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TEMPORA MUTANTUR.

*Times Have Changed. Why Should They
not Change Again? Why not Revive
the Gordon-Bennett Race?*

TIMES change, and we change with them," says the old Latin proverb, a seven-word epitome of human nature. And change we must have, if we are to advance in our knowledge of any subject; for progress is synonymous with change, although the converse

may not always hold true. As one looks back at the road-racing of the last few years the ancient tag rises instinctively to one's mind; in four years we have had four different sets of conditions, culminating in a complete abolition of the event—dealing, that is, only with the Grand Prix. If the other races are to be taken into consideration, the different conditions become multiplied at once; but the great French race has always given rise to the chief regulations of the year, and, therefore, serves best as the illustration. Weight limit, fuel consumption, 155 m.m. bore, 130 mm. bore, and then the great blank. Now we are promised the Grand Prix again, but without any restrictions whatever, a return to the old days of before Paris-Berlin. But it appears to be only a promise.

Ah! well, let us be thankful for small mercies.

It is bound to come, this revival of the racing upon the open road. The year now fast drawing to its close has been one of level dullness, relieved—a bad word, perhaps, in the circumstances—by the uproar over the Budget proposals.

In vain one looks for some notable event to mark the period, to underline some remarkable step in the progress, of design. What have we to our credit in the motoring year of 1909? Some reliability

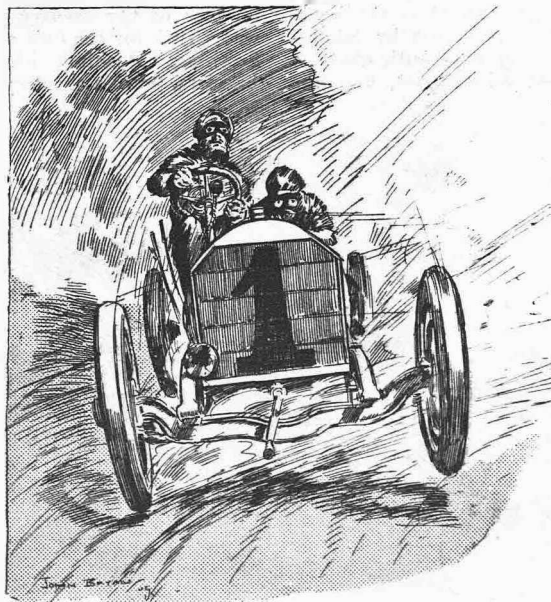
trials—who can repeat the list of winners now?—a few voiturette races, one or two hill-climbs, and so on, all interesting enough, certainly, but hardly to be considered in the light of epoch-marking events.

A dull year, my masters—a grey and colourless year.

And under the conditions fixed last October we might have made even greater progress than in 1908—that much-discussed Bianchi car first driven at Brooklands by Harbutt gave us an inkling of what we might have expected from the 130 mm. bore car.

Granted that another field for the designer's ingenuity has now been opened up by the coming of the aeroplane, it develops quite a different type of engine. We shall need all the skill we have at our disposal in the future to hold our own with the car of the air.

But these are mere technical regrets—regrets at the meagreness of the subject-matter of the sixteenth chapter in the story of the evolution of the perfect petrol motor. And it seems as if there would be little enough to add for 1910, for a race under open conditions can have no effect in developing new types of engine. We have already passed the limit of safety between car speed and tyre resistance. Consequently, there is no inducement to build newer and faster cars. Eliminate development, and we have left as the reason for the race



"The red devil was out to win."

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two objects—sport and advertisement. Long ago the first disappeared from the arena, when the paid driver ousted the amateur; remains, therefore, the only reason for the race—advertisement?

An entirely admirable and excellent reason, for it is an advertisement of the official trial type, which does not depend entirely upon the bluff of the advertiser. And yet one longs a little sometimes for the good old days, "les beaux jours d'antan," when the Gordon-Bennett was still the axis of the motoring year, when motor racing was not a fearful game between death and the driver, carried on at hurricane speeds, when there were still some amateurs at the wheel—in those days before commercialism had overwhelmed sport.

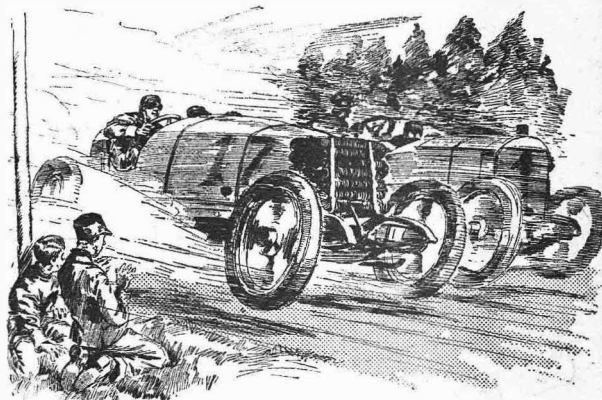
Looking back among the panorama of the old races, there is one which stands out above all the others in my memory as the climax, the culminating point of the whole series.

Never, I think, has there been such an impressive and official function, such a stately race, as the Gordon-Bennett of 1904 in Germany. It was a great event—we shall never have another like it. There was none of that grim fierceness which characterizes the races of to-day. The international spirit was still strong in the air, the discussions raged round which country was going to win, not which make of car; the drivers fought for the nations, not for the "marques." And the men competing—Baron de Caters, Baron de Crawhez, Warden, Charles Jarrott, Hautvast, Rougier; the two "star" performers, Jenatzy and Théry, the former burning to win, and the latter just at the beginning of his wonderful career; Lancia, driving his first race on a big car; Werner, the imperturbable, and so on through a list every name in which carries memories of past deeds.

It will be a long time before I forget that day. I was living at the time in Darmstadt, some little distance by train from the course, and had given up hope of seeing the race when a lucky chance freed me, and I found I could get away, after all, in time for part, at least. Hurriedly consulting time-tables with a friend, we found that a train left in ten minutes for Frankfurt, our most direct route. We seized glasses, cameras and all the rest of the race-going paraphernalia, and fled to the station, falling exhausted into the train as it moved out, followed by the shouts of the outraged officials. That run is very firmly imprinted on my memory.

It was not a day for sprinting in comfort. I forget the exact number of degrees in the shade which had been registered before 10 o'clock, but I know that all the schools were let off for the day on account of the heat.

At Frankfurt we took tourist tickets, out by Königstein and home by Oberursel. They were both controls on the circuit, about six or seven miles apart, and our



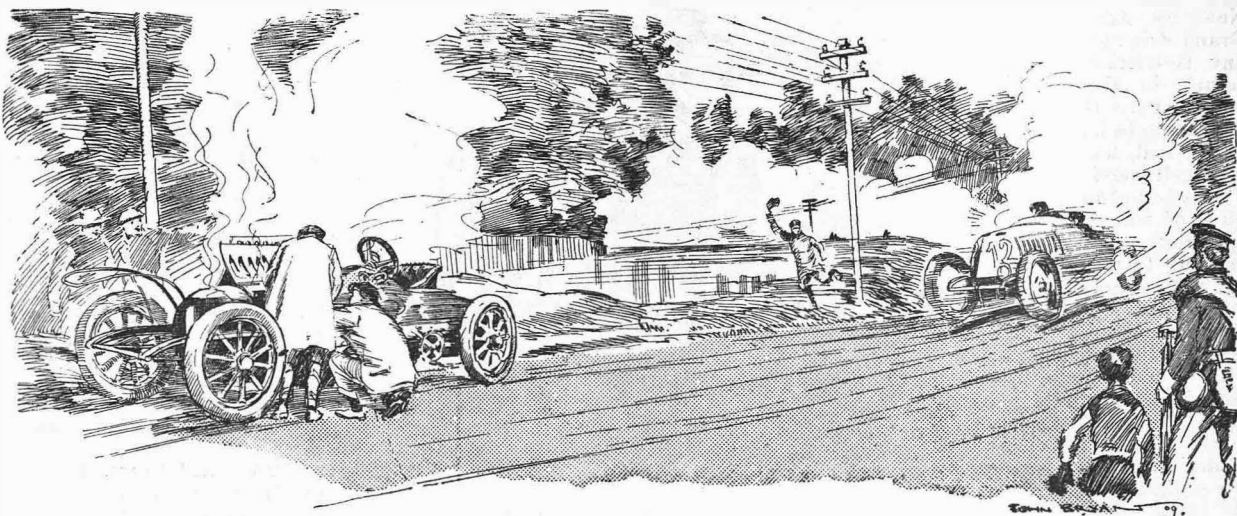
Rougier on Tercat-Mery and Jenatzy on Mercedes race neck and neck.

idea was to walk between the two, and thus see the cars at full speed as well as in the controls. But our hopes were dashed by finding that there was no train due for Königstein for a couple of hours.

We were aghast, but my friend was struck by a brilliant idea, and suggested that we should reverse the proceedings, going out by Oberursel and home by Königstein. A glance at the tables showed a train starting for Oberursel in five minutes, and the situation was saved. However, once at the train another difficulty arose. The carriages were packed. They were almost bulging with passengers.

Vainly we searched for standing room, looking longingly at the big, open end-platforms upon which it is "strengstens verboten" to stand when the train is in motion. But here, again, fortune intervened in the portly shape of an exceedingly choleric postman, who swore in voluble German that no one should prevent him standing on the end-platform, since he had paid for a seat and one was not provided for him. So I felt he would amply bear the brunt of any official attacks, and followed his example. My friend, so far as I remember, squeezed his way inside, and as the train rattled through the sunny landscape I clung to the swaying platform, listening in silent admiration to the postman's awe-inspiring command over his mother tongue, and feeling that, even though hanging precariously in a torrent of smuts, I had at least the advantage of fresh air.

Oberursel was announced by the sudden disembarkation en bloc of the greater part of the trainload, and there was a rush for the exit as if the race were on the point of finishing. Pushing, jostling, we streamed through the barriers, down a short by-road, and on to the course of the



Numerous troubles that beset Jarrott.

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Gordon-Bennett race, all eager for a sight of the much-talked-of cars and drivers, and anxiously inquiring for the latest news of our particular favourites.

At first sight there was nothing particular noticeable. A brown road passing through the village—Oberursel was little more than a large village—a few policemen standing about, apparently in an aimless fashion, a white banner across the exit from the control, a small tent with a table and a few men sitting at it, the whole framed in a glare of sunlight—it was difficult to realize that a great race was in progress.

The spectators spread themselves along the road, the majority moving off to the other end of the village. My friend and I walked across to the outward banner and waited.

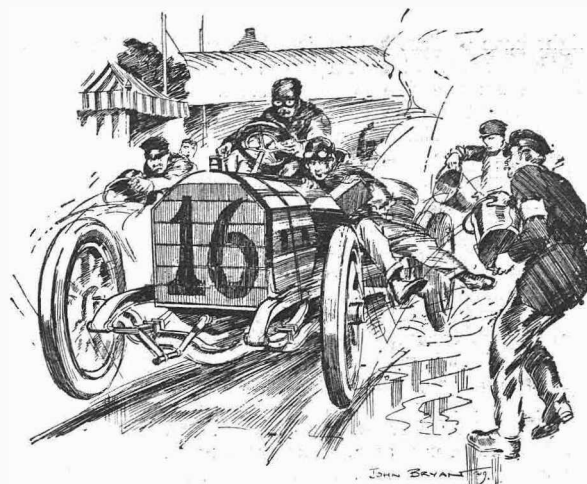
Perfect quiet reigned over the scene. In a very few minutes the trainload had dispersed, seeking the shadow of the trees in the side turnings. A few isolated groups stood on the edge of the pavement, now and then glancing expectantly up the road. The banner flapped sullenly in the gentle breeze. In the quiet of the country the clash of trucks and the puffs of a shunting engine in the station close by sounded doubly loud. A peasant working unmoved in the fields at the side called to his horses, and from above rang the shrill song of a skylark, circling upwards into the blue dome.

At the other end of the road a motor made itself heard. Nothing unusual, just the ordinary sound of a car's exhaust. In a moment interest awakes. Heads are craned, people walk off the pavement, and are requested to draw back by the unusually polite policeman. Round the corner house comes a small black object, which advances slowly down the centre of the road.

Number on the radiator—16. A hurried search in programmes—Warden, on an Austrian Mercedes.

He drives slowly up, and stops under the banner, the spectators running up and closing unrebuked behind him three or four deep. For a time the engine pants on, running very irregularly. Then, quite suddenly, it stops, firing the last charge in the huge exhaust pipe with a portentous bang and a cloud of black smoke, which shoots out from the horizontal pipe at the spectators. The latter scatter with yells, evidently under the impression, so often expressed by lay minds, that the car is going to burst. Warden sits motionless, but the mechanic gets up from the step—was not the Taunus race the last in which the mechanics sat on the floor, with their legs dangling above the road?—and strolls outside, talking to a friend. As the timekeeper begins to count the seconds the man runs to the front and pulls the engine over: it emits at once that impatient, fitful roar of the governing racing engine.

The word to go is given, and the mechanic pushes the car over the line by hand; a tin of petrol is taken on, buckets of water are splashed over the tyres, and then the clutch is let in. As the car shoots away the mechanic



"The car shoots away"—Warden on Mercedes.

takes a flying leap on to the step, turns round, and waves his hand to the spectators, and then the Mercedes rapidly disappears down the open road, travelling with that peculiar undulating motion which is always to be noticed in a racing car at full speed.

Such was my first glimpse of the Gordon-Bennett of 1904. There was nothing peculiarly exciting about it. Personally, I never saw any real racing between two cars all the time I spent on the circuit. But even the passage of the competitors at long intervals kept one always on the look-out, with the knowledge that at any moment a car might come round the corner.

After Warden had disappeared there was a pause, and then into sight came a snub-nosed blue car, running smoothly and quietly, with a stout figure at the wheel that was afterwards destined to become one of best-known personalities in connection with racing. As he passed along the road Thery had both hands off the wheel, and was pulling on his gloves, laughing and talking with Muller the while, the car running in quite a different manner to the one preceding. Once again we closed round the banner, and saw the ultimate winner glide off on the run to Homburg.

Jenatzy must have come through a very few minutes before we arrived, for we did not see him until the end of his next round.

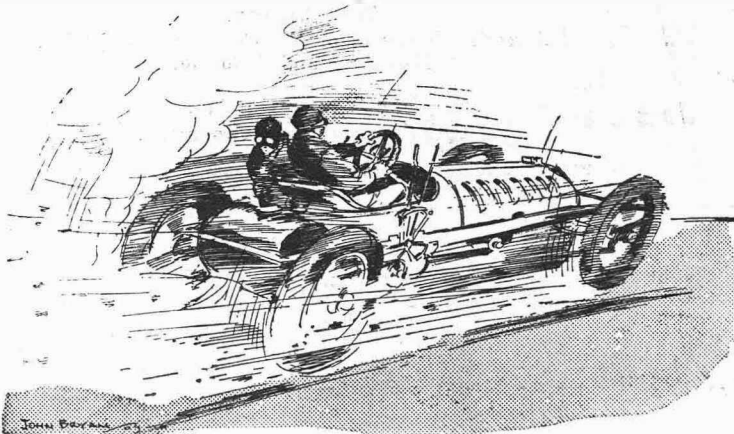
At this point we decided to start our walk to Konigstein, and allow plenty of time for dawdling on the road. Through the little village we went, passing by-roads full of touring cars, cabs, and carriages, which testified to the visitors attracted to the race, out through the inward control, and up the little slope outside. Here the spectators were much more numerous, encamped in the ditches on either side. "This is a good place," said a German.

"They come down here 'kolossal schnell' and have to pull up sharp at the bottom."

At the top of the slope we came upon booths with refreshments of a liquid character, barrels of the national beverage, and since the obtaining of edibles is comparatively simple on these occasions, on account of their portable character, while drinks are uncertain, we seized the opportunity.

As we sat by the side of the road in the crowd there was borne upon the breeze the well-known hum of an approaching car. In a moment everyone was running about. There were, if I remember rightly, a few soldiers in the place, but they had little or no control over the spectators, in spite of shouting "Zurück" with the utmost vehemence.

Louder and louder grew the hum, and the little beetle-like object could be seen dropping down the opposite slope with a



A roar, a brief vision of a flat, green car — Girling!

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slight haze of dust behind it. The spectators kept as far out into the road as they could, shouting and running about from one side to the other, making a rush for the edge when the car was right on them.

A roar, a brief vision of a flat, green car, with two swaying occupants—Girling!

Then the dust settles, the whirling paper drifts to the ground again, and the smell of the exhaust gives way to the scent of the pine woods.

"Du lieber Gott!" gasps a German dame beside me. "That's the fastest we've had yet."

And, indeed, the Wolseley seemed to me to pass quicker than any of the others which I saw at speed. But for that choked carburettor—still, there's no use thinking of "buts" nowadays.

Ten minutes' walk brought us to the pines, through which the road wound all the way to Königstein, except for the last mile or so. It is difficult to imagine a more ideal setting for a race. The road, hard, smooth, highly-cambered, and coloured dark brown from the dust-laying preparation, fringed on either side by the thick pine woods, in which the sandy ground was covered with pine cones, and splashed yellow with the sunshine. In the full blaze of the sun the road lay shimmering, empty, quiet, save for the voices of the spectators sitting in family parties beneath the shadow of the trees.

Every ear was alert to catch the first hum of a car, every eye turned incessantly to the brow of the hill, where the brown road stood out, clear-cut against the blue of the sky.

It was a little further on that we met Jenatzy.

We were walking towards a corner, when we heard the distinctive Mercedes exhaust approaching. As we watched the crowd at the corner we saw them spring to their feet, waving their hats, and cheering with the Teutonic "Hoch," which lends itself so badly to enthusiasm. We knew what that meant.

In a moment, with a big swerve, the famous Belgian wrenched his car round the corner and thundered up the slope towards us, sitting bolt upright, staring straight ahead with that fixed and desperate appearance which makes the Red Devil such an awe-inspiring spectacle at the wheel. Nummer Eins was out to win that day, and he was driving his final round still hoping against hope, chafing against the fate which had seemingly fought against him.

After him came Jarrott, his car running irregularly, and apparently slowly—so much we noticed at the time. It was not till afterwards that we heard of his wonderful clutch and switch duet with Bianchi, and of the numerous troubles that beset him. A little further on we found an excellent point of vantage, where we stayed for a long time—a right-hand, right-angled corner at the bottom of a long, straight hill (this part of the course was practically never level, being a succession of slopes and hills), on the other side of which lay the control. We saw Thery pass again here, taking the corner in his inimitable style, calmly, judiciously, with a minimum of skidding and a maximum of pace. He was hard on Jenatzy's heels, though we had little idea of it at the time.

While we were at this point De Crawhez came up on his Pipe, and I have a very vivid recollection of his shirt-sleeves fluttering in the wind as his car sped down the hill. He had discarded his coat for some reason, and drove ahead without waiting to pick it up, which gives a good idea of the temperature of the day. Then a long wait, a few more belated competitors, a dash for the train, and the end of a memorable day.

As I stood in the Tribunes in the last Dieppe Grand Prix, and watched the never-ending rush of cars, driven by masked and hooded individuals, who looked like beings of another world; as I walked down to Ancourt and saw them take that long straight to the top of the hill at hideous speeds, I could only admire the marvellous skill of the men at the wheel. But I felt there was something missing—something hard to put into words, perhaps, but, nevertheless, something which left a noticeable void.

It was fierce, brutal—there was no sport left in the thing, it was only a gladiatorial show. And I longed for the old days, and wondered if we should ever see them back again.

There seemed to me but one hope—the return of the Gordon-Bennett as an international race, with reasonable conditions, made up to suit the ideas of the present day. Impossible? Who knows? T.G.R.

Features of "The Motor."

This number of THE MOTOR, being a special one published on Thursday, supplementary to the usual issue of Tuesday, none of the customary features are included. In case this issue gets into the hands of a reader for the first time, we subjoin a list of some of the usual features of an ordinary issue.

MY WAY OF THINKING.

By Henry Sturmev.

Interesting chat about current topics.

CYCLOMOT'S CAUSERIE.

Driving Experiences, Hints, Tips and Comment.

MAGNETO'S POINT OF VIEW.

Interesting Comment on Motor Technics and the Trend of Things Generally.

THINGS ABOUT.

Interesting Features of the Countryside—Quaint, Historical and Amusing.

THE WAY OF THE AIR.

Aviation Notes and Comments.

FOR MOTORING LADIES.

By Mechaniste.

OTHER PEOPLE'S VIEWS.

Readers' Opinions on Motor Topics of the Day.

INFORMATION BUREAU.

A Section Through the Medium of Which the Editors Answer Questions on All Motor Subjects.

The key-note of "The Motor" is

First out with all the News,
Every Tuesday Morning.



ARCHIE: "But, Algie, dear boy, wherefore this thushness?"

ALGIE: "My own idea for watching flights. Got it from my barber."

CARS OF THE COMING YEAR.

A Comparative Guide to Present-day Constructional Characteristics.

By *ENGINEER.*

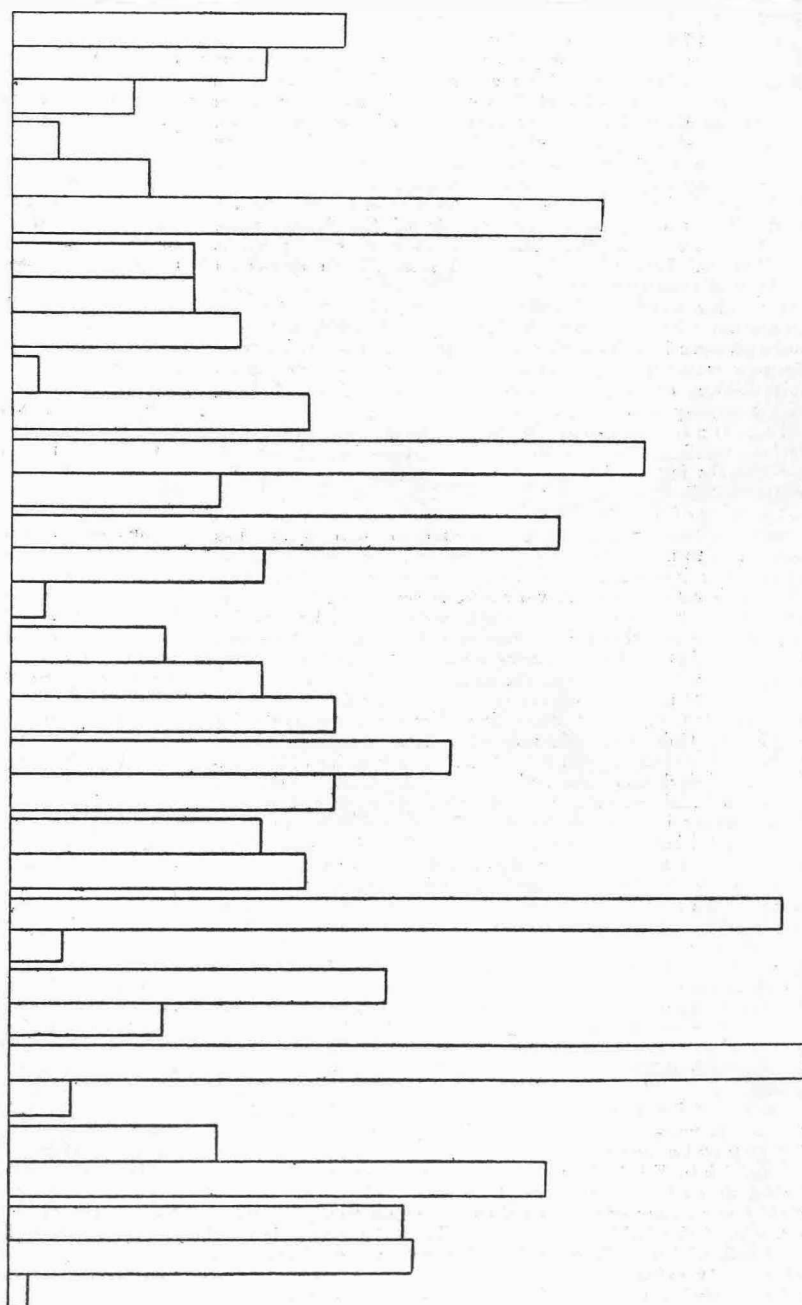
A SOURCE of considerable interest to the motorist at the present season is to learn what manner of cars promise to enjoy a vogue for the ensuing year. As each summer passes by, makers of automobiles are busy setting their plans for new models or for alteration and improvement of existing ones. But for the layman to arrive at a definite conclusion—even when those plans are made public—regarding systems and features most employed would, I am sure, prove a difficult task.

I have thought, therefore, that, by careful analysis of the mass of data placed annually in my possession in the course of my business, it would be possible to furnish in-

quiring minds with those points of information generally sought for. Hence, in order to show at a glance important characteristics relating to automobiles, I have prepared the accompanying comparative chart, which indicates a number of particular items pertaining to over 500 models of cars now marketed in Great Britain by some 125 of the leading constructors at home and abroad. The illustration, when read in conjunction with the text referring thereto, is, I venture to hope, so plain as to require no explanation whatever.

Brief comment thereon may, nevertheless, be appropriate, for one's attention can scarcely fail to be arrested by the striking proportions which certain kinds of mechanism and equipment have assumed. Take, for example, the subject of the final drive in the transmission

Up to and including 15 h.p.
 16-25 h.p. inclusive.
 30-40 h.p. inclusive.
 Single-cylinder engines.
 Two-cylinder engines.
 Four-cylinder engines.
 Cylinder diameter up to $3\frac{1}{4}$ in.
 Cylinder diameter $3\frac{1}{4}$ in. to $3\frac{1}{2}$ in.
 Cylinder diameter from $3\frac{3}{4}$ in. to 4 in.
 Equal diameter and stroke.
 Long stroke in proportion to diameter.
 Lubrication by mechanical means.
 Lubrication by pressure, gravity, etc.
 Ignition by magneto only.
 Ignition by magneto and accumulator.
 Ignition by low-tension magneto.
 8 ft. wheelbase and over.
 9 ft. wheelbase and over.
 10 ft. wheelbase and over.
 Track less than 4 ft. 7 in.
 Track 4 ft. 7 in. and over.
 Driving wheels from 750 mm. to 810 mm.
 Driving wheels from 820 mm. to 880 mm.
 Live-axle drive.
 Side-chain drive.
 Leather-faced cone clutch.
 Multiple-disc clutch.
 Water cooling by pump.
 Thermal water cooling.
 Quadrant change for gears.
 Gate change for gears.
 Four speeds.
 Three speeds.
 Two speeds.



CARS OF THE COMING YEAR.—Contd.

system. We find that the live axle has all but ousted the side-chain drive. Then we notice that the sliding gearbox having four forward speeds has reached nearly to the position of that furnished with three changes of gear, while the advance of gate-worked gear rods is also marked. The number of two-speeded gearing employed is meagre; and from these signs of the times it would seem that the "gearless" car is far off as ever.

Among engines, the four-cylindred type reigns supreme, both single and twin-cylindred motors being far in the rear. The favourite force for the multi-cylinder engines is, plainly, in the direction of what is termed "15 horse-power." In this regard, I have preferred to name the catalogued horse-power; and where that elastic

mode of phrasing the force at "15-30" h.p. (for example) is used by the maker I have adopted the lower designation, i.e., 15 h.p. There is no inclination to utilize the Royal Automobile Club's formula: the idea of denominating a four-cylinder, high-speed motor of 3 in. by $5\frac{1}{4}$ in., for instance, as 14 h.p. is ludicrous.

The greatly-increasing length of piston stroke and concurrent reduction of cylinder diameter is a feature of most new cars. I am gratified to observe so sensible a move on the part of manufacturers. Then, again, the studious attention now devoted to efficient oiling of the motor is manifest, since mechanical lubrication—that is to say, by pump—is well to the fore. Finally, the trustworthiness of the magneto appears to be established firmly, an extensive number of vehicles relying solely upon that method of firing.

From the Feminine Point of View.

Interior Comfort and Exterior Beauty.

EACH year brings its improvements in the way of extra comforts and general luxuriousness in the bodywork of motorcars; but 1910 will surely surpass all that imagination might have foretold. It may truly be called "The Great Motor Show" that is now in progress at Olympia. As our American friends would say, there is a "dandy" array of automobiles. The old difficulty arises of knowing which to choose out of such vast numbers as being specially comfortable and beautiful.

The magnetism of celebrated names in the manufacturing world draws one first to the stands of the Rolls-Royce, F.I.A.T.s, De Dions, etc. The Rolls-Royce cars are pictures of elegance. Limousines have, until lately, been rather on the lines of country-house buses, but the white and dark green one on this stand can hardly be thought of as having any connection with the old style. It has enclosed front seats, and a glimpse into the back reveals what is quite a relief from the now monotonous pair of small—and generally uncomfortable—folding extra seats. Here there is only room for two, with a consequent saving in tyres.

There is a turn of fashion in the 1910 models to make use of various woods for interior decoration of closed carriages. A particularly fine specimen of this description is to be found on the Metallurgique stand. Wonderful ingenuity is displayed in the work of Van den Plas, of Brussels, in the design of the "sporting limousine," with all the seats enclosed which has been built to a special order. Wherever upholstery is not required, the interior is of bird's-eye maple wood. The silky look is charming. The driver's seat is something like a fire-side armchair, and is in fawn cloth, with a nice, low, racing position, the steering column having a good rake. A fitment for the comfort of the passengers is a brass foot rail, this being much less cumbersome than the average stool.

Another example of decorative woodwork, worthy of many envious glances, is the marvellous Empire limousine on a 40-60 h.p. Gobron-Brillié, painted a Rose du Barri shade, with black mouldings and gold lines. The interior of this exhibit is of dark and light mahogany, with gorgeous cushions, carpet, trimmings, etc., of gold colour brocade and velvet. The fitments in this wonderful equipage should be specially noted by all lady visitors to the stand. The door handle is a patent idea, enabling one to open the door without stretching forward, the handle being close to the back seats, and having a special locking arrangement to prevent it flying open unintentionally. Many other comforts are provided—roll-front mahogany cabinets, companions, and a folding table. A thing that will probably go unnoticed by most people, but which is very neat and useful, is the sliding method of moving the folding seats backwards and forwards; they also revolve. A somewhat novel colour is introduced in the other model, a 20-30 h.p. chassis, with limousine landaulet body. It is of a rich dark purple shade, with leather upholstery to match.

On the F.I.A.T. stand there is a variety of choice. Here are cars of many useful and convenient sizes and shapes. The low step and entrance are always an attraction of the delightful 15-20 h.p. F.I.A.T., and particularly appeal to ladies, enabling us to keep our skirts clean when obliged to be constantly in and out of a car on shopping expeditions. There is a model of the fashionable limousine landaulet type. It is of dark red, with pale fawn cord cloth upholstery, and there are very pretty extra cushions, in the same shade of plain cloth, adorned with a white Empire wreath design. A dainty-look-

ing little two-seater, on the celebrated 12-14 h.p. type chassis, is on somewhat novel lines of colouring—pale blue, with dark blue mouldings and mudguards.

Napiers, as usual, show fascinating cars. Here, again, we find comfort in the low entrance and step, which is also a broad one—an item making for ease in ingress and exit. A 30 h.p. model possesses a charming green body of the cabriolet type. The curves of the panelling are finely formed, giving a handsome, non-cumbersome effect. The chief points to note about the interior are the arms to the folding seats.

Something of the above style appears on the De Dion stand in Mulliner's handiwork on a 14 h.p. chassis. It is eminently suitable for those who dispense with the offices (or officiousness) of a chauffeur. The hood is of the shape of an ordinary extension Cape cart, with the appearance of black leather, but, in reality, is of lighter and cheaper material. Side windows, that can be stored away under the seats, meet the hood, and, with these and the glass screen, sufficient protection is afforded in wet weather to content the most fastidious. The colouring is olive green, with lighter shade of basket-work toppings to the panels.

Colouring is a matter in which the body-builders are at last trying to show a little originality. A new note appears in the upholstery work of a Leon Bollee. It is a dark mole shade, and in plain cloth, which is a relief from the numerous corded stuffs. It is quite pleasant to the eye, and tones with the brown paintwork.

The old idea of elaborate trimmings in carriages is being much developed this year in motors, many having really beautifully-patterned braids, but one in a Panhard is especially fine. It is of pale gold, with the raised pattern in green to match the rest of the interior. The outside of this car is black, with broad green border to the panels.

The N.E.C. stand may always be called the Mecca of comfort-lovers. It is quite extraordinary how much extra space can be made by this company's arrangement of the engine under the front seats. The luxury of the wonderful suspension makes travelling in these cars as comfortable as it is possible to have it. The tones of brown in which the 40 h.p. model is painted are most pleasing, blending delightfully with the fawn cord cloth seats. The extra folding seats are well arranged to adjust to many positions.

The annexe part of the hall contains a bewildering mass of beautiful coachwork. To the average user of motorcars, Maythorn's will probably be the greatest attraction, as they are catering for the smaller car, yet expending upon it as much care as is usually bestowed upon the six or eight-seated limousine. There is here a small wonder in bodywork on a 20 h.p. Lancia, of coupé-landaulet form, with folding chauffeur's seat at the back. It is of primrose colour, with grey cloth upholstery, the two seats being of armchair form. The driver's seat is moveable rearwards when egress is required on that side. A third person can be tucked away comfortably in the corner opposite the steering wheel, an extra seat being fitted there. The fittings are all that can be desired—electric light everywhere, lighting up dashboard, gauges, etc. A tiny writing-table, with two small drawers, is also provided.

For general utility in small limousines it would be difficult to beat the 12-14 h.p. F.I.A.T., also shown by Maythorn. A great attraction to all ladies will be, I feel sure, the height of the roof, this enabling one to sit with head well raised whilst wearing the latest fashion in headgear.

MECHANISTE.

THE LIGHT CAR AT OLYMPIA.

A Record of Improvement—Illustrated by Striking Sketches—With Reasons Why Men of Limited Income May Now Become Motorists.

By ENGINEER.

WANDERING hither and thither through the avenues of automobiles displayed at Olympia, one receives a constantly-recurring impression that retrogression in engine power has become the vogue. This is true of that type of car holding middle place between the tourist's heavy vehicle and the "voiturette" or "runabout"; I mean the machine called 15 h.p. Of light cars at popular prices several may now be examined; some among them possessing four-cylindrical motors. Until, however, some decidedly inexpensive methods shall have come into being for the production of multi-cylinder engines, it seems tolerably clear that the constructor will prefer to concern himself with turning out efficient light cars—voiturettes a deux places—having twin and even mono-cylindrical motors. It is a fact that, on the average, double-cylindrical automobiles cost very little more than the single-cylinder sort, yet there is, it would appear, a strong tendency in favour of a simple, straightforward chassis engined with the single-piston motor. For a number of good and sufficient reasons this is not surprising. To-day, the manufacturer must consider his market with precision, he must gauge his client's means. Hence, if your pocket will not allow of a com-

—economical ways and means notwithstanding—cannot allow of a reliable four or five-seated vehicle yet to be produced at a really low figure. For proper service, a car of this kind will cost more than is at the disposal of the man of strictly limited means. This journal is, I believe, one of the few which has long advocated the active development of the inexpensive light car, and with that view I agree heartily, but, nevertheless, its conductor knows, like myself, that, however much his sympathies are extended to motorists of restricted income, the manufacturer cannot perform impossibilities. He is, naturally, unable to offer a car worth £350 for £175—and that, I am afraid, is what many would-be buyers unwittingly expect.

The array of light automobiles now on view at Kensington is well worthy of attention. And of such machines there are, it is to be observed, two kinds. Which will you have—one that is fast and low-built, with comparatively little carriage-body space, or the other that is less speedy, but, perhaps, more durable on that account, and certainly possessed of commodious seating accommodation? As to the first-mentioned category, there are some excellent vehicles to choose from, notwithstanding that many believe a cheap car cannot be fast. By those disbelievers a trial trip should be sought on certain well-known makes. An example of the sort of machine I refer to is the Sizaire et Naudin, engined with a single-cylinder motor having a long piston stroke. Anyone new to motoring would, as a rule, never credit the great speed obtained, by a touch of the throttle, on these little fire-eaters. I myself have caused the eyes of more than a few amateurs and others to open wide at the exposition of their hidden pace. On a car of this character you may travel at pretty nearly the same rate, uphill and down dale, as on the lordly 60 h.p. *voiture de luxe*. If it is wished to drink from the cup of speed here is the opportunity at low cost. Provided that you do not overload the chassis, e.g., carry a friend upon the footboard and the like, that you take up all slack in the working parts as it occurs—not in laggard style—and that you oil up plentifully, your car will be found to be one of the cheapest "speed" investments imaginable. Some envious ones may liken it to the coster's fast donkey-chaise, but what matter, if your object of swift travel be achieved? If, then, your years lie between jocund youth and middle-age and you are blessed with health and strength, little speedsters of this calibre will satisfy your craving to a nicety. Lest it be thought that I preach a gospel of inconsiderate driving, I express the view that if the police catch you, I am pretty sure their attention will not have been undeserved.

For the man who seeks the quality of a moderate rate of travel, coupled with a minimum of expense, there are several attractive machines to be seen under the roof of Olympia. Such chassis are provided with really comfortable carriage-room—with ample space for the occupants. Some are also well adapted for the carrying of a reasonable

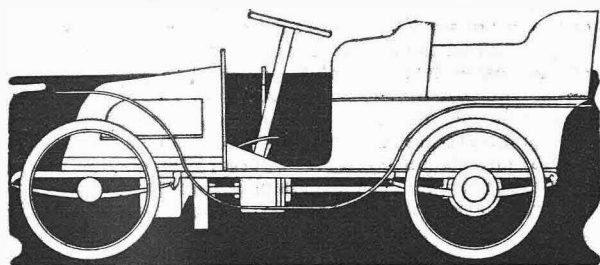


Fig. 1.—The light car of yesterday.

paratively heavy outlay, it is surely better to procure a plain, light vehicle of good quality rather than one which, although ostensibly superior by reason of a multi-cylinder motor, paintwork and so forth, may prove, on practical acquaintance, to be for ever subject to derangements, and, therefore, expensive to maintain. To motorists *in posse* and other amateurs, I would proffer the advice not to allow relatively large size to mislead them. For example, a smart, small two-seater at a cost of three or four £50 notes may well prove infinitely more trustworthy and inexpensive to run than a more imposing equipage.

Let me cite another cogent reason for the two-seated type, namely, overloading. If a very cheap four-seated machine be bought, it is almost certain that the strains imposed by the weight of four persons represent the utmost limit, but sometimes a fifth is carried. Do we not often hear the owner of a light car remark that it carried "five up" for such-and-such a distance and speed? Few among them, it would seem, realize that what this additional burden means is not unlike a man suffering from a weak heart undertaking some strain which he should not dare to attempt. Thus, if one obtains a satisfactory two-seater such an investment may be regarded as safe. With such a vehicle there is scant temptation to overload it; it will travel quite swiftly enough on the level, it will run uphill also with reasonable celerity. The purchaser of a small car should bear in mind that he cannot well expect to have his cake and eat it. That is to say, it is wise to restrict one's inclinations for a gaudy, many-seated chariot. In a word, present-day methods of manufacture

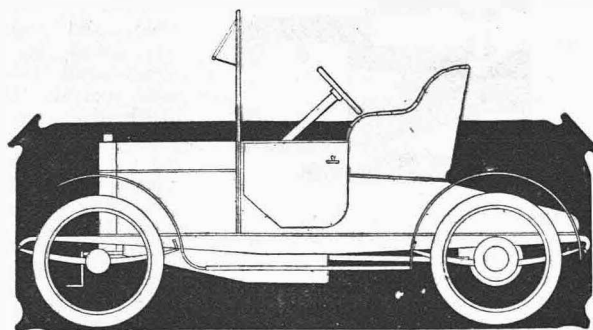


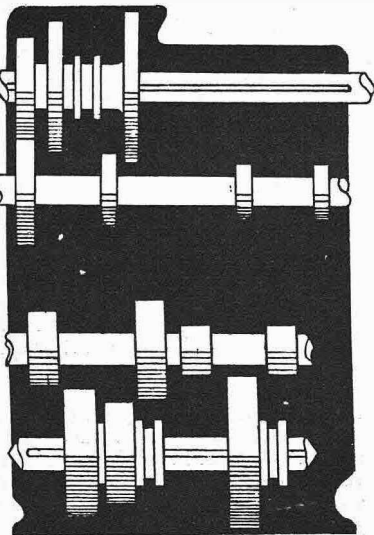
Fig. 2.—A typical light car of to-day.

THE LIGHT CAR AT OLYMPIA.—Contd.

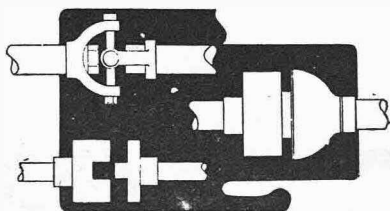
quantity of baggage in addition, either at the rear or on the footboard. Then, too, modes of manufacture have been studied so well that quite efficacious protection from foul weather is afforded. In this connection, efficient hoods, high dashboards, rain screens, and last, but not least, high side doors are outstanding features. In light cars, but a few seasons since, the simple idea of properly-made deep doors to the front seat was merely of sporadic appearance. Nowadays it is the fashion, and one of the most sensible plans yet adopted.

Assuredly, it must be admitted that the motor user obtains much greater value in the small car than was formerly assumed to be possible. The striking difference between the light automobile of yesterday and to-day may be gleaned easily from a glance at Fig. 1, an outline drawing of the small, four-seated rear-entry tonneau vehicle so fashionable a very short time ago. Engined with a single-cylinder motor often incapable of developing more than 5 h.p., built with a brazed-up tubular frame to which a slender live driving axle was suspended by short springs, it is not surprising that the owner's lot was frequently one of discontent.

Let us turn to Fig. 2: here is no untrue illustration of the "1910 type" of two-seater. On looking at its lines, one may easily gather that the rearwardly-sloping seats have all the comfort of arm-chairs—"arm-chair travelling" has a new significance. The steering wheel is within comfortable reach of the driver, the change speed, the brake levers, and the push-pedals—no longer of the piano pattern—are, likewise, convenient. Guards curved to the contour of the wheels in conjunction with long running-boards arrest the mud splashings previously unrestrained by narrow and wreathlike wooden wings. It should be a source of satisfaction that we are free from the trammels of old-fashioned coachbuilding practice. Stamped from tough sheet steel, the chassis frame is longer and infinitely stronger than before, the wheels and tyres are

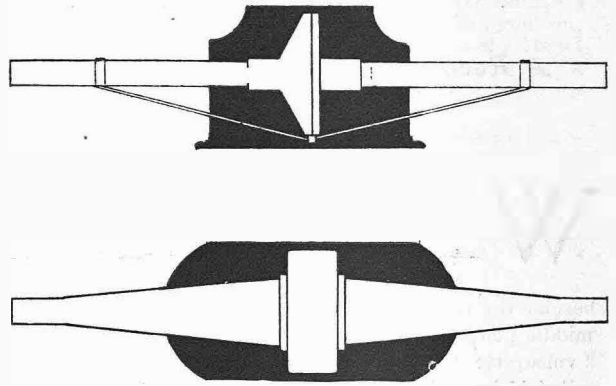


Two methods of change-speed gear making: the upper gear-shaft comprises a single sliding-sleeve on a long axle; the lower pair of figures show the shaft-length reduced and the wheel-width increased by the adoption of two sliding sleeves.



Exposed, unlubricated universal joints (of the plain pin and crosspiece, and other types) have given place to correctly-designed couplings encased by oil-retaining metal covers, which are easily removable. The lower joint on the left and the modern cased-in kind on the right are both shown separated for clearness of illustration.

c14



Upper diagram shows a live driving axle with the straight barrels shrunk on, or driven into, the difference case.

Lower diagram shows the new style of live axle, with tapered steel tubes flanged and bolted to a substantial differential gear-case, as now used largely.

Noteworthy improvement in the mechanism is equally evident. It was but lately common for many motors to be provided with one small cylinder having the same measurement of piston stroke as diameter, with discs for flywheels revolving within an utterly inaccessible crank-case. The influence, however, of racing and a handful of daring mechanics, upon construction, is responsible for the long-stroke engine furnished with a large external flywheel, a one-piece crank suspended from above, and a crank pit pretty nearly as easy of approach as any stationary steam plant. The essential of efficient oiling has become recognized, hence we observe, even in the motor of the car of small price, an oil well and a pump, to ensure proper lubrication. Then, again, the disappearance of the atmospheric inlet valve was productive of increased force from diminutive engines, while valve area has so been enlarged and the valve motion so improved that results heretofore unbelievable are achieved thereby.

The circulation system, whether forced or on the thermal principle, has been simplified, and with the former the circulation is maintained by improved accessible pumps, driven positively by gearwheels—a vast advance upon the erstwhile friction drive off the flywheel. In fine, it is in consequence of close attention to details such as I have mentioned that the single and multi-cylindere motor of small proportions furnishes pleasing service.

The mode of transmission is better than ever long-experienced motorists were wont to hope for; and the weakness of live axles has been abolished. To-day there are light cars wherein the driving axle comprises features of unqualified excellence, namely, tapered steel tubes, flanged and bolted on to a box-shape differential gearcase, thus affording rigidity never before attained to. Ball bearings are ubiquitous, since they surround the journals or road wheels, change-speed gears, balance gearing; they take the thrust of the engine and of the clutch, they relieve the steering mechanism—everywhere will you find these friction-reducing devices.

Without any doubt, almost ideal accessibility is reached. For example, many a small car of old pattern has passed through my hands, in which to adjust the clutch entailed a whole day's labour in dismantling and refixing—a task cut down to less than half-an-hour in the modernized voiturette. Difficulties with the change-speed gearing have been overcome. At one time it was considered necessary to use long shafts and narrow-faced spur-wheels. By a glance at one of the accompanying drawings the reader may gauge plainly that the length of the gearshafts has been reduced, yet the wheels have wider faces, the advantages being greatly augmented strength, silence, and complete absence of liability to derangement. There are, of course, other ways of effecting the same purpose, but the single example will perhaps suffice to direct attention to the point in question.

For the driving shafts the crudely-fashioned, exposed universal joint was familiar a little while ago; now it is scientifically made, neither noisy, unlubricated, nor

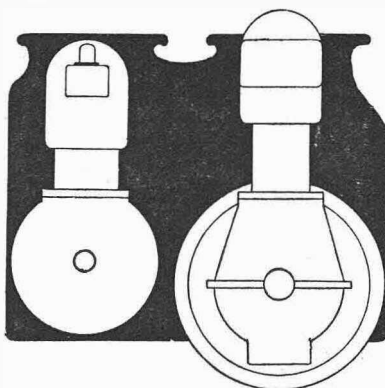
THE LIGHT CAR AT OLYMPIA.—Contd.

quickly worn out. And brakes are immeasurably superior to those of early design, for, protected from water, grit, and other foreign matter, their action remains unimpaired for lengthy periods. Moreover, when the enclosed form of expanding brake does call for adjustment, it is not seldom the work of a few minutes to give it a fresh lease of life.

Among other vastly-improved component parts is the steering gear, which is, in the majority of vehicles, of robust construction. Each part of it has been subjected to such scrutiny that the joints and the worm and segment or nut are capable of facile adjustment. The need of proper lubrication and security is well met by carefully-made covers for these joints, which are now produced from the requisite materials with large wearing surfaces.

The ingenuity of many inventors expended upon the subject of carburation is advantageous to the car buyer, in that most important results are obtained. Several carburetors, especially of the multi-jet order, are really remarkable as to their quality of fuel economy, giving concurrently an elasticity to the engine beyond cavil.

The old style of cumbersome water tank and festoons of gilled tubes, the latter hung perilously close to the ground, has been superseded by the neat, light radiator set in a case which is found to give a far greater cooling effect. Truly, the old system was not inaptly called "plumber's cooling." It is curious to note that this change is rendered possible without the necessity of employing the comparatively fragile honeycomb cooler. And no small por-



A comparison of the erstwhile short-stroke, disc-flywheel motor, having an atmospheric admission-valve, with its successor, the long-stroke motor with both valves opened positively, lubrication by pump from an oil well, an accessible crank chamber, a "suspended" crankshaft, and a large diameter flywheel.

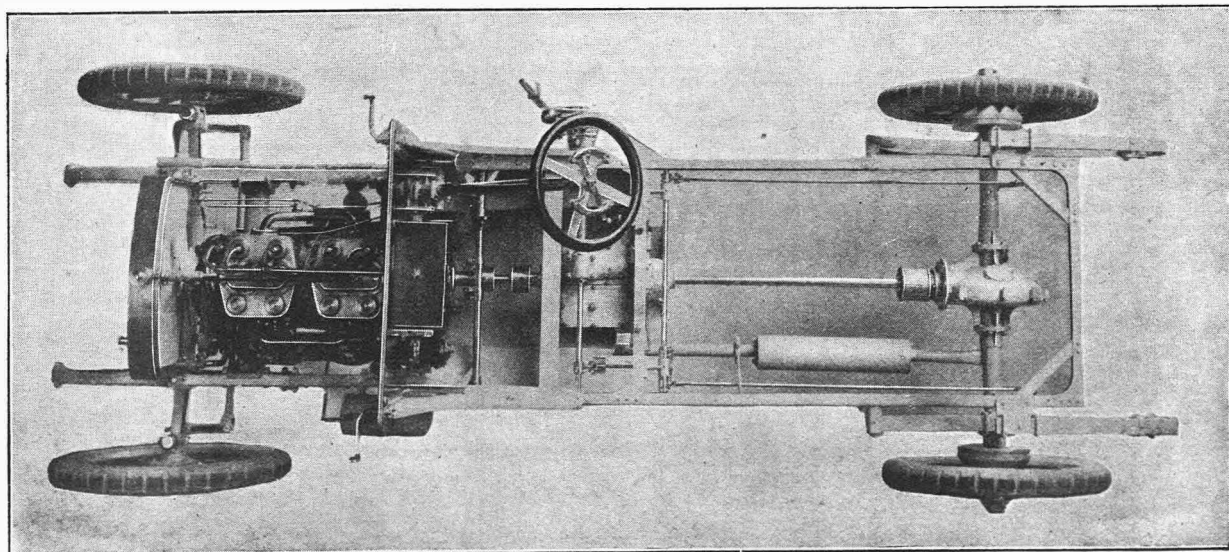
tion of the improved efficacy of water-circulation systems is due to a sensible size of piping, correctly situated and curved.

In drawing these observations to a close, I would wish to say that the time for hesitating to make the investment of a light motorcar is past. Until a few years ago, I grant that such a step might possibly have possessed pitfalls for the novice. But the benefits of the unmistakable mechanical progress of the automobile industry ought not to be overlooked. Students of car construction can scarcely fail to have noticed the trend of maker and user, a trend all in favour of the small and handy vehicle. There is, then, no excuse for delay. I would counsel everyone who contemplates entering upon motoring to eschew the view that the small car is merely a costly pastime, or that it is an experiment. And at the present exhibition it is a trite, but none the less true, expression that there are "cars to suit every purse."

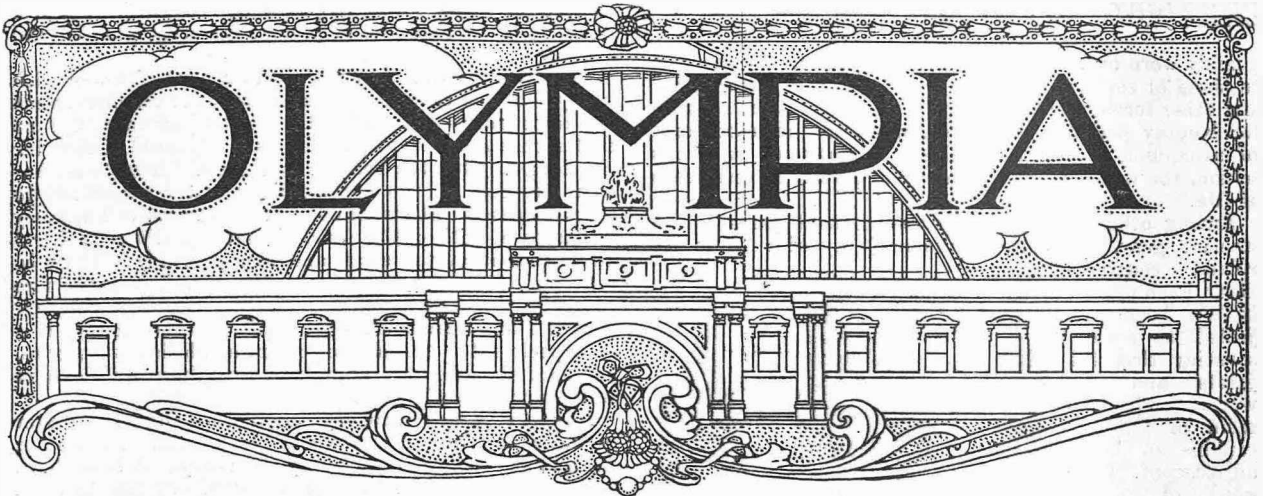
A light vehicle will convey man and wife on holiday over highway and by-way; it will serve him on business; in summer or winter it will always be ready. A breakdown will assuredly be the fault of the man, not the machine.

In conclusion, here are the names and countries of origin for most of nearly half a hundred makers catering for the small-car buyer. The list undoubtedly affords ample evidence of an *embarras de richesses*:—

Adams, Great Britain.	Humber, Great Britain.
Adler, Germany.	Jackson.
Albrena, France.	Laurin-Klement, Austria.
Alldays, Great Britain.	Marlborough, France.
Argyll, Great Britain.	Martini, Switzerland.
Austin, Great Britain.	Mass, France.
Bedford.	Miesse.
Berliet, France.	Mors, France.
Briton, Great Britain.	N.A.G., Germany.
Cadillac, U.S.A.	Napier, Great Britain.
Calthorpe, Great Britain.	Opel, Germany.
Charron, France.	Panhard-Levassor, France.
Chenard-Walcker, France.	Peugeot, France.
Clément, France.	Phenix, Great Britain.
Clyde, Great Britain.	Renault, France.
Darracq, France.	Riley, Great Britain.
De Dietrich, France.	Rover, Great Britain.
De Dion-Bouton, France.	Singer, Great Britain.
Delage, France.	Sizaire-Naudin, France.
Enfield, Great Britain.	Star, Great Britain.
F.N., Belgium.	Swift, Great Britain.
Ford, U.S.A.	Thames, Great Britain.
Gregoire, France.	Vulcan, Great Britain.
Hillman-Coatalen,	
[Great Britain.]	



Plan view of 12-15 h.p. Hillman-Coatalen chassis, described in "The Motor" of Tuesday.

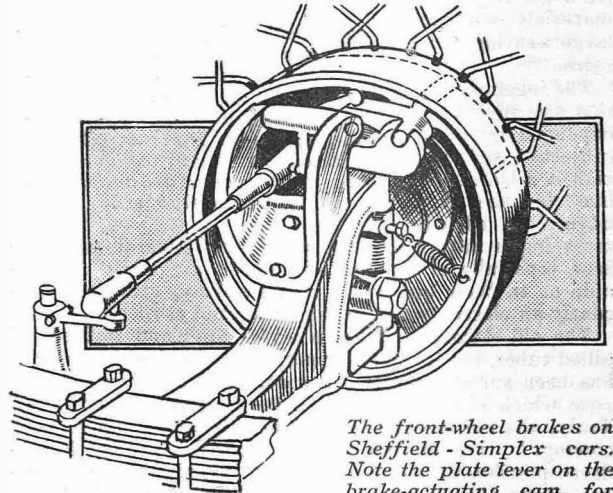


Second Review of Exhibits.

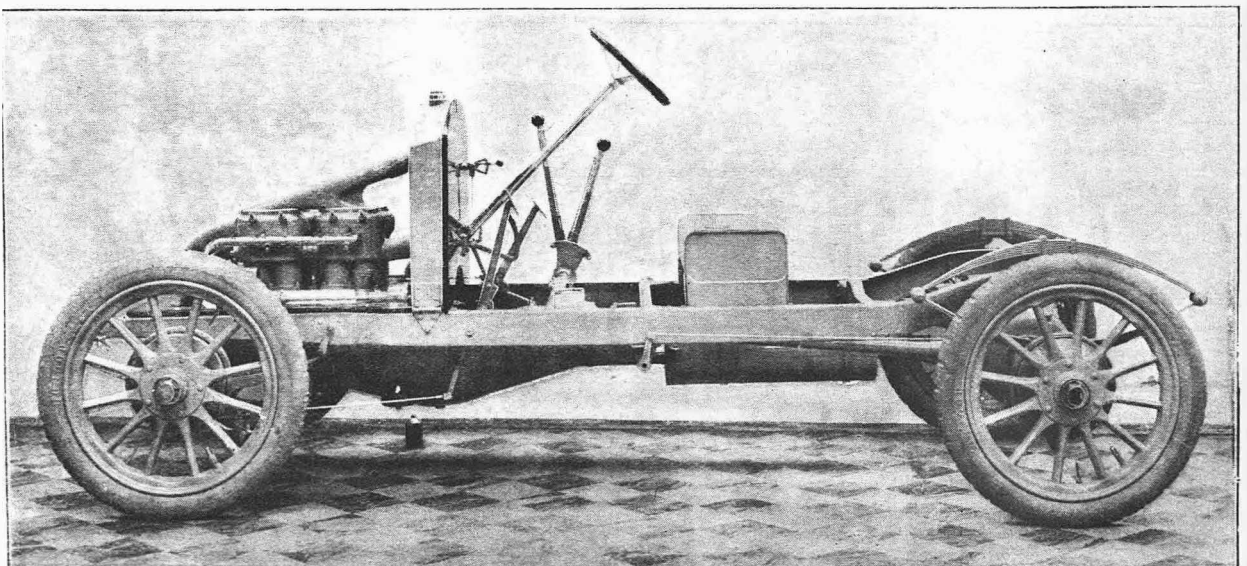
Sheffield-Simplex Cars.

The 45 h.p. six-cylinder unsprung-gearbox Sheffield-Simplex remains practically unaltered, prolonged experience having failed to find any but very minor improvements necessary. The centre of interest in this exhibit is the new four-cylinder car. Mr. Percy Richardson's productions are always well worth close examination, as he has the happy knack of combining originality with practical engineering work. Following a distinct trend, the Renault type radiator on bonnet has been adopted, but identification is easy by means of the well-known double S on the nose of the bonnet. The valves are all on one side, and circulation is by thermo-syphon. The magneto is set crosswise forward of the crankcase, and slightly dropped, while the carburetter is the well-known Claudel-Hobson. The exhaust is taken forward, a well-swept bend taking the pipe below the engine and back to the silencer. Lubrication is by pump to troughs, into which scoops on the big ends dip. The oil circuit is taken through a dashboard tell tale of the spring-plunger type. The bearing taking the drive to the frame, the gearbox, and live axle, through the hollow propeller shaft, are lubricated by means of an oiler, which combines the duties of an oil cup and a pump. An interesting feature is the fitting of a spherical thrust bearing immediately behind the clutch, the gearbox and propeller shaft casing being rigidly connected. The former is one of the neatest three-speed boxes ever contrived, so that the unsprung weight is not materially increased. The gear-operating shaft is, of course, universally jointed, and the gear

lever is hinged, so as to get a movement free from any binding. The frame is well stayed at the rear and fitted with a back cross-spring, the springs being of a very carefully-



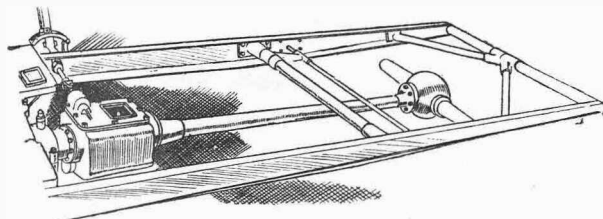
The front-wheel brakes on Sheffield-Simplex cars. Note the plate lever on the brake-actuating cam for ball head on bell-crank lever to operate upon.



15 h.p. Arrol-Johnston chassis, described on p. 559 of Tuesday's issue.

OLYMPIA SHOW.—Contd.

selected Sheffield brand, so as to secure the easiest possible springing. Fibre in place of the usual wood pads are inserted in the spring clips. The sliding pedal control is, of course, retained, and a single pedal controls clutch and front-wheel



The new position of the gearbox on the forward end of the torque tube of the Sheffield-Simplex car.

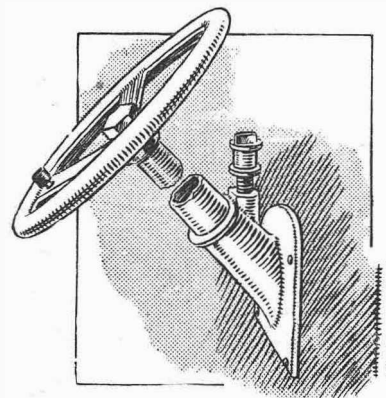
brakes, which latter are operated through bell-crank levers. The side brake acts on the rear wheels, and a big milled head provides an easy method of adjustment.

Mors Cars.

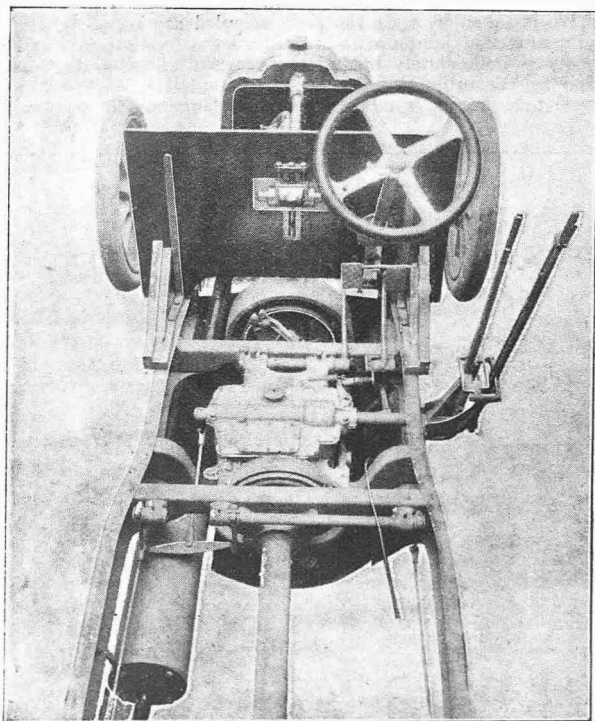
The novelty on the Mors stand is the new 15-20 h.p. four-cylinder chassis. The cylinders are cast in pairs, and are 80 mm. in diameter with a piston stroke of 120 mm., and this engine, like all other 1909 Mors models, is fitted with a modified form of Zenith carburetter. The upper part of the crankcase is provided with two very broad webs, and these form the bearing brackets for attachment to the side members of the main frame, and the upper part of the crankcase, therefore, acts as a very substantial cross stay for the whole chassis. The lower part of the crankcase has a vertical division, about midway of its length, thus forming two independent oil wells or sumps, and, in connection with the lubrication system, it is interesting to note that a five-way oil tap is provided. When set for No. 1 position, oil may be pumped direct from the supply tank to one half of the oil sump in the crankcase; moving the tap to No. 2 position causes the oil level in the two divisions to become equalized; when in No. 3 position both divisions receive an equal supply of oil from the pump; and, should there be any excess of oil in the crankcase, this may be drawn off to a predetermined level by turning the tap to its fourth position; whilst, when turned to the

fifth position, all the oil may be completely drained from the crankcase. In the hands of an intelligent driver this fitting may certainly serve a useful purpose, but it is doubtful whether the average car owner requires, or even desires, such refinements.

So far as the clutch is concerned, the design does not differ in any respect from those previously fitted by this maker. It is of the contracting-band-brake type, operated by two ball-pointed bell crank levers, which work in conjunction with a coned sliding member on the clutch shaft. The same type of clutch is fitted on all models, but the diameter, of course, varies with the power to be transmitted. The design of the four-speed and reverse gearbox is one which appeals to us on a score of accessibility, as by the removal of the very large top cover, the whole of the selecting gear, inter-locking arrangements, sleeves and pinions, may easily be inspected. All the shafts are mounted on ball bearings, and a direct drive is obtained on top speed. Unlike other Mors models, the propeller shaft on this chassis is enclosed in a stout tube, and this tube, in addition to keeping the universal joints in a state of cleanliness, also serves the dual purpose of torque and radius rod. The design of the after-part of the chassis is particularly clean, and the back axle strikes us as being a very stout and workmanlike job, whilst the spring shackles are all fitted with a very practical form of grease cap that should not easily be lost on the road. In the same chassis a 20-30 h.p. engine may be fitted, and this has four cylinders, 95 mm. in diameter by 130 mm. stroke. The general characteristics of this engine closely resemble the 15-20 h.p. engine, the weight of which chassis, with tyres and filled tanks, is 18½ cwt.



Magneto cut out and lubricating cup to steering column on 12-15 h.p. Mors.

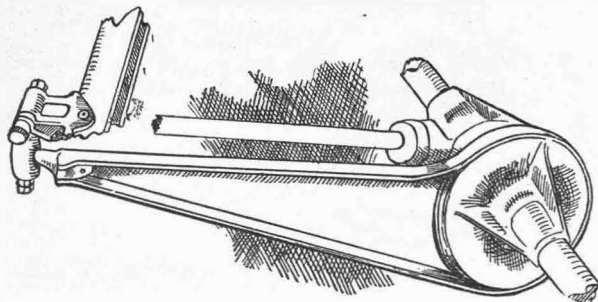


15-20 h.p. Mors chassis shows crosshead for compensating rear hand brakes, Mors hand clutch, etc.

Lancia Cars.

The 24 h.p. Lancia car is shown by Messrs. W. L. Stewart and Co., Ltd., of 166, Shaftesbury Avenue. The chassis shown is specially finished and generally embodies the well-known Lancia features, particularly with regard to the construction of the main frame and the method of supporting the engine and gearbox. The engine itself is of the monobloc type, having four cylinders of 100 mm. to 110 mm. stroke. The castings surrounding the lower end of the cylinder bore are separated in the middle of the engine—that is, there is a space of about 1½ in. between the second and third cylinders below the water space. The metal is continued in the form of a flange around the valve springs, and the faces are planed and form two boxes, encasing four sets of valves and springs each. These boxes have each a cover plate, held in position by a single central stud. The tappet guides are held down in pairs by a short plate, each plate holding a pair of guides. The tappet heads are adjustable.

A noticeable feature is the method in which the water circulation is carried out. The water pump is enclosed within the crank chamber, and it delivers through a short rubber connection through the top of the chamber to a union connected

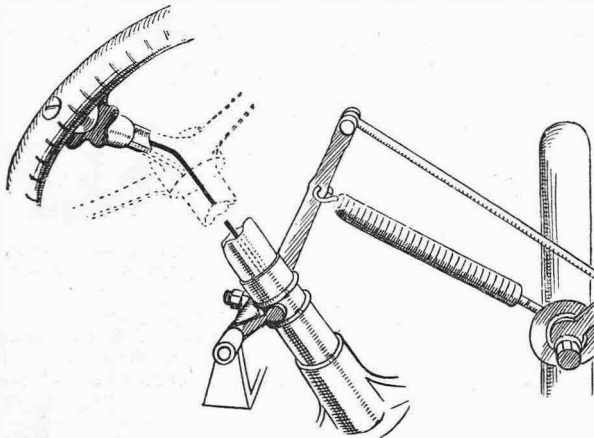


The Lancia pressed-steel torque stay.

OLYMPIA SHOW.—Contd.

to an extension of the cylinder casting at the front end turning downwards in the form of an elbow. The crank chamber is not actually in connection with the pump, but the pump body is separated by means of a diaphragm plate. There is also a water outlet provided in case the pump glands should leak at any time. It is therefore not possible that the water leaking from the pump can get into the base chamber. The pump itself is of the rotary type and driven by means of an extra pinion keyed on to the pumpshaft, this shaft being carried in a ball bearing.

The flywheel is of particularly large diameter, and has vanes cast in it, no fan being employed. The change-speed gearbox gives four speeds and reverse, the direct drive being on the fourth. In order to obtain this, the third speed wheel

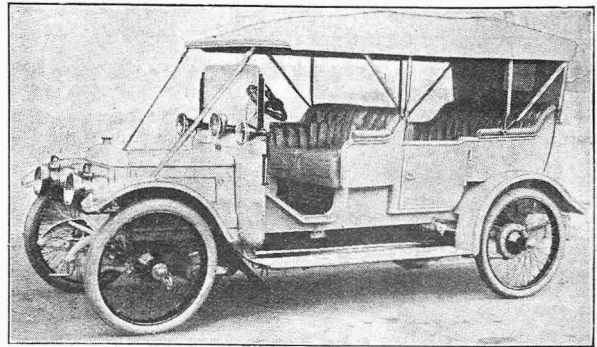


The Lancia throttle control by finger nut on arm of steering wheel and then through cable to the collar at the foot of the column.

on the sliding train fits internally cut teeth on the large wheel on the primary gearshaft, which transmits the power from the secondary. The two gearshafts are carried on ball bearings and the sliding sleeves run on a castellated shaft.

The foot-brake drum is of large dimensions, and the shoes, which are supported from a couple of studs at their lower ends, are drawn together at the upper ends by means of hardened cams, rotating on hardened rollers, supported between the lugs on the ends of the shoes, and these are separated by a stiff spiral spring.

The back axle and its suspension is similar to that of the older models, but is particularly noteworthy. The torque plate held between the two halves of the back axle casting

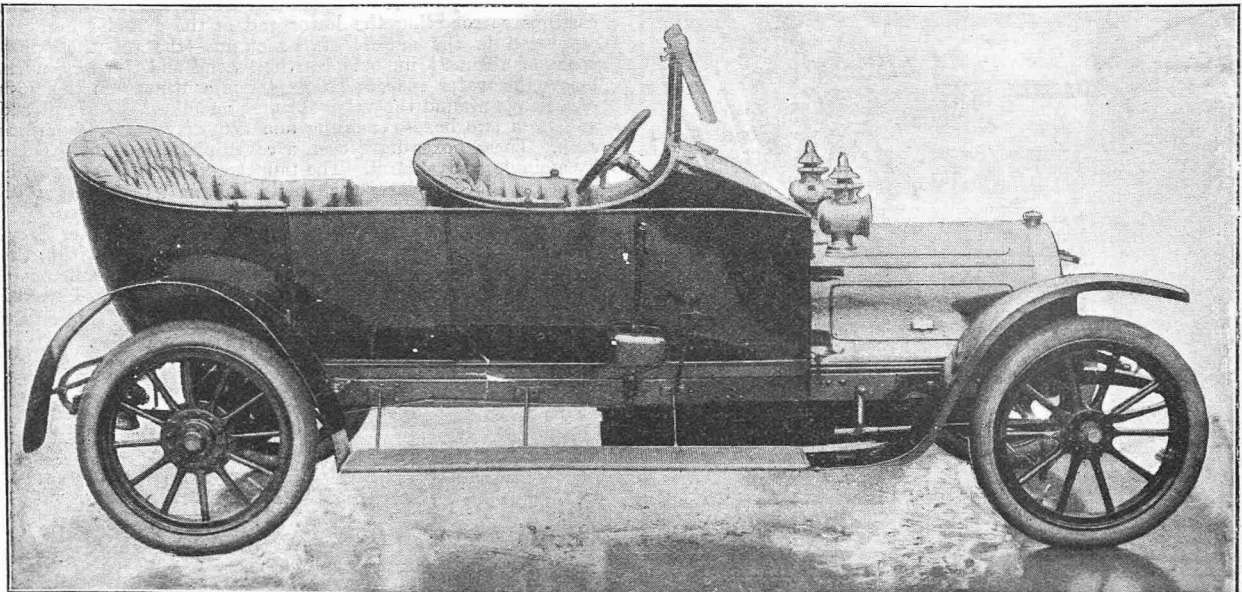


Daimler Co.'s 15 h.p. phaeton. Six seats.

is a very neat arrangement. The rear brake drums, too, are of extra large diameter; in fact, the car is well provided for as regards braking.

Gregoire Cars.

Osborn and Co., of 6, Great Marlborough Street, W., are exhibiting three complete Gregoire motels, and one stripped show chassis, the 14-16 h.p. model. One of the cars is fitted with torpedo touring body; another as a two-seater run-about; a third is fitted with a coupe body. With the exception of the gate-change gearbox, employed in place of the original sliding gears, there is practically no alteration from last year's model. There are four cylinders cast in pairs, 80 mm. bore, 110 stroke, having the valves all upon the one side. The carburetter is fitted upon the opposite side of the chassis and connected by an induction pipe which branches at the top and couples up independently to both sets of cylinders. The water circulation is the ordinary thermo-siphon system; and the lubrication is the forced drip-feed type. The standard ignition is by a Bosch high-tension magneto. The plugs of this engine are fitted on the tops of the water jackets, not, as usually, in the valve caps. The drive is taken through a cone leather-faced clutch having springs between the body of the male member and the leather facing. The transmission is through a universal joint to a three-speed gear having a gate gear change with a direct drive on top. There is a rather peculiar feature about this drive, inasmuch as it is placed on the front of the gearbox instead of at the back, as is customary. They claim through this to reduce the running speed of the secondary shaft when it is in the top gear. The drive is taken by a cardan shaft coupled at the forward end to a universal joint upon the back of the brake drum, which is fitted immediately behind the gearbox. The cardan shaft driving the ordinary bevel gear differential is enclosed in a steel tube having a raised bracketed flange on the rear end,



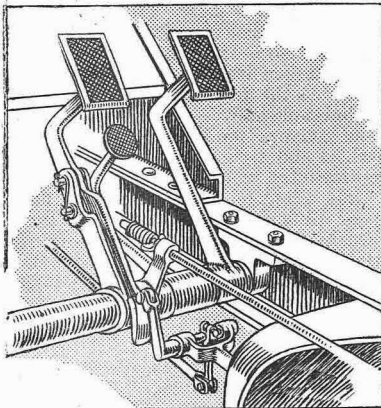
14-16 h.p. Gregoire with special torpedo body.

OLYMPIA SHOW.—Contd.

which is bolted to the axle casing. The forward end of the torque tube is carried by a V-shaped bracket suspended from the transverse member carrying the gearbox sub-frames, and is swivel-jointed horizontally. The brakes on driving wheels on the cardan shaft are amply proportioned and very powerful in action.

Lorraine Dietrich Cars.

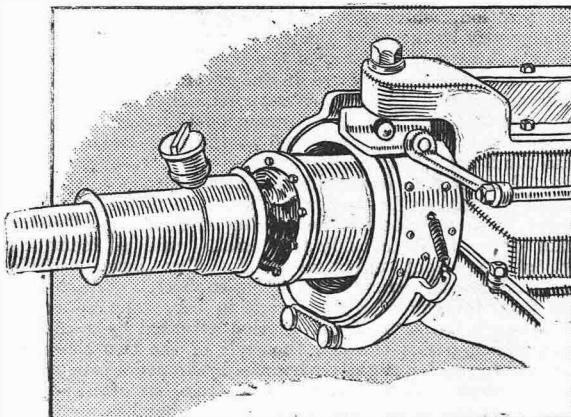
The beautifully-made English model of the de Dietrich 20-30 h.p. chassis is shown on Stand No. 68, together with two three-quarter landaulets. One of the bodies is by Thorn, and the other by Salmons. There has been practically no alteration in the design of this model since it was shown last year, but it contains so many interesting features that it will well repay a visit to the stand. Some of its features are of a very practical nature, but we have some doubt as to the utility, or real necessity, for some of the beautifully-



Pedal operating clutch on 20-30 h.p. Dietrich closes throttle at same time.

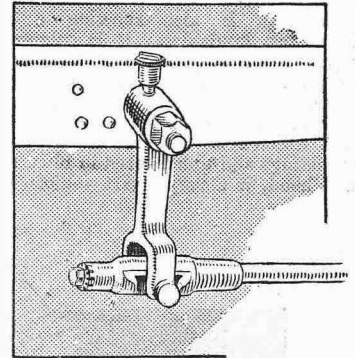
made, but intricate little fittings that are to be found on the chassis. Take, for instance, the inter-connecting gear between the clutch pedal and the throttle valve. The proportions, and workmanship, of the leading axle and steering gear are excellent, and we strongly commend the form of ball joint adopted on the after-end of the fore and aft steering rod. It is a pity, however, that the forward-end of the same rod is not provided with a similar joint. A low-tension magneto, with hand control, is fitted to the engine, and the transmission is through a multiple-disc clutch and a four-speed-and-reverse-direct-drive gearbox, to a bevel-driven live back axle. The outer casing of the axle is designed to take all bending strains, and the rear spring beds, with their caps, embrace spherical enlargements in the axle casing. The petrol tank, which is hung at the rear end of the chassis, is shaped to clear the axle casing, and it is interesting to note that this tank is double lagged, in order to protect it from impact with stones or other hard substances thrown up from the road. The outer lagging is of plain polished copper, and is removable, and between this and the metal of the petrol tank itself there is an intermediate layer of corrugated sheet metal.

On Stand 71 nothing but French models are shown, and these include a 30 h.p. show chassis, a 30 h.p. Thrupp and Maherley landaulet, a two-cylinder 10 h.p. Salmons phaeton, a 12 h.p. four-cylinder runabout, and a 12 h.p. four-cylinder Salmons landaulet. The 10 h.p. and 12 h.p. chassis are quite new models, and differ only so far as the engine is concerned. The 10 h.p. engine has two cylinders, each



The 20-30 h.p. English de Dietrich foot brake.

80 mm. bore by 120 mm. stroke, whereas the 12 h.p. has four cylinders cast in one piece, and these are 75 mm. in diameter and 120 mm. stroke. Both are cooled on the thermosiphon principle, and high-tension Bosch magnetos are fitted. All the valves are on one side of the engine, and the petrol is fed by gravity to the float chamber, which component, by the way, is fitted well below the level of the frame, whereas the mixing chamber and throttle valve are placed high up on the engine. A belt-driven Lefebvre lubricator is fitted, and an inverted cone clutch transmits the power to a very compact little three-speed-and-reverse gearbox, and from thence the power is transmitted through a cardan shaft to the bevel-driven live axle. The torque is taken through a triangular girder. The front halves of the rear bearing springs, which, by the way, are of the three-quarter elliptic type, act as the radius rods for the axle. The whole design of this chassis is very simple and clean, and is most suitable for bodies of the landaulet type.

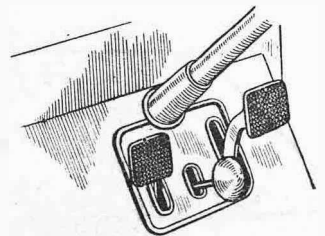


20-30 h.p. Dietrich. The steering lever and its ball joint connection to the rod.

F.I.A.T. Cars.

On the F.I.A.T. stand there is a polished chassis of 15-20 h.p., which shows the general features of this firm's design. The four cylinders are cast in pairs with the valves on opposite sides, the half-time gear being separately encased in front. The water pump is on the exhaust side, and there also is an oil pump driven off the back end of the camshaft. It draws from a sump in the engine base, and feeds to the main bearings, the oil flowing from which serves to lubricate the moving parts by splash. On the lower half of the crankcase there is an oil-filler, by means of which the correct level of oil in the base chamber is determined—the oil being filled to within a quarter of an inch of the top. The magneto is on the inlet side, and, in this year's models, instead of being provided with automatic advance, as has for some years been the practice of this firm, it is now controlled by a hand lever on the steering wheel. Hot air for the carburetter is drawn in through a sleeve over the exhaust pipe, and led through to the carburetter on the other side between two pairs of cylinders. A very neat dashboard is provided, the oil and tank pressure gauges being sunk flush, and, in addition, there are only the short-circuiting switch and the hand-pump. Where the pedals project through the footboard there is a neat square plate in which slots are formed, and on which is fixed a supporting collar for the steering column. The drive is taken through a plate clutch, the operating fork acting on a ball-bearing collar. No fan being provided behind the radiator, the flywheel is vanned.

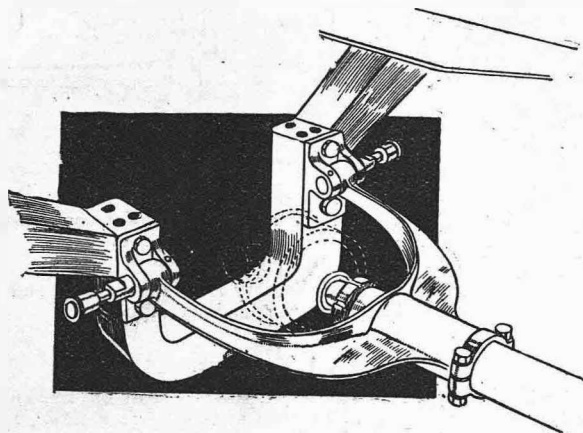
Three-point suspension is adopted for the four-speed gearbox; there are two bearer arms in front and a standard at the back, fixed on the bottom of a dropped cross member. The shaft brake is of the contracting pattern operated by double cams, each acting against rollers and giving thus a very smooth and easy action. The rear axle casing is built up of two vertical sections, to which is bolted a torque tube, which is carried in front by a swivelled fork, the ends of which are mounted on pins fixed to the dropped cross member, where their point of attachment is centred with the front universal joint of the tail shaft. Round this universal joint there is a leather cover held neatly in metal rings instead of being laced up. The rear brakes are operated by cables and are very neatly compensated. The operating shaft is split, and two bell cranks are fixed on either side of this severance. These two bell cranks are joined by a wire cable passing round a jockey wheel about 18 in. in front. It is



The pedal plate on F.I.A.T. cars.

OLYMPIA SHOW.—Contd.

thus through the intervention of the wire round the jockey pulley the pressure of the two brakes is equalized. The F.I.A.T. frame is one of the most elaborate stampings to be found. It is swept in at the front and dropped behind the gearbox to rise again over the axle. In the webs at about its middle length there is an increase in width to about 5 in. This firm is also showing a 12-14 h.p. chassis with Maythorn landaulet. It is coloured dark green with black mouldings and picked out with fine white lines. Over the driver there is an extension canopy. A smaller chassis with three-seated touring body by the same coachmaker is also shown. In this the front seat is divided, and there is a hind seat which folds into the back. It is painted grey with blue mouldings and upholstered in blue, and, fitted with windscreen and hood, is a very smart vehicle, the steering column being

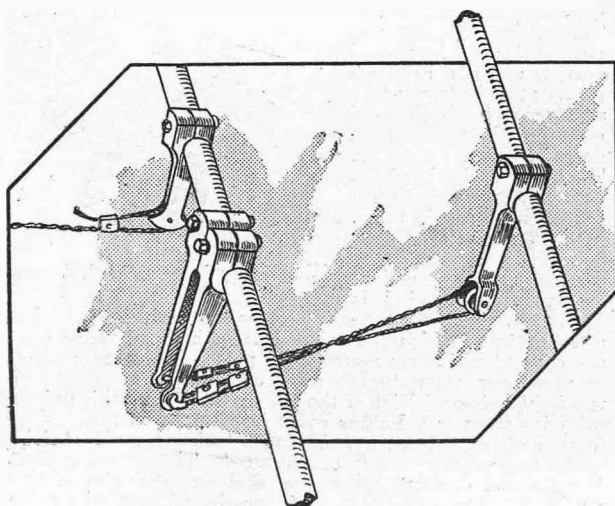


The forward mounting of the torque tube in F.I.A.T. cars.

slightly more raked than in the landaulet of the same power. A 15-20 h.p. three-quarter landaulet, a 28-35 h.p. limousine-landaulet and a 28-35 h.p. three-quarter landaulet complete the exhibit on this stand. The limousine-landaulet has a round back and front windows beside the driver's seat, and is coloured dark blue with dark wings and mouldings picked out with fine white lines. The interior is fitted with grey-corded cloth and is elaborately fitted.

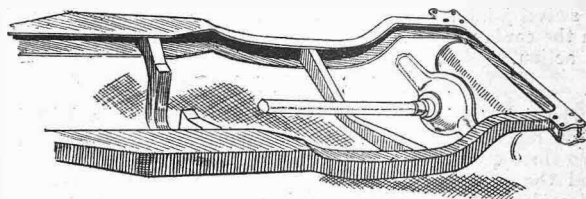
Clement Cars.

The chassis of the 18-28 h.p. four-cylinder Clement is shown by the Clement Motor Co., Ltd., 3, Leicester Street, W., on Stand No. 39, fitted with two types of body, the long chassis with a double landaulet and the shorter model with a side-entrance touring body. The chassis is fitted with an engine having cylinders cast in pairs, the diameter being 102 mm. and stroke 111 mm. The valves are all on the off-side of the engine. The cylinders are set about $\frac{1}{2}$ in. desaxé in the smaller model, which is rather more than is usual. It is found, however, that the rate of revolutions can be increased



F.I.A.T. brake compensating attachments.

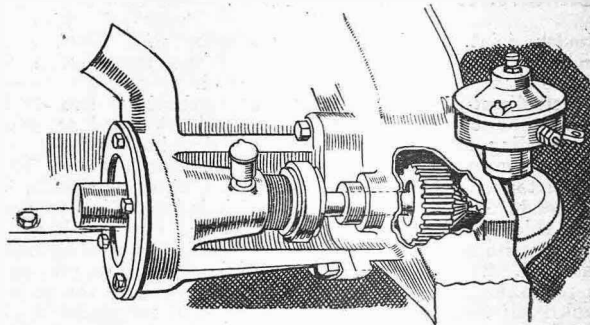
up to 2,500 in this smaller model with the cylinders set in this manner. In the 18 h.p., however, the cylinders are on the centre line and bolted to the upper part of a somewhat narrow base chamber, the lower half of this chamber forming



The F.I.A.T. frame.

a deep oil sump, which is replenished from filling cups cast in the supporting arms of the base chamber. The oil pump is driven by a vertical shaft and skew gear, and delivers oil through a pipe outside the engine which sweeps round on to the off-side of the engine and is carried outside the crank chamber. From this pipe branches are taken leading to the main bearings of the engine, and also at the front end to the chain of wheels operating the single crankshaft.

An interesting feature of construction is that a cap containing an extra bevel gearwheel and a commutator can be fitted to the casing which contains the wheel driving the water-circulating pump, and thus a second ignition can be fitted without any alteration or difficulty. Ordinarily, a Bosch magneto is fixed to a bracket on the crank chamber on the off-side of the engine, the armature driven by a continuation of the pump shaft through a coupling. Each of the tappet rods is fitted at its lower end with a large ball which runs on the profile of the cam. The top or lifting end of the tappet has a small red fibre insertion so that no noise is created by its contact with the end of the valve stem. The cottar plate is also a noticeable feature; instead of the valve stem being slotted, two flats are formed upon it, and a sliding finger-plate is slipped over these flats to retain the spring in



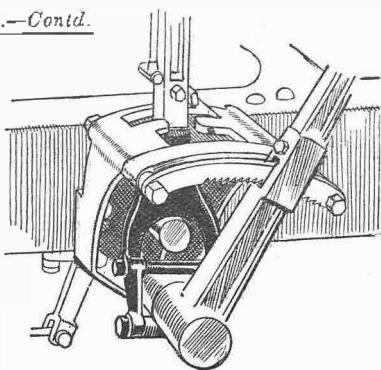
The pump drive on Clement cars. The contact maker is mounted on the vertical spindle when a second ignition is used.

position. The gearbox is provided with four speeds forward and reverse, actuated by two selector rods. This is made possible by allowing the rod which operates the first and second speeds to also actuate the reverse, by putting the lever into a fore-most position, which it is prevented from entering in the ordinary way by means of a pawl and projection. The depression of a button on the top of the lever raises this pawl and allows the lever to be placed in the reverse position.

The engine and gearbox are supported on an inner channel frame fixed at one end of a transverse U member, which is dropped under the radiator, and at the rear end to a large cross tubular stay, to which brackets are fixed for this purpose. A sheet-steel under-shield is attached also to the lower web of the main side members and to the inside frame, and sweeps down well below the moving mechanism. The foot-brake drum is of considerable width, and it forms also part of the front universal joint. Two large cast-steel shoes embrace the drum, these being supported at their lower ends from the end of a short rocking bar. The upper ends are drawn together by a cam motion actuated by means of a shaft, which passes through the ends of the two shoes, and is caused to revolve slightly when the brake pedal is depressed. The side brake rod is connected to a cross bar fitted adjacent to the front end of the rear springs. This bar has short arms, carrying small grooved pulleys, and actuating the rear brakes through a steel cable threaded through these pulleys. The

OLYMPIA SHOW.—Contd.

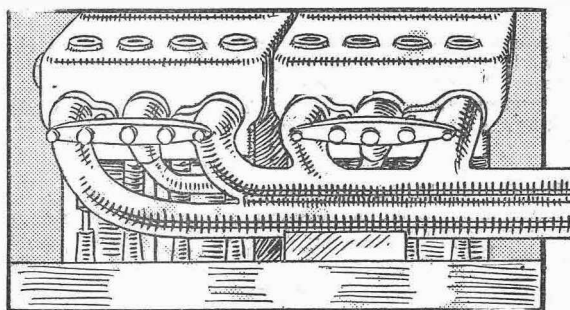
rear brakes are of the internal-expanding type, and are left open at the insides. They are operated by the steel cables, actuating through short shafts held in brackets attached to the rear of the back axle casing. The suspension of the rear end of the chassis is by three-quarter elliptical springs, and the side members of the chassis are up-swept at the rear, to give increased clearance above the back axle.



The pivoted gear lever and brake lever on the 18 h.p. Clement.

Briton Cars.

Two popular types of car, a four-cylinder and a two-cylinder, priced at the moderate figures of £250 and £215 complete, are staged by the Briton Motor Co., Stewarts Street, Wolverhampton. The four-cylinder is rated at 14 h.p. with a fairly long stroke, the cylinders being $3\frac{1}{2}$ in. bore, 5 in. stroke, cast in pairs, valves on one side. The frame is a substantial one of pressed steel hung on ample springs. The clutch is a leather cone of large diameter, thence the transmission is through a gearbox having three speeds to a cardan shaft and live axle. All shafts, including the gearbox, run on ball bearings. The countershaft brake is of the calliper contracting type, easy of

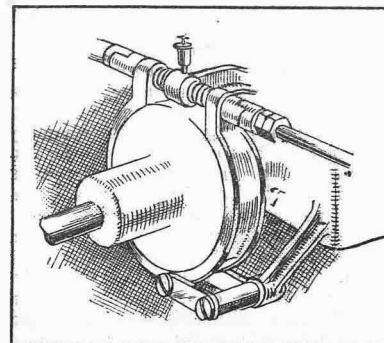


The 14 h.p. Briton, showing mode of clamping pipes to valve ports.

adjustment. Accessibility has been well considered. The ignition is by magneto high tension, the timing being fixed. The carburetter is a White and Poppe automatic, and the circulation is by centrifugal pump and fan-assisted radiator. The lubrication is effected mechanically from a tank on the dash. The splash-guards are of the new type of full curve, with inside extensions. A special racing body "Brooklands" pattern, is fitted. Two models of this car are shown, and have a speedy appearance, with well-raked steering column and long bonnet. The finish is tastefully carried out in two colours—a chocolate and light grey.

The two-cylinder is rated at 10 h.p., cylinders 4 in. bore, 5 in. stroke. Most of the features of the four-cylinder chassis are found on this, pressed steel frame, cardan shaft drive, magneto high-tension ignition, and artillery wheels.

These cars are sure to receive a good deal of attention from those looking out for a well-made car of British construction at a low figure.

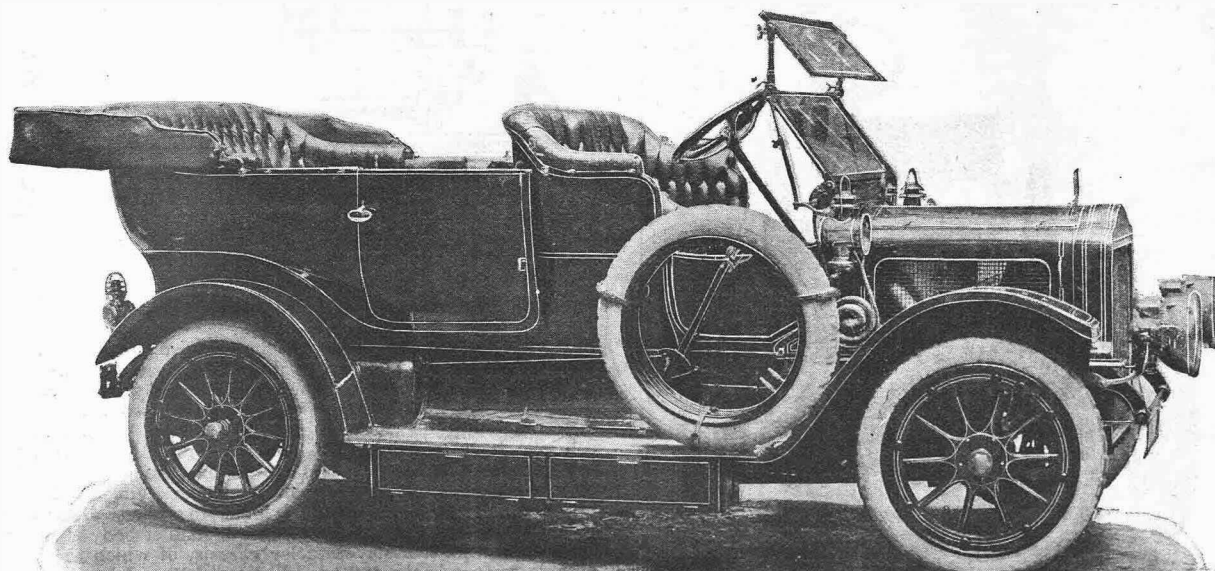


The linked carrier of the Briton foot brake.

Orleans Cars.

The Orleans cars are shown by the Orleans Motor Co., of 11, Regent Street. The exhibits are one 30-40 h.p. four-cylinder car fitted with a limousine body with detachable top; one 30-40 h.p. car with open touring body; and one 35-45 h.p. six-cylinder landaulet. This latter type has its cylinders cast separately, the dimensions being 110 mm bore by 120 mm. stroke. The valves are on opposite sides and are in pockets suitably cast, the exhaust being on the near side and the inlet on the off-side of the engine. The inlet pipe is made in three branches, and each branch is attached to a breeches piece which supplies two cylinders. On the top of each water-space a brass cap is fitted with a union to which is attached the outlet water pipe, the circulation being by a pump on the near side of the engine. A high-tension magneto is fitted on the front of the off-side of the engine driven by fibre gears partially enclosed in an aluminium casing.

The models shown this year are practically identical with those exhibited last year, as it has not been found necessary to make any alterations to the details.



Special touring body fitted on 40 h.p. White steam chassis. (This body is not being exhibited.)

OLYMPIA SHOW.—Contd.

Austrian Daimler Car.

The 20.30 h.p. Austrian Daimler remains much the same as heretofore, but the 15 h.p. model is new, and has some interesting features. The engine is of the monobloc type now so popular for moderate powers, with valves enclosed by a plate easily detachable by a single screw. The bore and stroke of the engine are 76 mm. by 110 mm., and the complete weight of the chassis is but 13 cwt. The magneto is in the now approved position set crosswise in front of the crankcase, and worm driven from the crankshaft.

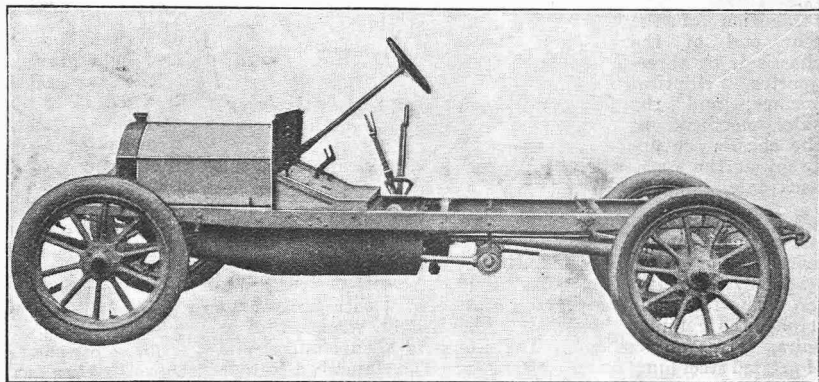
The carburetter is automatic, a revolving sleeve controlling the proportions of the mixture as well as the quantity. Water circulation is by pump in conjunction with a honeycomb radiator and vaned flywheel. The gearbox gives three speeds, and the final drive is by a propeller shaft enclosed in a tapered casing forked at its forward end.

The 20.30 h.p. model has an engine with valves on either side and unclosed. Lubrication is on the Friedmann system, a series of piston pumps being employed to force oil to every bearing. The gearbox and transmission are the same as in the case of the 15 h.p., except that four speeds are fitted and the tail end of the main gearshaft carries a wide drum, on which two external brakes of the contracting type with deep ribs act. There are thus three brake systems, two operated by pedal and one by the usual side lever. Design and construction throughout, these Austrian Daimler chassis are what one would expect from any firm bearing the renowned name of Daimler.

Clyde Cars.

Messrs. G. H. Wait and Co., of Leicester, the makers of Clyde cars, are exhibiting three examples of their manufacture. The smallest of these is a two-seated car, with a two-cylinder White and Poppe engine of 8-10 h.p., and the other two exhibits are four-seated cars, one with a three-cylinder 12-14 h.p. engine, and the other with a four-cylinder 16-20 h.p., both of the White and Poppe make. These engines are arranged transversely in the frame under a bonnet, and the transmission from the clutch shaft is through a long Renold silent chain to a three-speed gearbox, which is com-

bined with the live back axle. The whole chassis is extremely simple, and the design of the back axle and gearbox is as light as is consistent with the load it has to carry, and the power to be transmitted in the case of each of the chassis. These makers remain faithful to tubular construction for the frame. It is claimed by Messrs. Wait and Co. that, through the equal distribution of the weight which is secured by placing the engine at one end of the chassis, and the gearbox and back axle combined at the other end, all tendency for side-slip is eliminated, and, certainly, the expressed opinions of some of the users of this car would indicate that this end is secured in no small degree. It must be remembered that

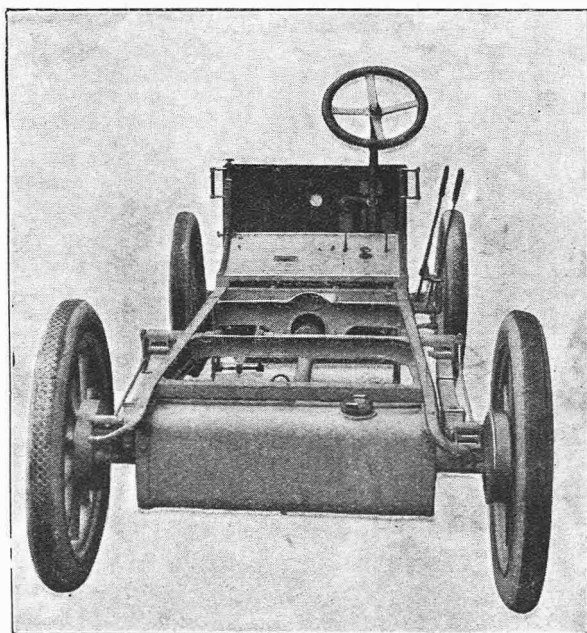


15 h.p. Austrian Daimler chassis. (We regret that the above was wrongly described in Tuesday's issue as an "Austin.")

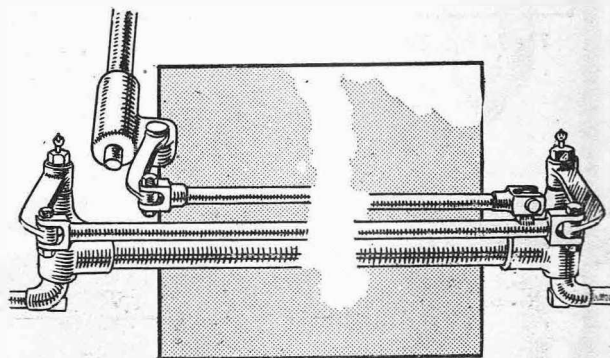
Clyde cars have been designed with the object of standing up to work over rough roads in the Colonies and other places abroad. They are none the less suitable for ordinary work in any part of this country. Strength has been secured without making the chassis unduly heavy.

Connaught Co.

The Connaught Co., of Long Acre, have obtained a well-deserved distinction for good coachwork, and the examples shown are quite worthy of their reputation. As a touring car the 16-20 h.p. Wolseley-Siddeley, with victoria pha-



Rear view of 15 h.p. Austrian Daimler chassis. (We regret that the above was wrongly described in Tuesday's issue as an "Austin.")

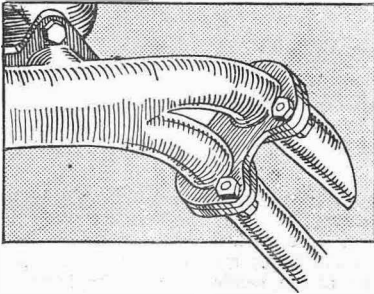


The Clyde steering gear and front axle.

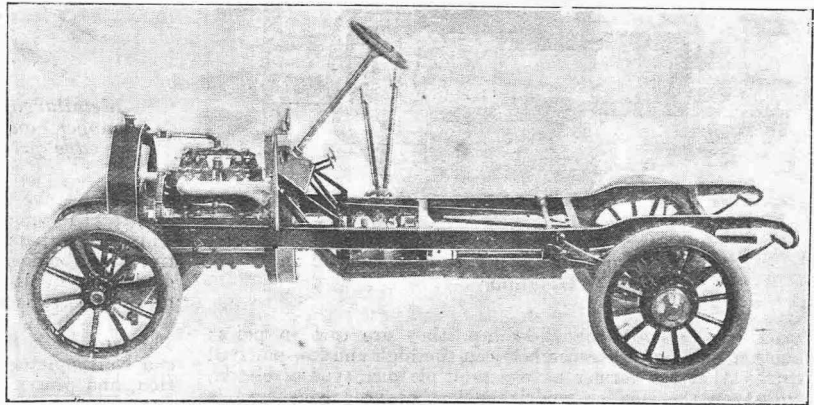
ton body would be hard to improve upon. The hood fitted is of leather, and can, if desired, be used for the protection of the occupants of the rear seats only. The colour scheme is excellent, being two shades of deep green with deep moulding and white lines. A 14-20 h.p. Renault has a cabriolet body which forms an ideal combination of touring car and town carriage. The curves are graceful, and the colours unusual, but in excellent taste, dark violet and lilac upper panels giving an original finish to a very distinctive "tout ensemble." A very handsome landaulet body is shown on a 20-28 h.p. Wolseley-Siddeley chassis, of which the most notable feature is the "fishtail" curve followed by the back panel. On the Renault the Nesta system of seat springing is employed, giving extremely comfortable riding. This system consists of interlaced spiral springs, practically no horse-hair being used. A 15 h.p. Talbot, with a landaulet body similar to that on the Wolseley chassis, is also shown.

OLYMPIA SHOW.—Contd.**Peugeot.**

The Peugeot appears in new form. Its radiator has been entirely changed, and the old square type of bonnet and radiator has disappeared, giving place to the arched type. The exhibits include a new 12-15 h.p. show chassis, and 12-15 h.p. car, with open touring body, a 16-20 h.p., with a double landaulet body, and a 22-30 h.p., with a cabriolet body. A new six-cylinder 18-24 h.p. model is made, but not



The separated exhaust pipes on Peugeot cars. The chassis view at the side is that of the 12-15 h.p. Peugeot.



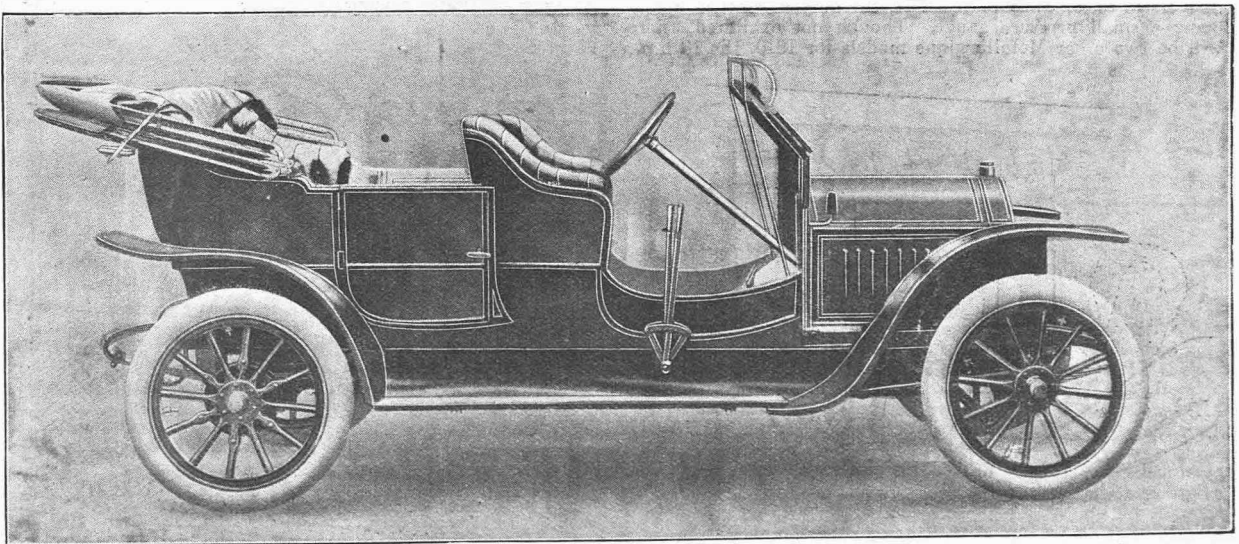
exhibited. The 12-25 h.p. model is four-cylindere, with its cylinders cast in pairs, 80 mm. bore by 110 mm. stroke, with valves on opposite sides. At the off-side of the engine are fitted a Bosch magneto and a Claudel-Hobson carburetter. The induction pipe branches in the form of a "Y" piece, one arm going to each pair of cylinders. The exhaust pipe is of very large dimensions, and is of the twin type, i.e., No. 1 cylinder exhausts into the upper half, No. 2 into the lower half, No. 3 again into the lower half, and No. 4 into the upper half. It will thus be seen that in the ordinary firing sequence the cylinders exhaust into the pipes alternately. This twin exhaust branch separates immediately in front of the dash into two distinct exhaust pipes. It will be noticed that the fly-wheel rim is carefully marked out for every setting of valve opening and closure, and that a pointer is provided. Another notable feature is that the foot-brake pedal operates through a compensating gear into the two expanding brakes on the rear wheels. The hand brake operates a pair of large shoes, which grip the drum at the rear of the gearbox, these shoes being supported at the left-hand side, whilst the adjustable actuating-lever mechanism is fitted at the right-hand side, operated directly from a long bell-crank lever, with its fulcrum in a line with the hand lever. The back axle is of particular interest, owing

to its substantial method of support. At the rear end of the torque tube a large ring of solid steel, having two diagonal arms, which form part of the main-axle tubes, is fitted over the enlarged end of this torque tube. The axle sleeves are of very substantial construction, and fixed between them is the case carrying the differential and bevel gear. This is diagonally divided so that the rear and upper portion is removable for examination of the gear. Truffault shock absorbers are fitted to all four wheels. At the rear, the arms are fixed to small brackets bolted inside the side members of the frame.

Gladiator Cars.

The most attractive model on the stand of the Gladiator Co., of Long Acre, W.C., is the four-cylinder 12-14 h.p. chassis. The cylinders are 80 mm. in diameter by 110 mm. stroke, and are cast in pairs, with the valves all on one side. The leather-faced cone clutch is provided with a neat and effective form of clutch stop. This consists of a small pad of red fibre that is riveted to an arm of spring steel, which, in turn, is carried by a lever on the clutch-pedal shaft. The form of universal joint between the clutch and gearbox is a very practical one, and permits of either clutch or gearbox being easily dismantled without the necessity for disturbing a lot of other parts. The three-speed-and-reverse gearbox is now practically cubical in form, with a very large inspection cover at the top and two end plates, which carry the bearings. As is usual on all high-class chassis at the present time, the propeller-shaft universal joints are enclosed in oil-retaining cases, and the after-part of the chassis is suspended on three-quarter elliptical springs, of unusual length for a chassis of this power.

There are on the stand two other examples of 12-14 h.p. Gladiator chassis; one of these has a four-seated phaeton body; on the other is mounted a very smart single landaulet.

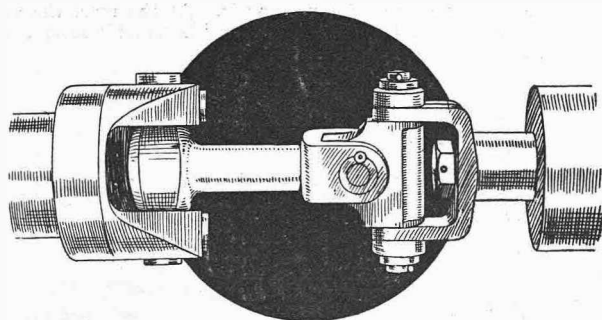


New 14-16 h.p. Darracq described in Tuesday's issue.

OLYMPIA SHOW.—Contd.

The other two Gladiator exhibits are chain driven, and one of these has a 25-30 h.p. four-cylinder engine, and a three-quarter landaulet body, whilst the other—a four-cylinder 40-50 h.p.—has a roomy body of the phaeton type.

The two higher-powered cars have the cylinders cast sepa-

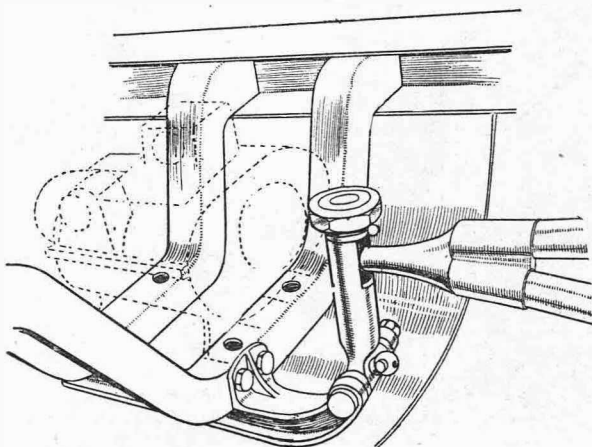


The coupling between clutch and gearbox on Gladiator car.

ately, whereas in the 12-14 h.p. they are cast in pairs; another point of difference between the high and low-powered cars is that the former have a multiple disc type of clutch, whilst on the smaller model the leather-faced cone type is fitted.

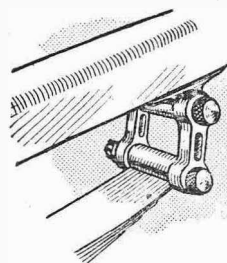
Warwick Wright, Ltd.

Mechanical features of the Metallurgique cars remain very much the same as in previous years, the chief points to be noted being the expanding-ring clutch, spring drive, and inclined steering heads, all of which make for very great economy in tyres. In each model weights are notably low, and the engines, by reason of large valves, long stroke, and extremely tight reciprocating parts, are all capable of very greatly exceeding their rated powers. Five cars are exhibited, four being of 26 h.p., fitted with as many different examples of really splendid body-work by the famous Belgian firm of Van den Plas, while the other is a 12-14 h.p. chassis. There are, perhaps, more changes in the latter than in any of the other models; the 18 h.p. and the 40 h.p. are the two types not exhibited. The new 12-14 h.p. engine, 75 mm. bore by 110 mm. stroke, has by far the largest valves we have seen on an engine of this size, and it further differs from last year's pattern in having a very long centre bearing. Worthy of note are the extremely flat springs, a great help to steering on rough roads. Lastly, the foot and side brakes are interchangeable, and adjustable by means of thumb-screws. The 26 h.p. car for 1910 differs from its predecessor, in that a four-speed gearbox is now fitted, and, in common with all other models, forced lubrication is now employed. There is the usual sump under the crankcase, and a gearwheel pump delivers to all crankshaft bearings, the only dashboard fitting being a small pressure gauge. Though not exhibited, there will be two other Metallurgique models for 1910, the 18 h.p.,

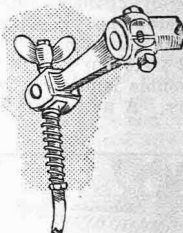


The cross members of the Metallurgique frame dropped to form the gearbox bed and to carry forward end of torque rod.

a light and very fast car, and the 40 h.p. The last-named remains the same as for last year, with its distinctive overhead exhaust valves operated by rockers. The Van den Plas bodies of the four 26 h.p. exhibits are as fine examples of



Metallurgique spring hanger and milled-edge grease-cup.

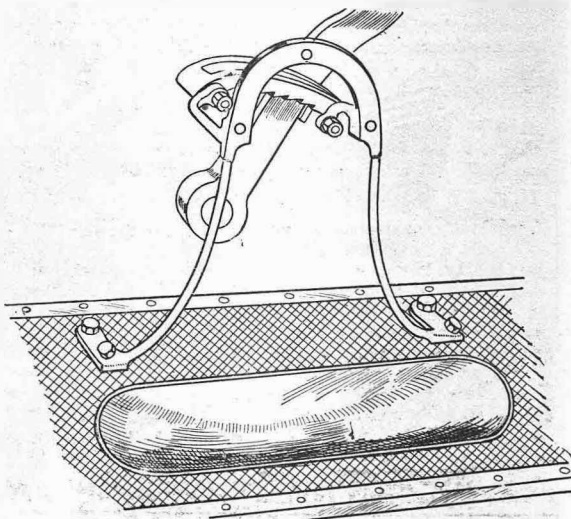


Brake-rod adjustment on Metallurgique cars.

their respective types as have ever been seen. There is a red, torped-shaped tonneau, that has speed in its every line, and, once seated in it, we were loath to get up again, so seductive were the deep seats and amply-sloping back. A landaulet de luxe, notable for its ample headroom and the large size of the doors, is another really fine piece of work, though, in our opinion, eclipsed by an excellent touring limousine. The woodwork throughout is of mahogany, the driver's seat can be completely separated from the rest of the accommodation, and practically every fitting that luxury can suggest is provided. A contrast to this car, which is painted a pleasing shade of yellow, is the "sporting limousine." It is an extremely light body, painted a distinctive French grey, and much enhanced by Rudge-Whitworth wire wheels.

The Cadillac Cars.

The centre of attraction on the stand of the Anglo-American Motor Car Co. is the stripped Cadillac 20-30 h.p. chassis, so constructed that when driven by an electric motor, and having the crank and gearcase internally lighted, the major portion of the moving internal mechanism can be seen through numerous windows let into the engine and gearcase. The front cylinder has had a portion of the copper water jacket and cylinder wall removed, which allows the piston to be seen while working. The cylinders are separate units, machined on the outside, and fitted with copper water jackets. The induction and exhaust valves are arranged on one side. The lubrication is by means of a pump delivering the oil from a reservoir to the crank chamber through a novel single sight feed on the dash. There are two separate ignitions fitted—a Splitdorf low-tension magneto, which is connected to a special coil through a switch on the dash, and also an accumulator and non-trembler four-unit coil connected to this single switch, enabling either the magneto, coil or accumulator coil to be transformed into a trembler coil, and the engine started off the switch. The drive is taken to the gearbox through an external leather-faced cone clutch. The



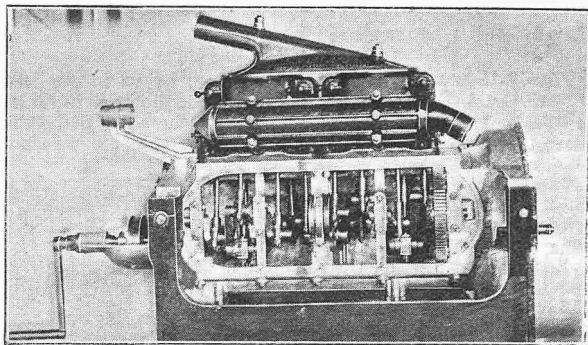
The spare-wheel carrier and pan on Metallurgique cars.

OLYMPIA SHOW.—Contd.

inner member is constructed with a stamped steel angle ring bolted on to the flywheel. This ring is slotted circumferentially, and split diametrically at eight points, thereby allowing a very gradual engagement of the clutch. The transmission is by sliding gears and gate change, giving three speeds forward, direct on top and reverse. There is a neat universal joint between clutch and gearbox and a simple gear shaft actuated by the clutch pedal. The propeller shaft is encased and fitted at rear of gearbox, with a universal joint enclosed in spherical casing. The differential case is built up of steel stampings electrically welded to axle tubes and finished in very neat style. The engine, gearbox and back axle have each a three-point suspension. The clutch and brake pedals are now designed to give a 4 in. extension or contraction. The steering sector can be adjusted by a very simple arrangement of two ratchet discs mounted eccentrically on two bushes carrying the sector shaft. By means of a hexagon on the bush outside the box they may be revolved until the sector is correctly meshed with the worm and then locked by set pins. The foot and side brakes are both connected to the drums on the driving wheels, the foot brake actuating external bands and the side lever brakes the usual type of internal expanding, both sets having ample power. The front and rear axles have semi-elliptical springs, the rear ones being connected to the transverse spring by ball and socket shackles.

Davy Car.

In our last issue we described, at some length, the new Hewitt engine, which is fitted in the cars made by the Davy Engineering Co., Ltd., of Hulme, Manchester. This engine, it will be remembered, has diagonally-disposed piston valves operated from an auxiliary crankshaft in place of the usual type of mushroom valves. In addition to an engine which is staged for demonstration purposes, a complete car is shown. The engine transmits its power to a live back axle through a leather cone clutch, and a three-speed-and-reverse gearbox with direct drive on top speed. The gearbox shafts are extremely short, and are mounted on ball bearings. So far as the general features of the chassis are concerned, it appears to conform to present-day standards for a car of its power, but the body which is fitted has many



New Hewitt piston valve engine which was described in "The Motor" of 9th November.

claims to would-be purchasers. The position of the front seat, relative to the dashboard, may be varied to suit the convenience of the driver, and the whole machine has quite a rakish and speedy appearance. It is certainly proving one of the attractions at the Show, and many visitors who desire to make an examination of the vehicle are finding no little difficulty in getting within sight of it. Apart from the body, the engine is undoubtedly a most interesting feature, and we would refer readers to the illustration and description which have already appeared in the pages of THE MOTOR.

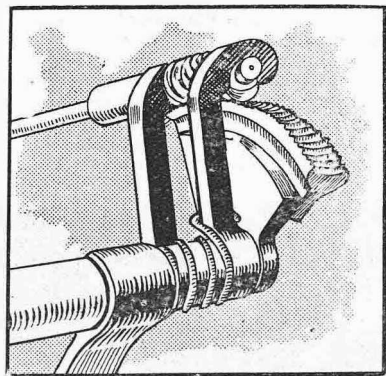
Delahaye and Hobson Cars.

H. M. Hobson, Ltd., of 29, Vauxhall Bridge Road, S.W., have one of its 14-20 h.p. Hobson cars, practically identical with the same-powered model exhibited last year. The only alteration in the design consists of a plain cover, which now completely encloses the valve stems, and the exhaust manifold is now provided with a water jacket, the idea being to secure a greater degree of silence.

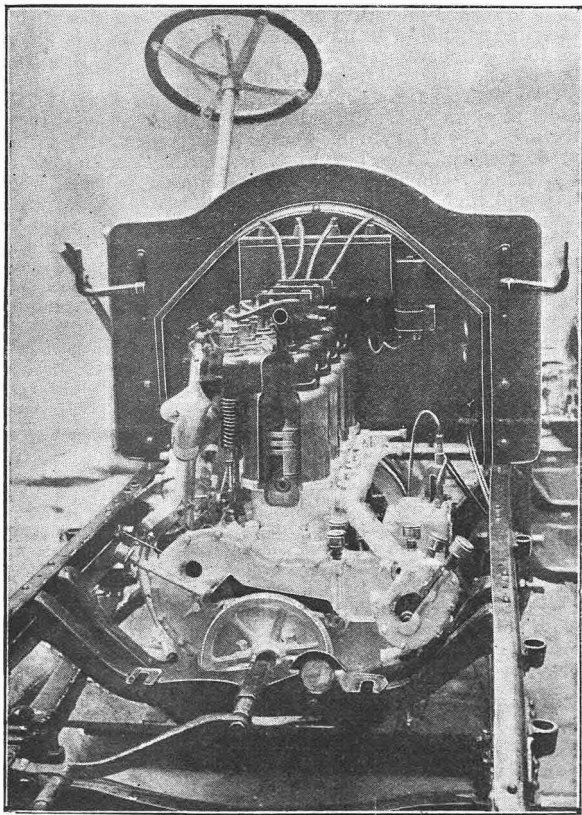
In addition to their own model, this company is exhibiting two Delahaye cars and a chassis of the same make. The smallest of these is a four-cylinder 9-11 h.p. car, which is a very smart little vehicle, and is put on the market at a low price. It has a three-speed-and-reverse gearbox, with direct drive on top speed and cardan-shaft drive to a live axle. The live axle, however, differs from that of other Delahaye models, inasmuch as it is provided with a double-reduction gear. Although involving the use of an extra transmission shaft, this form of construction permits of more silent running than can be obtained with a single-reduction gear of equal ratio. This little car has a very smart and highly-finished two-seated body.

The largest model is one of 20 to 30 h.p., and on the chassis is mounted a body of the landaulet type. In design this Delahaye vehicle does not differ from that of the same power which has previously been exhibited. Another popular Delahaye model—the 12-16 h.p. four-cylinder—is also exhibited, and this machine, like the other two of the same make, has all the four cylinders cast "en bloc." It is now fitted with a four-speed-and-reverse gearbox in place of the three speeds formerly fitted, but in other respects it does not differ from last year's model.

From personal experience of this car in hilly districts of Yorkshire, we know it to be a first-rate climber, and to give all-round satisfaction. We are of opinion that that must be the general opinion of all Delahaye users, and the fact that so little alteration from previous years' designs has been made seems to strengthen our opinion. This exhibit is one that certainly should not be missed, the manner of displaying the chassis being original.



Worm form of brake adjustment on Delahaye cars.



The sectioned chassis of the four-cylinder Cadillac car.

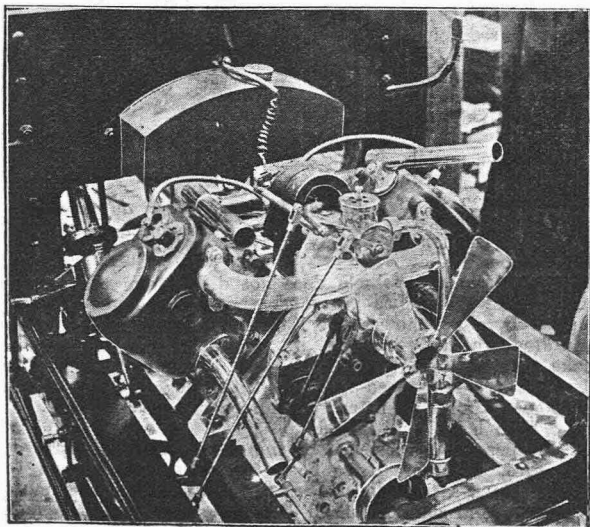
OLYMPIA SHOW.—Contd.

Sunbeam Cars.

The 12-16 h.p. Sunbeam was described by us in our issue of 26th October, and, except in sizes throughout, it is similar to the 16-20 h.p. and 25-30 h.p. cars of the same make, but these two cars may be had with live axle or chain transmission, at the purchaser's option, the 12-16 h.p. car having live-axle transmission only, whilst all three models may be had with short or long wheelbase. The engine in each model is arranged with its cylinders cast in pairs, the dimensions of the 16-20 h.p. car being 95 mm. bore by 135 mm. stroke, whilst those of the 25-30 h.p. are 105 mm. bore by 135 mm. stroke. The valves are placed on opposite sides of the engine, and are protected by aluminium covers easily detachable, these covers protecting the valves from dirt and dust, and at the same time silencing their action. The flanges on the upper half of the engine casing are continued so as to form a dust shield to the upper part, the lower part of the base chamber being thus exposed to the draught of air caused by the movement of the car.

The engine is lubricated by a gear-driven pump maintaining a constant supply of oil at a pressure of 12 lb. per square inch, the oil being filtered in the course of its circulation. The pressure of the oil can be varied to suit the requirements of the running; thus, uphill, a full pressure can be employed, whilst, in town, the pressure can be reduced to 2 lb. to the square inch, so as to ensure the absence of smoking. The Claudel-Hobson carburetter is employed, giving excellent results, whilst the Bosch dual ignition is used on both models. The power is transmitted through a leather-faced cone clutch, which, being entirely self-contained, gives no end thrust to crankshaft or gearshaft. It can be very easily adjusted and very quickly removed if necessary.

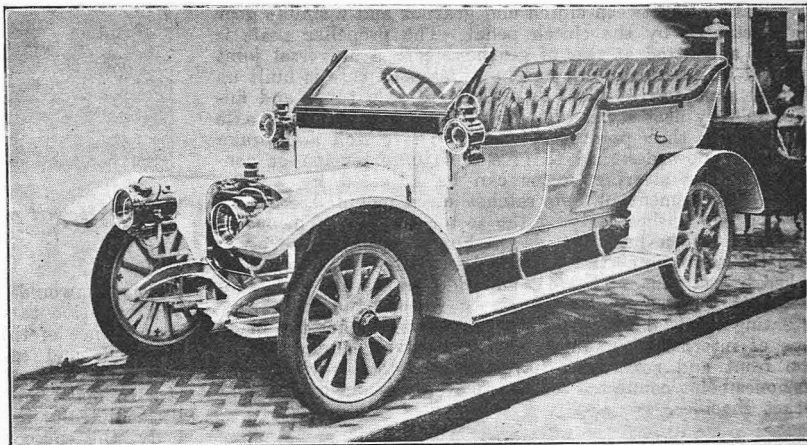
The gearbox gives in each case four forward speeds and reverse, with direct drive on the top speed. All the shafts run on ball bearings, and are short and rigid, whilst the employment of a third shaft below the lay shaft to carry the reverse gear, which latter bridges over from the third gear pinion on the lay shaft to the low speed wheel on the sliding shaft, makes for a short gearbox, and allows the reverse gear to be idle when not in use. By a very simple device, namely, that of a caliper which follows the shifting lever, two out of three shifting gears are always locked, thus preventing more than one gear from being in engagement at any one time. The concentricity of the brake shoes to the drum is assured by the very simple device of hinging the shoes to a spring-held pin. On the application of the brake the shoes pull the pin inwards towards the brake drum against the action of the spring,



Riley two-cylinder V engine.

while the latter pulls them out of engagement with the drum when the brake is released. The steering of all the Sunbeam cars is thoroughly well supported between the frame and a bracket carried on the upper half of the base chamber, and, if specified before the car is delivered, the steering pillar can be set to any required angle.

In the case of chain drive, Hans Renold silent chains transmit the power, and run in oil-bath chain cases which are



12-16 h.p. Sunbeam.

very easily detached, and which conduce to the longevity of the chains and sprockets, as well as to the silence of the drive. The dimensions of these two cars are the same, namely, 10 ft. base, 4 ft. 7 in. wheel track, and 13 ft. 9 in. overall length, the price of the chassis complete with tyres and front wings being £445 in the case of the 16-20 h.p., and £520 in the case of the 25-30 h.p. car, whilst the detachable artillery wheels, with a spare wheel, can be supplied at 5 guineas extra.

Germain.

Germain chainless cars will be found on the stand of Theo Masui, 1, Hanover Court, Hanover Street, London, W. There are three models, a 28-36 h.p. light chassis, a 20 h.p. six-cylinder, and an 18 h.p. The 28 h.p. and 18 h.p. models are four cylinders. The 18 h.p. is made in two lengths of chassis, one having a specially-dropped frame. A metal-to-metal clutch and four-speed gearbox can be fitted to this model at extra cost. Special attention has been paid to the steering. The six-cylinder chassis is provided with a four-speed gearbox. The bodywork is worth close inspection. It is a fine landaulet-limousine with interior polished woodwork and high side doors to the front seats. A feature is made of desaxe crank setting in this type, and, as in the other models, will be found such features as positive lubrication, three or four-speed gearbox (at option), with gate control, patent metal-to-metal clutch, steel cylinders with brass water jackets. The 28-36 h.p. chassis is shown equipped with a special torpedo phaeton body fully arranged for touring, an excellent example of strength and lightness combined. The framing of this body is shown, which explains how a maximum of strength for least weight is obtained. The splash-guard equipment, it will be noted, is very efficient and of such light and symmetrical lines as to harmonize perfectly with the bodywork.

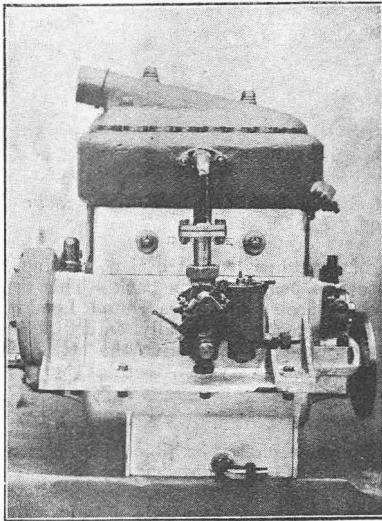
Two-stroke Engine Car.

An interesting chassis is that shown by the Two-stroke Engine Co., Shoreham. The engine is a four-cylinder and works on a special two-stroke cycle, each cylinder being charged with mixture from a separate positive pump driven from the crankshaft. There are no exhaust valves or camshafts and the whole engine is notably simple. The drive is through a metal disc clutch to a four-speed gearbox having four speeds, the direct drive being on the third speed. The final drive is by a bevel-gear live axle. Special torque stays of the lattice type are used. These allow slight lateral flexibility. The axle is made so that the differential and the driving shafts can be taken out without disturbing the outer casing. Two ignitions, coil and magneto, are provided. All braking is done on the rear wheels, no countershaft brake being used. A feature is made of adjustable steering for setting at any desired angle.

OLYMPIA SHOW.—Contd.

Delage Cars.

This year's Delage models, which are rated respectively as 10 h.p., 12 h.p., and 14 h.p., are of exactly similar design, and differ only in the cylinder dimensions. The new Delage engines are all four-cylindered, cast in one block with the valve pockets all on one side. The valve gear is completely

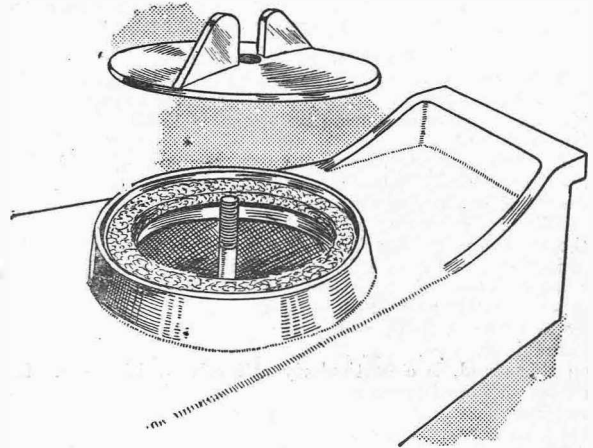


10 h.p. Delage engine, with all enclosed valves.

boxed in, but has a detachable panel to afford easy inspection. Thermosiphon cooling is employed with pipes of large diameter, and the water supply is increased by a tank at the top of the radiator. A small pump drains the oil from a sump at the bottom of the base chamber and returns it to the oil tank in front of the dashboard. The oil passes to the main bearings and through hollow crankshafts to the big ends, and thence up the hollow connecting rods to the gudgeon pins. The high-tension magneto is on the off-side of the engine, driven through a half-time gear, enclosed in a separate case in front of the engine. The transmission to the three-speed gearbox is through a leather cone clutch, the operating fork of which engages with the clutch collar through small ball races. The change-speed gear is of the straight-through pattern, the lever being held at its right position in the quadrant by a ball which engages in small cups cut in the quadrant, a spring plunger holding the ball up to its work. The operating rods are ball jointed, as are also the rods which actuate the internal-expanding hand brake behind the gearbox. The rear-wheel brakes in all Delage models are controlled by the pedal. There is one universal joint at the front end of the cardan shaft, but no alteration occurs in the length of the tail shaft, owing to the fact that two torque rods are taken from the rear-axle casing to the centre line of the universal joint. These brake rods act at the same time as radius rods, and the rear side springs can therefore be shackled at both ends. A transverse spring is fitted. Three cars are shown on the stand, besides a polished chassis. Two only are two-seaters, and one, a 12 h.p., is fitted with a four-seated, open, side-entrance body.

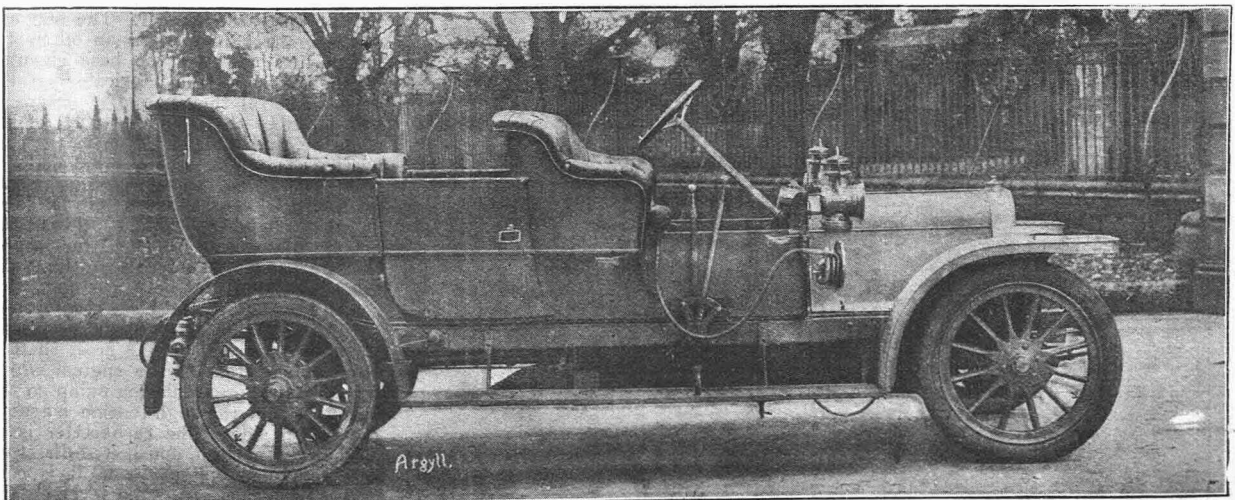
Thornycroft Cars.

These are shown by Messrs. J. I. Thornycroft and Co., Ltd., 2, Albemarle Street, Piccadilly, W. The 18 h.p. is staged both as a show chassis, and also fitted with a very attractive victoria phaeton body. This body is in pale green with dark stripes, and has a particularly handy double extension hood, which can be manipulated easily by one man. This hood is really supported from the back when the two front arms are raised, and it collapses into quite a small space, two handles being provided in the roof for manipulating. The body has side doors to both front and rear seats, and the change-speed lever is inside. The show chassis is fitted with detachable type wire wheels, but in other respects it is similar to the chassis employed on the phaeton model. The engine has four cylinders cast in one block, 95 mm. diameter by 114 mm. stroke. The valves are all on the near side of the engine, operated from a single camshaft. The crank chamber on the inner side is fitted with two large covers; each cover has, screwed into it, four tappet guides, and suspended from studs below this cover are fingers which are interposed between the cams and the tappets. The upper ends of the tappets are fibre-centred to reduce noise. The camshaft drives in turn the magneto shaft, which latter also operates the oil pump situated at the front end of the engine. This pump draws oil from a square sump at the front end of the crank chamber and delivers it through the crankshaft to all the main bearings and the large bearings of the connecting rods. The valve caps are



The Thornycroft oil filler.

held in position in pairs by a three-pronged clamp, each clamp being fixed by one central stud and nut. The carburetter is fitted on the off side of the engine and, high up, the petrol being pressure-fed to the float chamber. The throttle, which is of the horizontal piston type, is connected by means of a lever fitted at the top of the steering wheel. When this throttle is opened, the movement raises a taper needle fitting



The new 15 h.p. Argyll car, dealt with in Tuesday's issue of "The Motor."

OLYMPIA SHOW.—Contd

into the centre of the jet orifice, and thus increasing the area at the same time as the area of inlet is increased. From the lower face of the throttle a breeches pipe leads to a space between the front and rear pair of cylinders, which is cored out of the water space, and the gas passage is carried through the water jacket from the right-hand side to the left-hand side of the engine. A rectangular cover plate extends the whole length of the right-hand side of the engine, and makes a joint over the water space and the gas inlet passages. The back axle consists of a steel forging shaped like a banjo with two arms, the face of this, however, being at right angles to the centre line of the car. On the front a specially shaped forging is bolted and carries the driving bevel and its bearing. On the back a cover plate, which is easily removable, is retained by a number of small bolts, and can be taken off for inspection of the bevel gear without disturbing the latter in any way. The driving wheels run on the ends of the tubular axle, gunmetal bushes being pressed into the wheels for this purpose. The suspension of the rear of the chassis is by semi-elliptical springs of good width and anchored at the forward ends to a cross-bar, which runs across the whole width of the chassis and takes the two springs. A torque stay consisting of a pair of tubes is also fitted and attached at its forward end to a link suspended from a circular cross-member of the chassis. The gearbox is supported at its rear end on a U-shaped member slung below the chassis in a pair of brackets in which it is capable of slight movement, and at the forward end to a single joint suspended from another tubular cross-member of the chassis.

Messrs. J. Keele, Ltd.

This firm, whose address is 72, New Bond Street, London, W., exhibit models of 14-20 h.p. Renault landaulet, 12-16 h.p. Sunbeam with open touring body, and 14-16 h.p. Belsize with landaulet body.

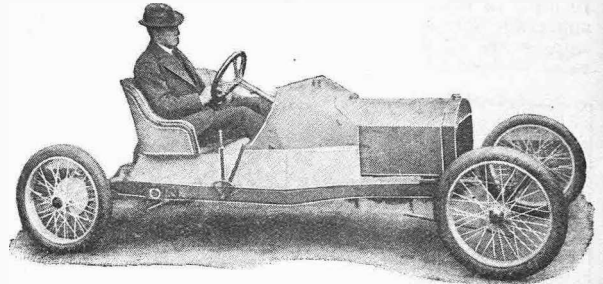
Owing to lack of space this firm are unable to show the Darracq car, for which they also hold an agency. These cars are described in their mechanical detail under other headings.

This firm is making a special line for the coming season of the 14-16 h.p. Belsize four-cylinder chassis fitted with a torpedo body, which is selling at £295. They anticipate quite a large demand for this class of vehicle during the coming season. In the past, the landaulet has been put on the market by this firm at £390, and at this price it has secured a considerable demand. The 12-16 h.p. Sunbeam, which is shown on this stand, is a particularly attractive-looking car. It is a low-built open touring body, with large doors to both front and back seats. A single folding screen and double extension hood make this car very snug, and, combined with the inside driving arrangement, it should be a very useful vehicle for all weathers.

The dashboard is particularly free from impedimenta, there being only an oil controller, a single sight-feed lubricator, and a switch.

On the off-side a spare artillery wheel complete with tyre is fixed in a suitable carrier, which can be used for either front or back, and attached on the Rudge-Whitworth principle. The 14-20 h.p. Renault, which is exhibited by this firm,

is fitted with a very handsome body by Mulliner, of Brook Street, and Messrs. Keels are able to give early deliveries of these cars. The particular landaulet shown has side doors fitted to the front seats, and the back is handsomely upholstered, and has, in addition to the rear seat,



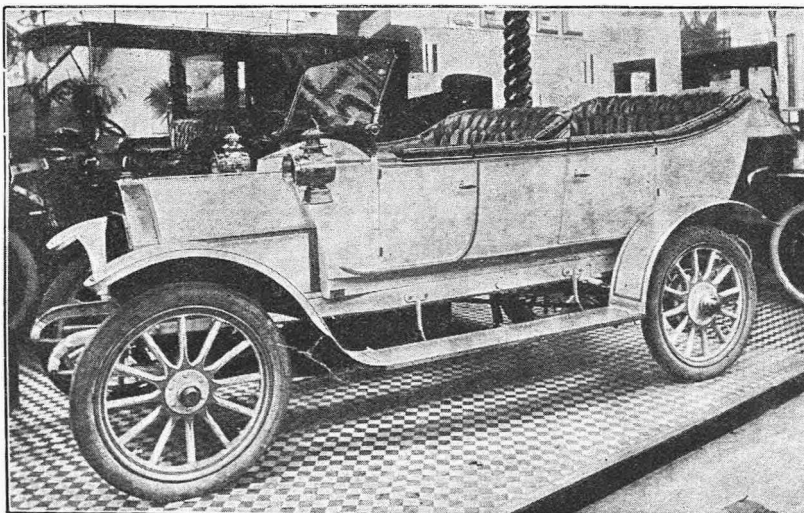
The Waverley light car described in Tuesday's issue of "The Motor."

a pair of folding seats of substantial construction, making it possible to accommodate five people in the back. This firm has sole agencies for considerable distances round London for instance, the Sunbeam agency practically embodies the whole of the south-east of England, and with the attractive new model they expect to do a very considerable business during the coming season.

Martini Cars.

The 12-16 h.p. Martini Show chassis exhibited by Messrs. Martini, London, Ltd., of 40, Knightsbridge, S.W., is shown on Stand No. 95, together with their better-known 10-12 h.p. model. The Show chassis represents a type which this company intends to push extensively this year, as they are enabled to get deliveries of this model in suitable quantities. The Martini car is the output of the celebrated Swiss firm, and its workmanship throughout is of the highest order, and that, combined with a particularly neat general design, should inspire confidence in purchasers of this type of machine. The engine has four cylinders, 80 mm. diameter by 110 mm. stroke, in monobloc form. This casting, in addition to comprising the water jacket, also has cast with it the induction pipe formed on the off side of the engine between the two middle cylinders and the exhaust pipe, which is formed in a horizontal direction upon the rear side. This arrangement leaves all the valve stems and springs, which are on the rear side of the engine, perfectly free from obstruction. The inlet valves are of the overhead type, actuated by means of tappets of the ordinary pattern, and of the same length as the exhaust tappets. These operate vertical rods, which in turn are connected through short rocking levers on to the overhead inlet valves. These rockers are placed in a fore-and-aft direction, which necessitates coring out the casting between the two middle valves to allow the vertical rods freedom of motion without passing through any joints in the water space.

All the tappets have adjustable ends, and the tappet guides, which are made of brass and of large dimensions, are held down in pairs by means of dogs attached to the upper half of the base chamber. The rear end of the crankshaft operates an oil pump, which lifts oil from the base chamber through a sight-feed lubricator on the dash. The oil then passes by means of two pipes to the front and back of the chamber, and is deflected on to the connecting-rod ends. The crankshaft is held by three split bearings; but, in addition, there is a lower joint in the chamber, which allows the bottom plate to be removed for inspection purposes without dismantling the crankshaft. Oil catchers are cast with the upper half of the base chamber, so that the main bearings shall receive an adequate supply of oil. A cross shaft is fitted at the front of the engine, which drives the water-circulating pump on the rear side and the high-tension magneto on the off side. The carburetter is of the Martini pattern, and bolted direct on to the cylinder casting, and it is controlled by means of a hand lever on the steering wheel, with an overriding foot accelerator. The fan spindle is adjustable,



Handsome 14-16 h.p. Belsize on the stand of Messrs. J. Keele, Ltd.

OLYMPIA SHOW.—Contd.

and tension is maintained on the belt by means of a strong spring and large thumbscrew. The engine and gearbox are carried on an underframe slung from a cross member at about the centre of the chassis and from a front cross member which is set down below the radiator. The connection between the engine and gearbox is by means of a leather cone clutch, although a new form of disc clutch is shown in the particular chassis exhibited.

Three speeds are fitted, the top one being a direct drive by means of a dog clutch. The two gear sleeves are separately actuated, and slide upon a four-fluted primary shaft. The foot brake is situated immediately behind the gearbox, and is of unusual width. The brake shoes are operated in a very neat manner by a pair of cams which form one end of a short lever. The fulcrum of this lever is connected to the near-side shoe, and the off-side shoe is pressed towards it as the cam profile rotates. The two universal joints are substantially covered by spun-brass casings. A single torque rod is attached to the cross member of the chassis before referred to, and a pair of long radius rods are slung from a point below this member and attached to the axle by pins. The back axle is built up of two taper tubular elements of cast steel, each made with a spring seat and part of the brake drum, to which the shoes are fixed. These elements screw into the differential casing, and are held by large locking rings. The construction is very substantial, and evidently strength has been well considered. The centre casings are divided by one joint, situated near the back of the crown wheel, and three inspection plugs are screwed into this casing. The frames are upswept at the rear end, and three-quarter elliptical springs are fitted.

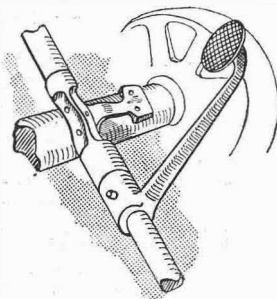
The 10-12 h.p. polished chassis, a type of which is also fitted with a two-seated body, has four cylinders in a block 67 mm. diameter by 90 mm. stroke. In this model all the valves are overhead, inclined, and operated from a skew gear. This is a particularly neat arrangement, as all the mechanism is enclosed by a large aluminium cover. The water circulation is the thermo-syphon, and the pipes are extremely short; in fact, it is this absence of pipes which makes the engine remarkable. The lubrication to the engine is carried out by means of four troughs, which are kept full of oil by means of a pump actuated by the vertical skew shaft. This pump draws the oil from the base chamber, and keeps the troughs always full to overflowing. The two-seated model has a particularly neat appearance, and, although the width across the dashboard is small, the curved doors at the sides of the leg space sweep out to quite a convenient width for a low two-seated body of this type.

Vinot Cars.

The latest 12-16 h.p. four-cylinder Vinot chassis occupies a very prominent position on the stand, where it is exhibited by Vinot Cars, Ltd., 20, Regent Street, S.W. Unlike many cars of similar power exhibited this year, the Vinot 12-16 h.p. engine has its cylinders cast in pairs, but with all the valves on one side. The gearbox and the patent change-speed actuating levers are the leading features on this particular car. The gearbox itself is of cylindrical shape, with a large in-

spection cover at the top, and the end walls of the case consist of two large circular plates with suitable bearings for the main shaft, layshaft, and reverse shaft bearings. Any desired speed can be brought into operation by means of a single lever, but the usual form of gate change, with its attendant sliding sleeve, is not fitted on this car; instead of the gate-change arrangement, the hand lever is provided with a trigger for causing a pawl to engage in either of two notched levers; one of these notched levers is coupled up to the first and reverse gears, whilst the other actuates the second and top gears.

It should be noted that the foot-brake drum on this car is mounted at the forward end of the propeller shaft, and this, instead of being a plain drum, is of conical formation, and within it are two castings, which are faced with red fibre



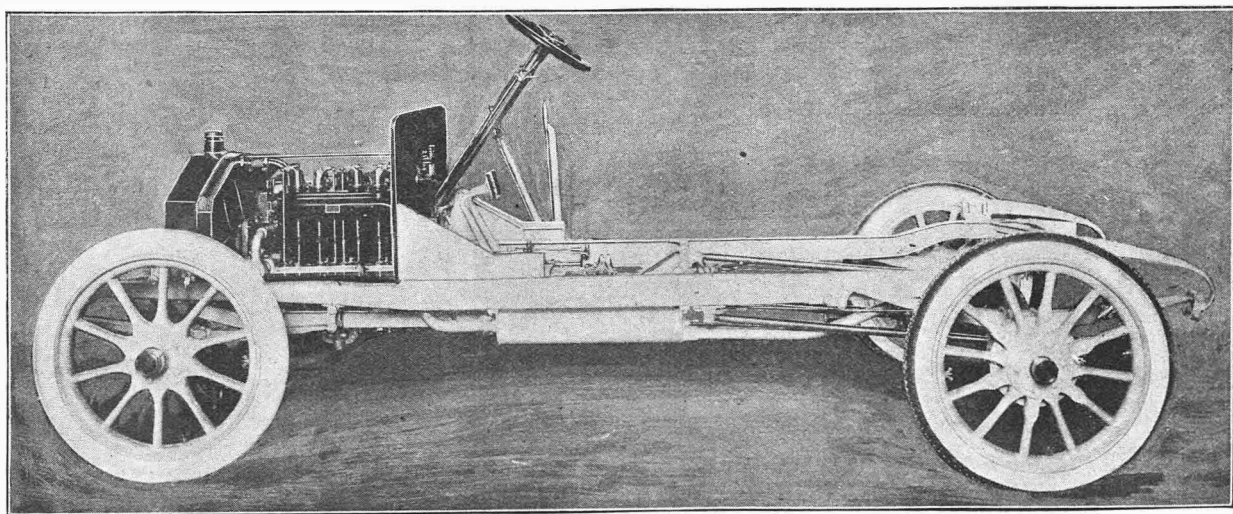
Vinot pad-form clutch-stop.

and may be caused, by the operation of a cam, to press against the inner surface of the conical drum. The side lever brakes are also of the internal-expanding type, as is now the usual practice. The forward halves of the three-quarter elliptic springs are utilized as radius rods for the back axle, but the torque is taken by means of a pressed-steel stay.

Apart from the chassis, four complete cars are exhibited, and three of these are mounted on the type of chassis to which we have referred; the body of one of them is a Salmon landaulet of very smart appearance, and the car, complete with lamps and all requisite fittings, is offered at £495. Another of these cars has a special side-entrance body with swinging windscreen and Cape-cart hood. The fourth car staged has a 38 h.p. four-cylinder engine, and the body is one of the double landaulet type with a collapsible roof extension over the driver.

Thames Cars.

The 24 h.p. Thames has been designed with the object of providing a fast and powerful touring car, economical on tyres and petrol. The four-cylinder engine is cast in pairs, the valves are enclosed, the tappets have fibre caps, and lubrication under exhaust control. The engine and gearbox form a single unit, supported on an under-frame formed of extensions of the low webs of the side frames. The gate lever is hinged, and the selecting mechanism is carried on the top of the gearbox. Four speeds are given, and the drive is by worm, the drive being on top of the worm wheel in this model, but underneath in the small 8 h.p. model. The single-cylinder 8 h.p. Thames is interesting, apart from the worm drive, a novel feature in a car of this power. Ball bearings are fitted throughout, including the engine, and the drive is either through a gearbox of the conventional type or by friction gear. This latter gear is placed immediately to the rear of the engine, and consists of a fibre friction wheel on



The 12-16 h.p. Martini chassis.

OLYMPIA SHOW.—Contd.

the main shaft, with balanced discs on either side kept in contact by powerful springs. The lever controlling the gears works in a quadrant notched in a similar manner to a brake quadrant, except for a space corresponding to the neutral. Any gear ratio is thus obtainable from zero to a maximum.

The 60 h.p. racing Thames, driven so successfully at Brooklands recently, is on view on the stand. The engine is a six-cylinder, of course, each set of three cylinders having its own carburetter. The usual controls are notable by their absence, a row of notched rods and stops to the left of the drive taking their place.

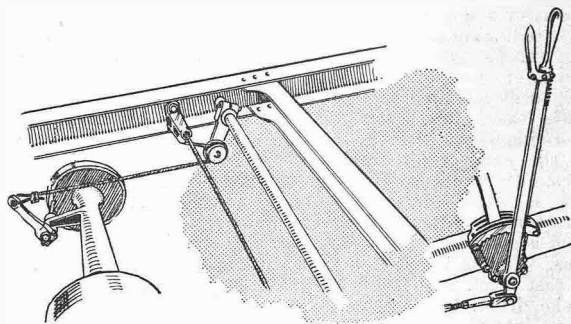
Zedel Car.

The latest pattern 12-14 h.p. Zedel is exhibited by Mr. C. Bertrand, and embodies several improvements. The valves are all on one side of the motor, while the whole of the cylinders are encased as distinct from the earlier models. The magneto and water pump are driven from a shaft set at right angles to the crankshaft and operated from it by a simple form of gearing. Forced lubrication is employed, the gear pump drawing filtered oil from the tank and distributing it by separate leads to the main bearings. A sight-feed is introduced in one of the connections as an indicator. The cone clutch has a simple form of adjustment, and the gearbox is carried far enough back to enable the clutch centre to be removed for examination. The foot brake has been altered from the internal-expanding type to external shoes, having a quick adjustment, which can be operated by hand. A neat setting of the brake pedal is obtained by means of a bell crank having saw teeth on one side of its lower boss, which engage with corresponding teeth on a shoulder of the spindle, and are locked in position by a nut and spring washer. The cardan joint behind the foot brake is entirely enclosed in a metal casing. The axle casing consists of two castings bolted together and enclosing the bevel drive and differential gear, the whole weight of the car being borne by the casing. Three-quarter semi-elliptical springs are fitted to the rear, the top half of the spring being anchored below the level of the frame. This provides a very clear chassis for bodywork. The dashboard is quite clear of fittings, and presents a very neat appearance. The chassis price of this new type is £350. A very nicely-finished body is shown on a similar type of chassis.

Calthorpe Cars.

Two Calthorpe models of 12-14 h.p. and 16-20 h.p. are shown of entirely new design, the merit of which places the Calthorpe in the front rank of British productions. The two models are identical, except in springing and lubrication, the smaller having three-quarter elliptics to the rear wheels and pressure lubrication, and the larger a transverse spring and forced lubrication. The engines are monobloc, with valves on

the near side. Magneto and carburetter are placed symmetrically on either side, the circulation is thermo-syphon, the engine is carried on the main frame, and the gearbox from a sub-frame. The clutch is a Hele-Shaw with a stop to facilitate gear changing. A somewhat novel method of attaching the gear wheels to their shafts has been adopted in the gearbox. Shaft and wheel have no keys or feathers, but are serrated, the wheel being pressed on to the shaft with a maximum of driving surface. The five axle and torque tube are of aluminium throughout, but well tapered and internally



Swift rear-brake connections to lever. Swift cars were dealt with in Tuesday's "Motor."

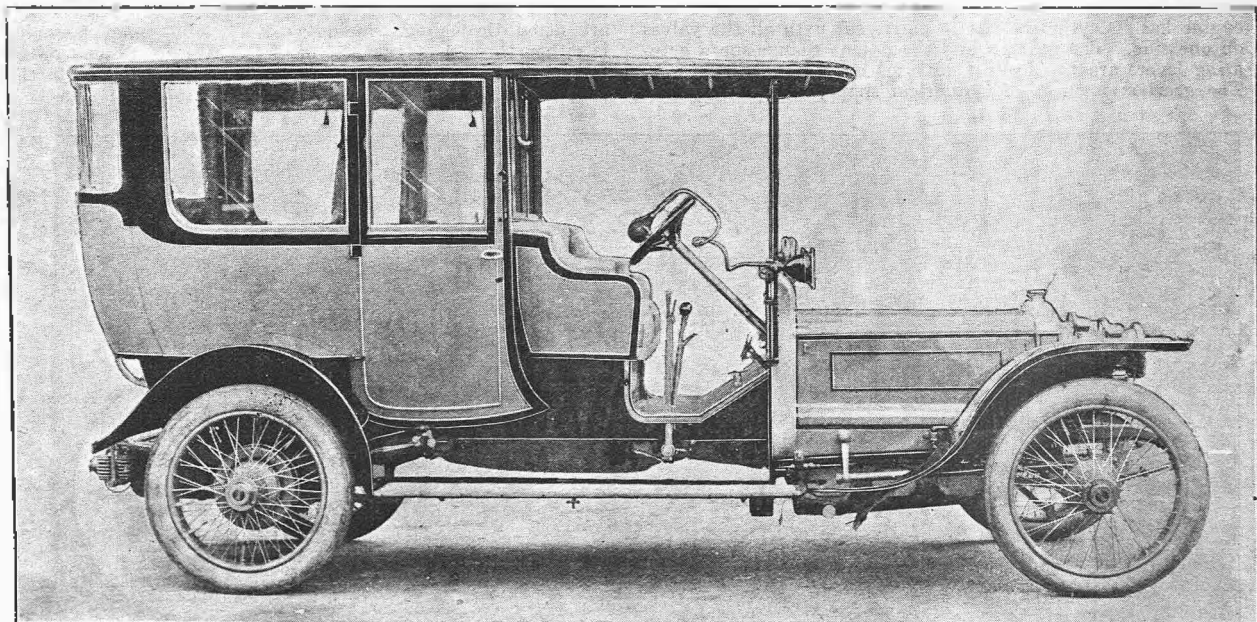
strengthened by deep ribs, so that the construction should be as strong as the now usual steel or cast-iron casings. In addition to the torque tube a triangulated rod link suspended forward is employed.

The brake systems are the reverse of the usual, the foot-brake acting on the rear wheels and the hand-brake on a drum on the gearshaft.

The engines are both of the long-stroke type, 10 mm. having been added to the former stroke adopted for these sizes. The bodywork is a speciality of the firm, and the fine finish of both chassis and body, with the undoubted excellence of construction, affords an example of value not to be easily out-distanced.

La Buire Cars.

The 15 h.p. La Buire chassis, with new silent engine, is the "pièce de résistance" of the stand of the Hollingdrake Automobile Co., and is certainly well worth examination, for it is undoubtedly one of the finest examples of motor engineering under the Olympia roof. The engine is a monobloc, with all valves on one side and encased. The camshaft is driven by a non-stretching chain, and magneto and pump are set crosswise, both being set well up and thoroughly



Daimler: 33 h.p. six-cylinder limousine. Daimler cars were dealt with in Tuesday's "Motor."

OLYMPIA SHOW.—Contd.

accessible. The induction branch is held to the cylinders by a single belt, internal passages taking the mixture across the heads to the valve chambers. Piping has been reduced to a minimum, so that a clean engine is secured, accessible in every detail. Lubrication is by a pump driven by an inclined, centrally-set skew shaft, actuated from the camshaft. The oil is forced to a tell-tale on the dash, which takes the form of a small turbine wheel, which naturally is in constant motion while the system is in operation. The oil is taken through a channel in the crankcase, and distributed to each bearing, whence it reaches four cups, into which scoops on the big-ends reach. A good feature is a lever on the crankcase, by which the case may be emptied, refilled, or level corrected. The Hele-Shaw clutch is placed in the gearbox, and the constant-mesh gear wheels are helically cut to secure silence. The foot brake is self-centring, and the axle is connected to the frame by a triangular-braced girder. The axle, while as strong as previously used, is considerably lighter, drawn steel being employed in place of castings. The 10 h.p. model is similar to the 15 h.p., except in dimensions, while the 16 h.p. remains the same as before. A good type of torpedo body is shown on a 26 h.p. chassis, the lines being good, while the front seats, being free to slide, any driver, whatever his size, can be sure of a comfortable driving position. Also, if the gearbox is to be examined, these seats can be lifted out, giving access to the whole of the chassis behind the bonnet.

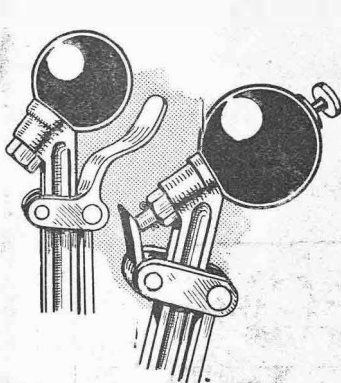
Electric Vehicles.

The Electric Vehicle Co., 14, Cockspur Street, London, S.W., stage a series of cars electrically driven by current from accumulators. These comprise a touring car having a weather-proof body of the victoria type. This seats two in front, and a third can be accommodated in a collapsible dickey seat at the rear. The maximum speed obtained on a good-surfaced level road is 30 miles per hour. The accumulator battery consists of 40 cells having a capacity of

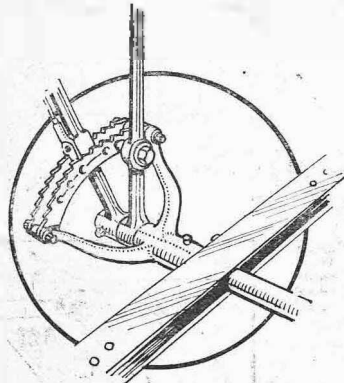
195 ampere-hours. Under favourable conditions 100 miles can be covered on a single charge. The drive is from a single enclosed motor in the centre of the frame, thence through a cardan shaft to a worm-driven axle. The battery is mounted under the bonnet. The Park Victoriette is provided with a driver's seat. It has a smaller battery than the victoria, the capacity being 105 ampere-hours, which gives 40 miles running on a single charge.

Fafnir Cars.

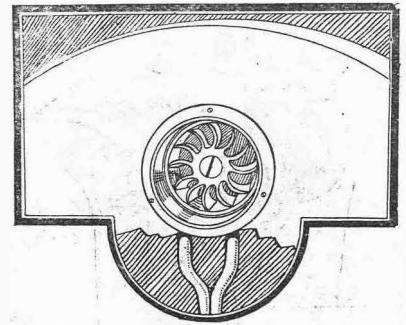
The Fafnir chassis of 12 h.p. and 16 h.p., and a complete car with two-seated body are shown by S. Strauss and Co., of 211, Upper Thames Street, E.C., the firm's output being limited to these two models. Four-cylinder motors are employed, the 12 h.p. dimensions being 70 mm. by 100 mm., and the 16 h.p. 80 mm. by 100 mm. The cylinders are cast separately, and have mechanically-operated valves, the inlet being situated above the exhaust and fitted with a particularly neat eccentric adjustment to the overhead actuating mechanism. The carburettor throttle valve is controlled from the steering wheel quadrant. The clutch pedal has a separate connection with the throttle, which operates only when declutching, and keeps the engine running at a normal speed. The pistons are of steel, and the cylinder heads are easily removable for inspection by unlocking a single nut. Forced lubrication is used, with a sight-feed on the dashboard. The oil pump is spring-driven and operated from the camshaft. The gearbox is fitted with three speeds and reverse, the chief members of the striking motion being outside the gearbox. A ratchet sprag forms portion of the foot-brake drum. The torque rod is of pressed steel, and forms a strong and, at the same time, very light member. The steering gear is fitted with a special form of shock-absorber to ensure steadiness on rough roads. The wheelbases are, for the 12 h.p. model 8 ft. 4½ in., and for the 16 h.p. 9 ft. 2½ in. The workmanship throughout is exceedingly good, and the whole design has evidently been well considered, with a view to reducing the number of working parts.



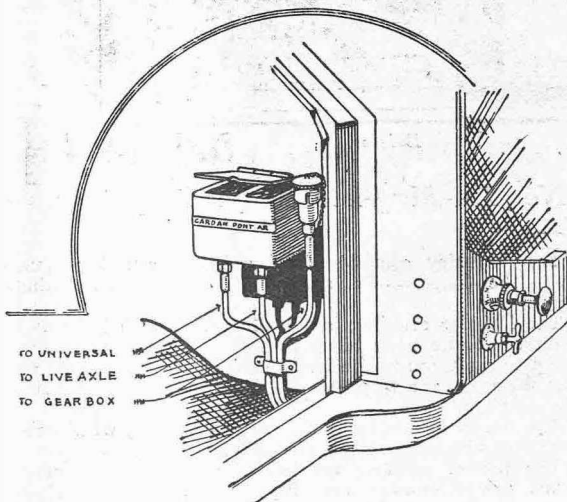
Change-speed and brake levers on 8 h.p. Phoenix.



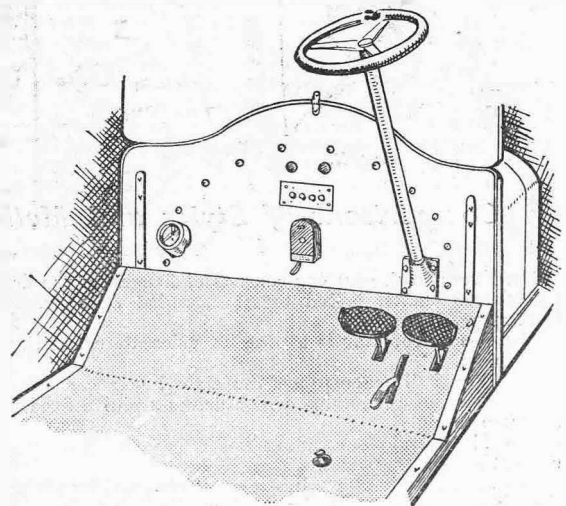
Lever in top gear of Delage. Ball-change speed lever.



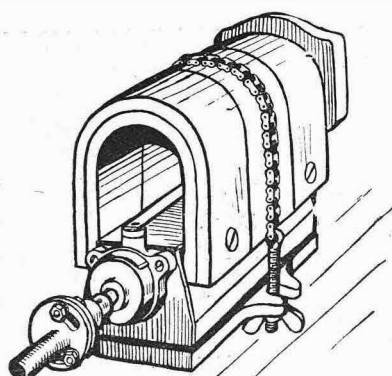
La Buire turbine oil feed on dashboard



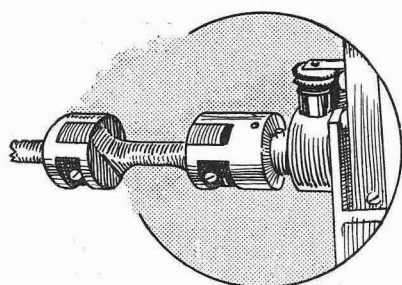
Berliet wick-feed oil box and pump.



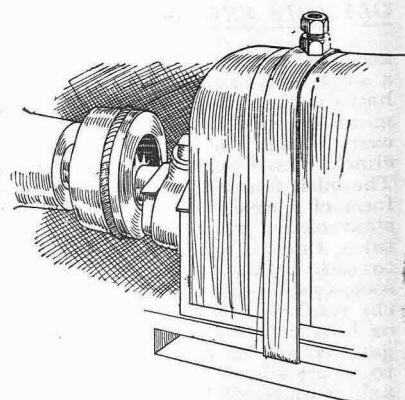
Cadillac dash, drip-feed, switch and heel pedal for accelerator.



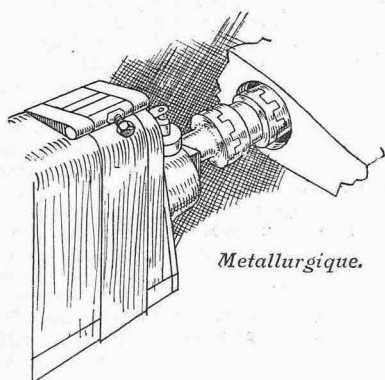
Thornycroft.



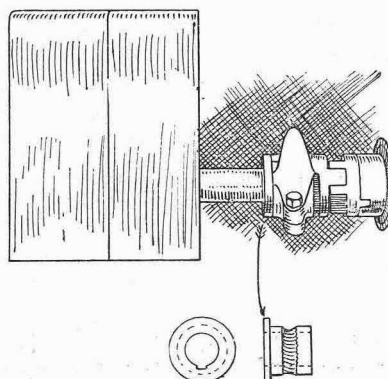
Cooper.



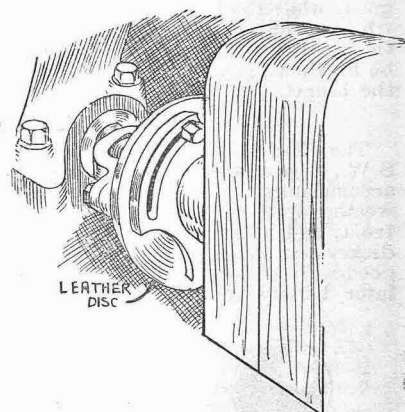
Vauxhall.



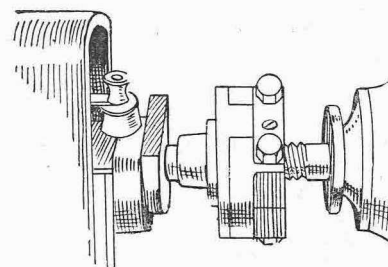
Metallurgique.



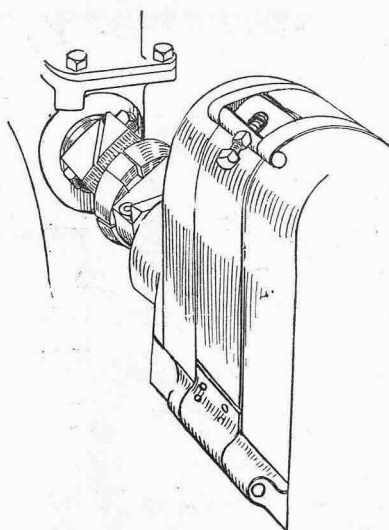
Sheffield-Simplex.



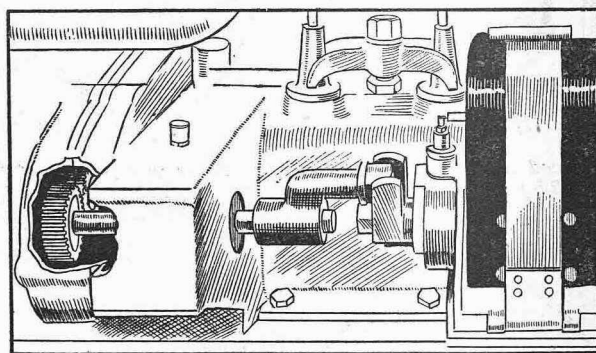
Daimler.



Wolseley



Argyll.



Belsize.

Comparisons of Styles and Methods: No. 1.—Magneto Shaft Couplings.

The Thornycroft coupling consists of flanges on the driving and driven shafts, bolted together, radial slots permitting of timing adjustment.

The Cooper coupling is a piece of vulcanite connecting the two shafts.

The Vauxhall magneto on the six-cylinder car is geared up by means of an annulus, which drives a pinion fixed to the magneto spindle.

The Metallurgique coupling has a castellated centre-piece connecting the two shafts.

The Sheffield-Simplex adjustment is obtained by slackening the clamping bolt, and, by turning the bolt, advancing or retarding the armature, by means of the worm cut on the sleeve, which latter is keyed to the spindle.

R16

The Wolseley consists of an ordinary coupling clamped on to the shaft, which is threaded, to increase the binding effect.

The Daimler coupling is a leather disc, with bolts at four points, opposite pairs being bolted to a flange keyed on the magneto shaft and to the fork on the end of the driving shaft. The flange on the magneto shaft has radial slots for setting the magneto.

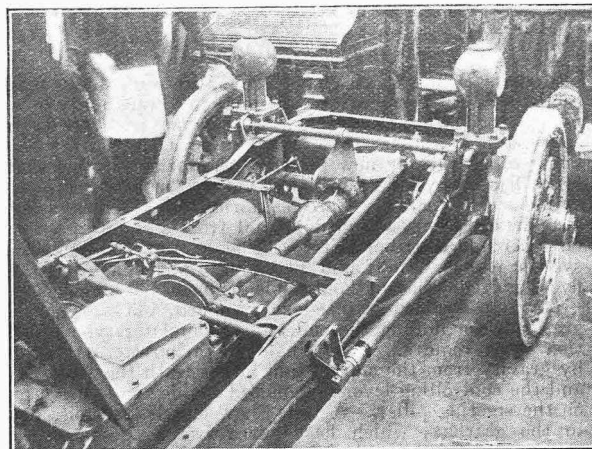
The Argyll has an Oldham type of coupling, with a simple clamping arrangement on the driving shaft.

The Belsize coupling consists of a fork on the magneto shaft, and a cranked arm keyed on the driving shaft, a square on the end of the arm engaging in the fork, and thus providing for any want of alignment.

OLYMPIA SHOW.—Contd**Adler Cars.**

The 12 h.p. Adler car is shown in three types by Messrs. Morgan and Co., Ltd., 127, Long Acre, the sole agents for the United Kingdom. The exhibits here consist of one show chassis, one two-seated model fitted with hood and windscreen, and one chassis fitted with a landaulet body with extension canopy. There is also one open touring model with hood and screen. It will thus be seen that the chassis is adaptable to various types of body, the only difference being that in the two-seated model the wheelbase is slightly shorter, as in this model the springs are suspended from hangers, whereas in the other models these are replaced by quarter elliptical springs. The four-cylinder engine has its cylinders cast in pairs, and they are 75 mm. by 100 mm. stroke. The cylinders are fixed upon an aluminium base chamber, which, in turn, is bolted to the top of a long base casting, which also forms the flywheel race and the lower half of the gearbox. This casting is supported from the main frame by pressed-steel plates and U-shaped arms, which are attached to the rear lugs of the top half of the crank chamber.

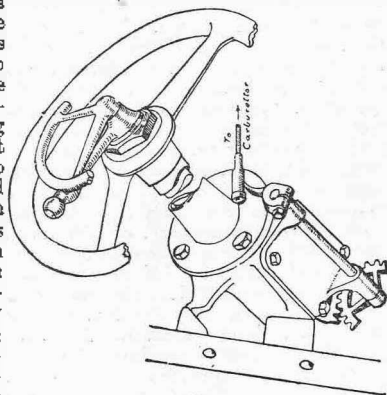
There are several new features about this year's model. The carburetter has been modified, and it is now fitted with an additional air valve of the flap type, held on its seat by a light spiral spring with a gauze wire covering the inlet. This communicates with the mixture chamber above the jet, and a rotary throttle is fixed above this mixing chamber, and at the base of the Y-shaped pipe from which the two branches are taken, one to either pair of cylinders. The inlet valves being adjacent to each other in one pair of cylinders, a pocket is cast for the distribution to the two



The Crossley car, equipped with the new Cowey suspension at Olympia. This has been already fully described in "The Motor."

cylinders. The exhaust pipe, however, which is placed above the inlet pipe, and is of cast iron, has four branches, one leading to each exhaust valve pocket. These branches are each held in position by a single nut, and are cast with ribs at the back, forming hollow clamps. The clutch is of the conical type, combined with the flywheel. It is actuated by means of hard steel arms, which engage with hard steel shoes, forming the projections on the ball race at the back of the clutch spring. The change-speed gearbox gives three forward speeds and reverse, with a direct drive on the top. A new form of gate is arranged in the new model. The lever

at its lower end is formed in the shape of a ball, which is held between two hard steel cups. The motion is transmitted to the sliding rod through a short lever attached to this rod, and hinged to the operating arm about 4 in. from its fulcrum. The motion of this lever from one notch into another is particularly easy, and a neat form of plunger is arranged on a horizontal centre line, so that, in order to place the lever in

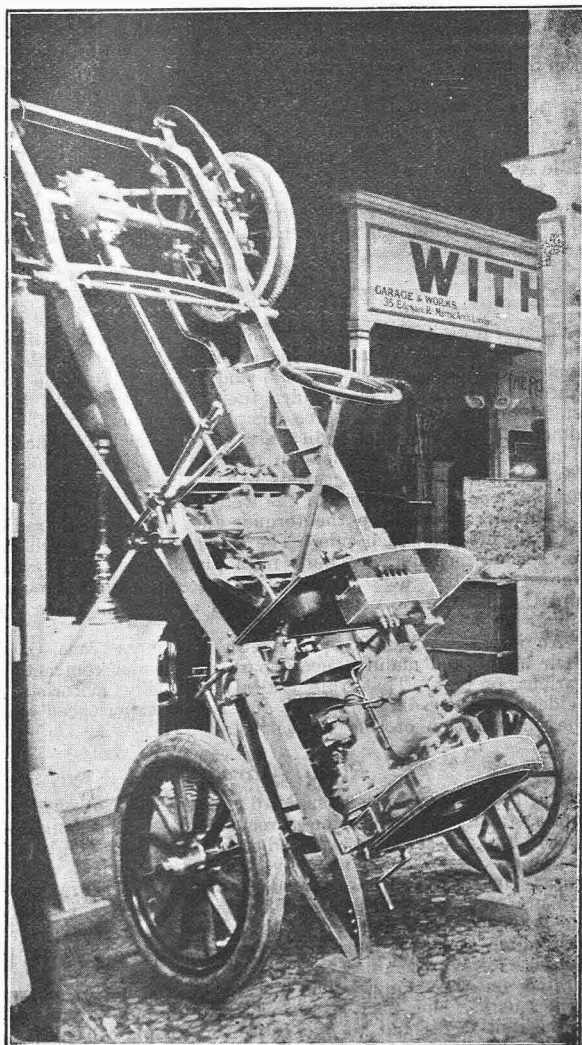


The Adler throttle control.

the reverse notch, this lever must be pulled towards the centre of the car first. The foot-brake shoes are supported at their lower ends on two pins, which run through the lower casing, which is a continuation of the base of the gearbox. The upper ends of the shoes are drawn together by a right and left-handed screw of coarse pitch, which works in two gun-metal nuts supported on trunnions in the ends of these two shoes. The gear shafts are supported on ball bearings throughout, and an extra ball bearing is also placed at the rear of the brake drum, between it and the front universal joint, thus giving ample support to this joint. The usual triangulation which forms the location of the rear live axle is adhered to, and the particularly neat cross bead which grips the forward end of the torque tube is still retained. The side brakes are operated by means of a short compensating bar, with ball ends attached by a knuckle joint to the rear end of the rod operated by a side lever. This rod at its forward end has a long knuckle with four different pin holes, allowing for adjustments to be made here by altering the position of the pin.

The steering arm, it will be noted, moves in a transverse direction instead of a fore-and-aft direction, which is the usual practice.

The carburetter is controlled by a toothed sector rotated by a shaft carried to a lever in the quadrant on steering wheel, the sector shaft moving the throttle rod through an adjustable bell-crank lever.



The novel way of showing the 12-16 h.p. Delahaye chassis.

OLYMPIA SHOW.—Contd.

Dennis Cars.

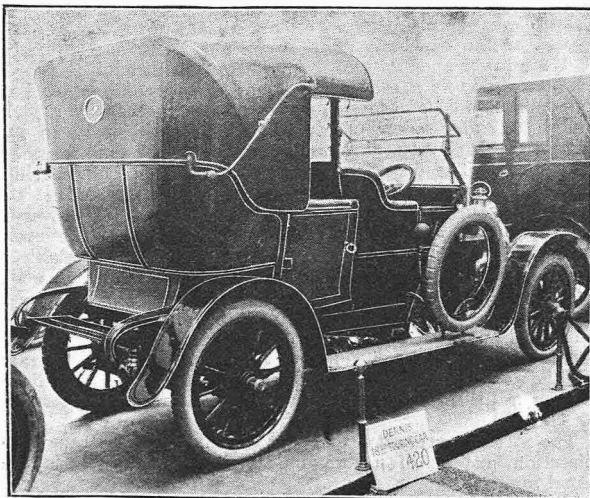
Messrs. Dennis Bros. have, from the very first, pinned their faith to worm drive transmission through a live axle to the road wheels. Their models range from an 18 h.p. four-cylinder chassis to a six-cylinder 60 h.p., the latter being of an entirely new design. The motor for the smaller types has its cylinders in pairs but in the larger sizes each cylinder is separate. Forced lubrication is effected by a gear-driven pump, which draws oil from a sump in the base chamber and distributes it to the main bearings. With this system it has been found possible to drive a 40 h.p. car five hundred miles without replenishment.

Magneto ignition is fitted as standard, but arrangements are made for adding the coil and accumulator type in addition when required. The single-jet carburetter is supplied by gravity from the supply tank underneath the front seats, and the controlling lever is mounted beside the ignition lever on the steering pillar. A Hele-Shaw clutch transmits power to the gearbox, which has four forward speeds and one reverse, the third speed giving a direct through drive. Final transmission to the back axle is through the Dennis patent worm gearing. This is contained, together with the differential, in one casing built into the back axle, the latter being designed so that no portion of the car weight falls on the driving axles.

The front axle is built up of two forged channel steel sections securely riveted together. The carriage bodies shown on the finished cars are worthy of special mention. Coach-building is an important department at the Guildford works, and those owners who prefer to take over the finished car are thus enabled to have any modification in design carried out without delaying the delivery date.

Pilot Cars.

The 16-20 h.p. four-cylinder Pilot chassis is shown by Motor Schools Ltd., of 10 and 12, Heddon Street, W. This firm also exhibits one of these chassis fitted with a landaulet body of the standard pattern. The Pilot car is an English production, being made in Coventry, and embodies several notable features, particularly the method of driving the magneto from a longitudinal shaft which is carried above the tops of the cylinders. This shaft is driven by a skew gear at its forward end, and it has the fan fixed at the end of the shaft, which projects towards the radiator. At the rear end the magneto carries this shaft by means of a sleeve coupling. The magneto is mounted on a bracket bolted to the rear pair of cylinders, and practically the whole of the magneto, together with the commutator and distributor, are situated behind the dashboard. The engine cylinders are cast in pairs and are 85 mm. diameter by 110 mm. stroke. The back axle is of interesting construction, the centre casing around the bevel drive being diagonally divided. These two halves close up in sandwich fashion around Hoffmann ball-bearings, which support the differential gearbox. The outer ends of the driving shaft are also supported on ball bearings. The torque tube has an additional support at its forward end, by means of a

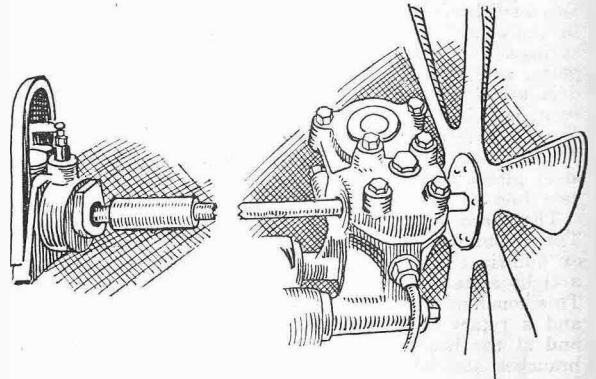


18-24 h.p. Dennis touring car with special leather hood to back seat.

pair of links attached to a cross-head. This cross-head is allowed to slide slightly and is retained by compression springs in its normal position.

Humphris Patent Gear.

The Humphris gear, whilst unique, undoubtedly has to be reckoned with, for an efficiency claimed of 96.7 per cent. is worth securing, especially when it can be obtained not on one speed only, but on three. The latest type of live axle in which the gear is incorporated gives six speeds, three of which are direct and three indirect. The principle of the gear is now familiar to most, the teeth of the pinion being of a some-



Magneto and fan on one shaft on Pilot car.

what different contour to usual, and instead of engaging a wheel similarly shaped they engage holes of the same pattern in a plate at right angles. This method makes it possible to secure what is practically a rolling contact, while, owing to the diameter of plate possible, a large number of changes can be obtained. While the Humphris Co. will convert existing vehicles, they build a car of their own with some interesting features. The engine and forward end of propeller shaft casing are held by a steel casing trunnion supported from the side frames in front of the dash. To take some of the weight off the shaft tube the casing is spring hung from a cross-member. The gear is contained in the rear axle, and the effect of the trunnions is to render any universal joints in the transmission unnecessary.

Withers Motors.

This old-established firm of jobmasters and carriage builders in Oxford Street, W., have been closely identified with the motor industry for many years, and, since 1905, have produced complete vehicles under their own name. At their stand in the main hall three complete cars are shown with limousine and landaulet bodies, also a 30 h.p. polished chassis. The motor has its cylinders in pairs, and drives through a leather cone clutch and gearbox to the live rear axle. Both gearbox and back axle are of the well-known M. and B. type. A forked rod takes up the torque, and, in addition, radius rods are fitted on each side. The carriage bodies, which call for special mention, are built from plans prepared by well-known Paris designers. The seating accommodation is roomy, and the passengers' comfort has been studied in every possible way.

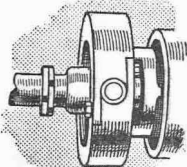
An important branch of this firm's business consists in their hiring and maintenance department, under contract for various periods. That this appeals to many motorists is evident from the large increase of business experienced since the inauguration of this innovation.

Rapid Cars.

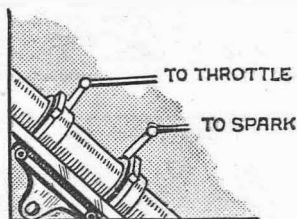
The Rapid Car Concessions, Ltd., at the time of our visit to its stand, was exhibiting three models; but a fourth—a new 14 h.p. chassis—was expected early this week. The 14 h.p. engine has its four 80 mm. by 105 mm. cylinders cast in pairs; the valves are arranged directly over the pistons, and are operated by tappet rods from a single camshaft in the crankcase. In the new 14 h.p. car which is expected, the engine remains unaltered in design, but the rest of the chassis closely resembles the new 20 h.p. car which is exhibited on the stand. The design of the latter chassis strikes us as being particularly workmanlike and, from front to back, it is difficult to find cause for complaint, so far as design is concerned. It has got a very large diameter fan flywheel, with well-curved blades embodying a multiple-disc type of clutch, from which power is transmitted to a four-

OLYMPIA SHOW.—Contd.

speed-and-reverse gearbox with gate change, and the drive to the live axle is through a cardan shaft that has two universal joints. Previous models of this Italian-built car were fitted with a spur pinion differential gear, but in the new model this has given place to one of the bevel type. The rear springs are of exceptional length, and are not called upon to do any duty other than the supporting of the load. The axle is provided with a stout radius rod on each side



The split ring on the universal joint between clutch and gearbox on the Rapid cars.



The control connections to the engine of the Rapid cars.

of the chassis, and the forward ends of these rods are anchored to brackets at a reasonable distance below the frame level, and all turning effort of the axle casing is transmitted to a cross-member of the frame through a separate rod. These rods are so arranged that but little work is thrown upon the universal joint.

The most imposing Rapid exhibit is the 40 h.p. four-cylinder model, with cylinders of 120 by 150 mm., cast in pairs, with the valves arranged on each side. This model is exhibited for the first time; in fact, the chassis is the first of its type to arrive in this country. We would direct the attention of visitors to the Eisemann lubricator, which is arranged to supply oil to each of the main bearings and to the cylinder walls. The same type of flywheel and clutch as are fitted on the 20 h.p. are used, but, of course, of larger diameter, and between the clutch and the gearbox there is a very businesslike universal joint, the ring of which is divided so that it may be easily removed before either of the shafts is disassembled. The gearbox is a capital job, and behind it a water-cooled foot brake of ample dimensions is fitted.

Two very smart cars are also shown by this company. One of these is a 14 h.p. chassis, and the other a 20 h.p. car with a snug arrangement of the front seat; although this seat is well enclosed and has high doors and a sloping dash, by an ingenious connection between the rear side of the door and one-half of the upper part of the dashboard, access to the seat is not interfered with.

Pilain Cars.

Three chassis are shown by Mr. Pellant, of 74, Shaftesbury Avenue, W., the smallest being the new 12 h.p. model. In this the motor is "monobloc," with thermo-syphon cooling, but on the larger models the motors have the cylinders cast in pairs, with the exception of the 60 h.p., in which the cylinders are single units. The chief feature of the Pilain design is the position of the gearbox, the change gears being embodied in an extension of the back-axle casing, and operated from the usual hand-lever through rods. The back axle has its cardan driving shafts exposed, the weight of the car being carried on a fixed tubular member. The petrol tank is combined with the dashboard, and feeds by gravity to the Zenith patent carburetter. This has two jets, the smaller of which only comes into operation when the throttle is closed, so as to keep the engine running at a slow rate. The piston throttle is controlled from a quadrant on the steering wheel, and, in addition to governing the supply of mixture, is arranged to admit air only to the cylinders, thus forming a very effective engine brake.

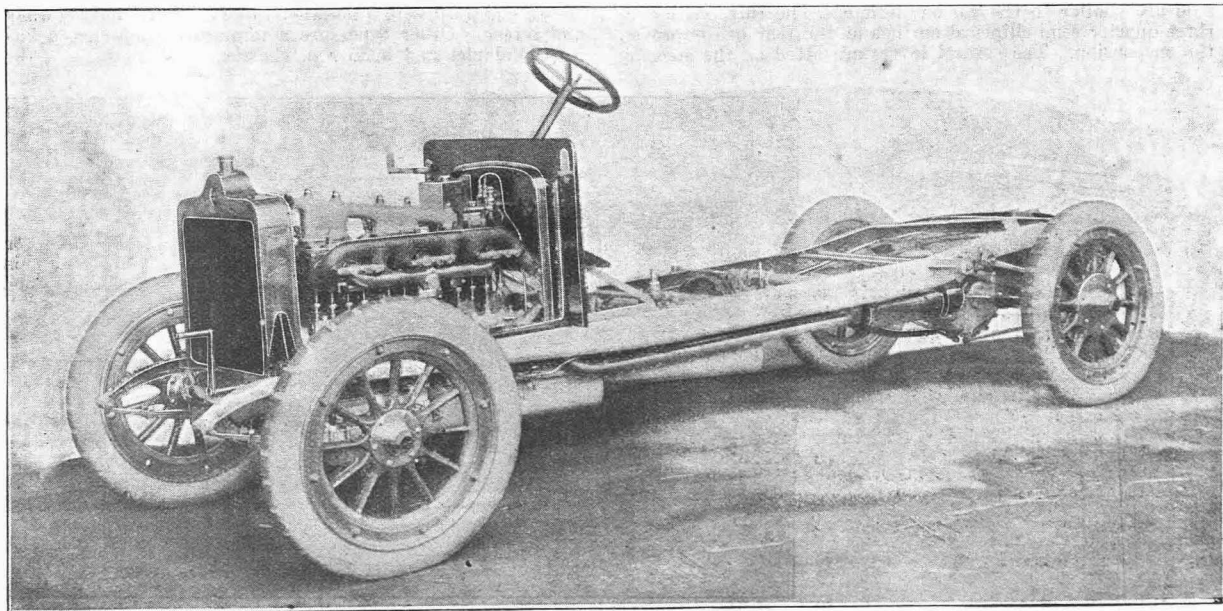
One of the cardan joints, which has already run over 25,000 miles under ordinary working conditions, is exhibited, and shows remarkably slight signs of wear, at the same time providing a good example of the high-quality material employed in the manufacture of these cars.

Botwood and Egerton.

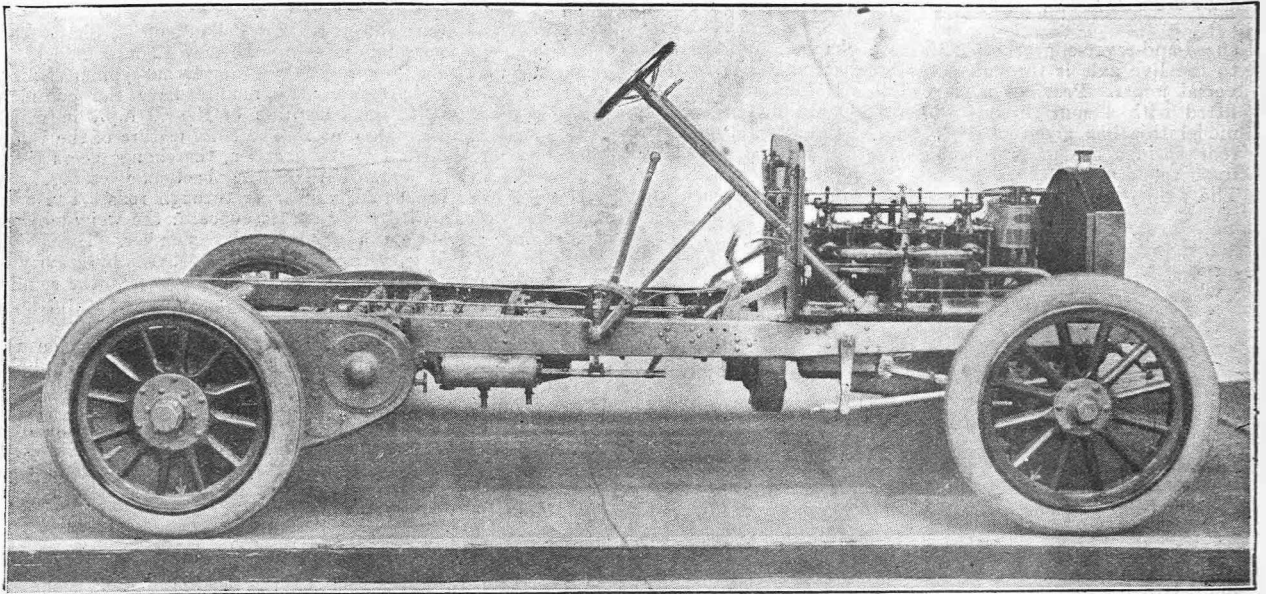
This firm, which is one of the leading motor agents in the eastern counties, is showing three very nicely finished cars. One of the new 15 h.p. Napier chassis has a doublephaeton body arranged to carry five people. There is also a new 10 h.p. De Dion and a little 6 h.p. Rover, appointed for doctor's use. All these cars are very handsomely finished in dark green, and form an attractive exhibit.

Albion Cars.

A range of Albion cars is shown by the Lacre Co., 15, Poland Street, London, W. This comprises a 16 h.p. side entrance, seating three at the rear and two on the front. The engine is a two-cylinder 124 by 127 mm., having low-tension ignition of special design. The drive is by encased side chains. The ignition switch gear has been improved. The water circulation is by pump. Ducasable semi-solid tyres are fitted on the back, and Continental pneumatic on the front wheels. The equipment is completed by a cape hood and windscreen. This chassis is also shown equipped with a shooting brake type of body, seating nine. It is finished in natural wood style, has side curtains and luggage rail, and has similar tyres to the standard car. A polished chassis of the 24 h.p. four-cylinder model forms an interesting exhibit. Amongst the distinctive features will be found a special carburetter, and a mechanical lubricator supplying every bearing. The patent governor on the engine is also a very interesting feature, as this acts on the throttle and advance and retard of the



40 h.p. six-cylinder Standard chassis.



24-30 h.p. Albion chassis.

ignition. A special type of low-tension machine is used, operating in conjunction with make-and-break tappets in cylinders. The clutch is a metal-to-metal multiple-disc pattern. The drive is by side chains protected by cases. The countershaft brake is specially wide, whilst the springing has been well considered, the rear springs being of the full elliptic type.

This chassis is shown equipped with a Lacre limousine body, seating five. A feature worth noting is that the windows are hinged, and can be opened and fixed under the roof. Another body on the same chassis is a double landaulet, seating seven. This is very luxuriantly mounted, and has many refinements. Shock absorbers are fitted on the rear wheels, which have Shrewsbury and Challiner detachable rims. Electric light is installed, and other accessories include speedometer, clock and spare rim carriers.

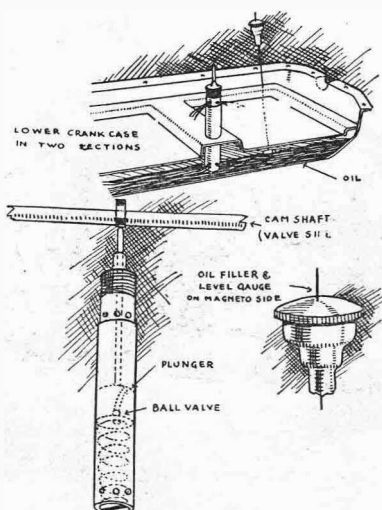
The Marlborough Car.

A new model 12 h.p. Marlborough chassis is shown by Messrs. T. B. Andre and Co., in which the component parts are manufactured by Malicet and Blin. The chief alteration consists in the fitting of a longer stroke motor, 80 mm. by 115 mm., with Bosch magneto and a Dubrulle automatic lubricator, driven from the engine. The gearbox and back axle are similar to the earlier designs. The introduction of three-quarter semi-elliptical springs at the rear has improved the suspension. The control levers are fitted on the steering

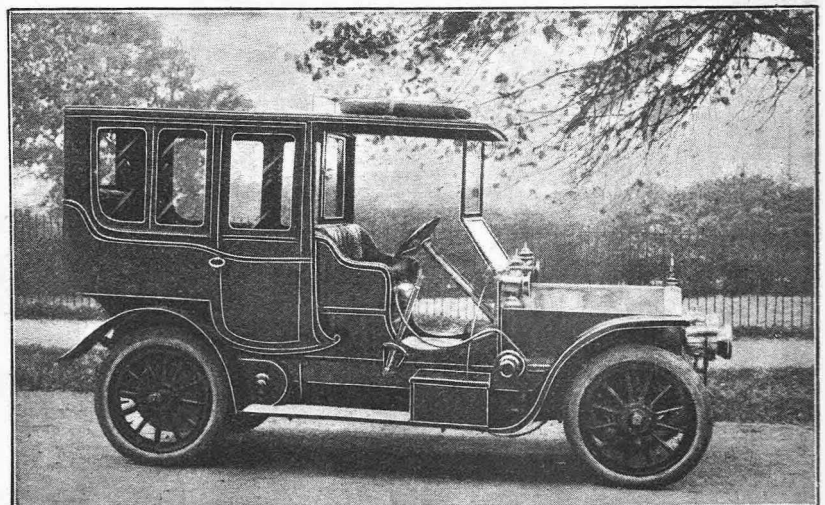
wheel in a fixed position; that is to say, they do not move with the steering.

N.A.G. Cars.

This new 12-14 h.p. N.A.G. chassis is exhibited by the Connaught Motor and Carriage Co., 28 and 29, Long Acre, London, W.C. This is a four-cylinder model having a longer wheelbase than previously. The engine is a compact single casting, thermo water circulation, and high-tension magneto ignition. The cylinder dimensions are 75 by 85 mm., giving ample power on a slightly lower gear than former models. The drive is by enclosed cardan shaft to live axle. The improvements to be noted comprise a new radiator with fan of stouter construction than before, and capable of easy repair in case of damage. The design is particularly neat. The lubricator tank is now carried half through the dash, improving the appearance and working, and the carburetter has a new type of air valve, giving maximum petrol economy. The gear-change system is improved and gate control adopted. The clutch is of the leather cone type, with a very accessible outside spring. The brakes consist of an internal-expanding brake on countershaft, and usual internal brakes on rear wheels with special compensating device. This chassis is also shown equipped with a handsome touring body, having a hood and screen. Other types are a miniature landaulet, a 28-36 h.p. landaulet and a 35 h.p. chassis.



Darracq lubricating system.



24-30 h.p. Albion, with limousine body

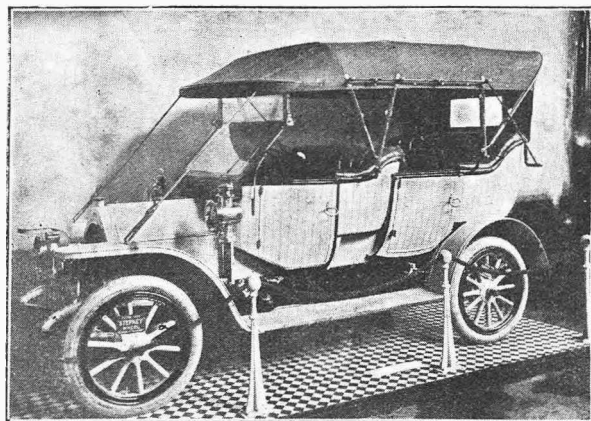
OLYMPIA SHOW—Contd.**Leon Bollee Cars.**

The exhibits consist of two chassis, one new 14 h.p. model and one 24-30 h.p. There are also three complete cars, two of which are fitted with landaulet bodies, one being a 24-30 h.p., and the other an 18-24 h.p. The third car is an 18 h.p. fitted with a cabriolet body. The 18 h.p. and 24 h.p. models are practically similar to last year's, with but two exceptions: the first is an alteration in the design of the water pump, which is now of the centrifugal type; the second alteration is a completely new back axle, which is noticeably different to the late type. It has a look of rigidity and stiffness that demands attention. We do not say this means weight, because the axle is neatly designed. The new 14 h.p. model differs in many ways from the original practice of this company. Although the cylinders are still cast in pairs, the valves are now all on one side, and the manner in which the carburetter is fitted enables the valve to be easily removed. The water-cooling system is on the thermo-syphon principle, and this is quite a new feature for this maker. The lubrication is forced, by means of a pump, through the hollow crankshaft to the connecting rod-ends. The engine has an unusually clean and neat appearance. The ignition is by means of a Bosch high-tension magneto, driven by skew gear through the camshaft. The power is transmitted through a leather-faced cone clutch. The gearbox gives three speeds forward and a reverse. The change-speed gear is actuated by a side lever worked in a quadrant, and the latter having ratchet teeth on both sides. The transmission from the gearbox is through a cardan shaft, with universal joints at each end, to a bevel type of differential gear.

Iris Cars.

Among the most carefully-designed chassis in the Show are undoubtedly the Iris models, exhibited by Iris Cars, Ltd., of 4, Marshall Street, Regent Street, W. Two chassis and two complete vehicles are shown together with several component parts of the 25 h.p. Iris car, and all the working parts of the engine and clutch of the 25 h.p. Iris, which has recently completed a road test over 2,000 miles (without stopping the engine), under the supervision of the R.A.C. The condition of these parts is excellent testimony to the excellent workmanship which is put into all this maker's cars.

The new model which is exhibited is a 15 h.p., with its four cylinders cast en bloc; unlike previous Iris cars, it has

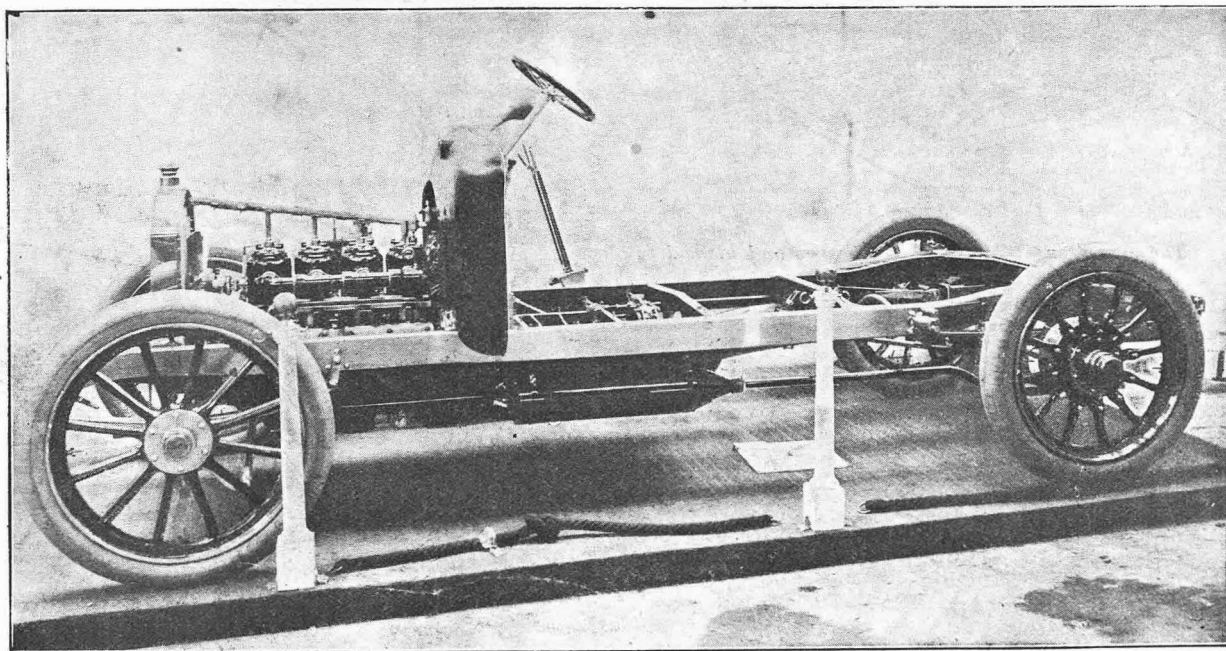


12-14 h.p. N.A.G. car.

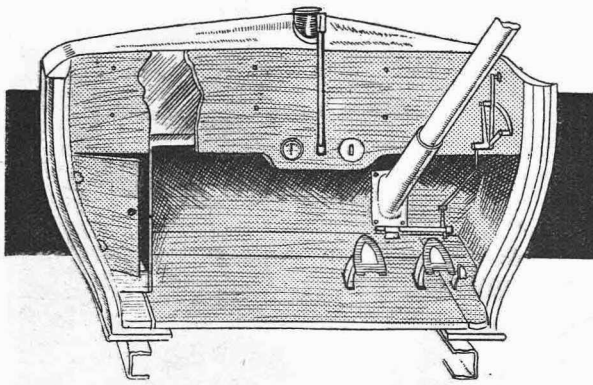
thermo-syphon cooling. All the valves are on one side of the engine, and the valve stems and springs are enclosed by two easily-removable aluminium covers. This chassis fairly bristles with really cleverly-designed details, and it is impossible, in the space at our command, to do justice in the way of a description. We would suggest, however, that every visitor to the Show should make a point of seeing for himself. The maker of the Iris car, we believe, was the first to fit such practical refinements as spring-shackle lubricators, and this was effected in a way that many other makers might, with advantage, take careful note. Unfortunately, the spring caps on many cars give one the impression of being the result of an after-thought, and look like being lost on the road the first time the car is taken out.

All the practical features that have existed in previous Iris models are embodied in the new light car, but, in addition, an arrangement is provided whereby clean cold air can be drawn into the cylinders if desired when coasting. In this car the air pressure to the fuel tank is maintained by means of a small reciprocating pump driven from the layshaft, in the gearbox.

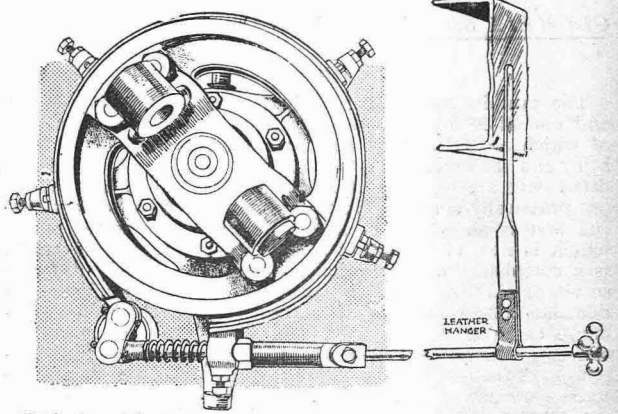
Of the two complete cars exhibited on this stand, one is a single landaulet on a 15 h.p. chassis, whilst the other is a very roomy double landaulet mounted on a chassis of 25 h.p.

**THE 18-24 H.P. AUSTIN CHASSIS.**

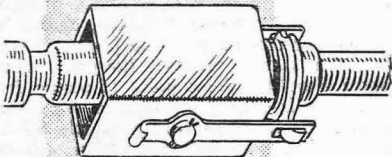
By an unfortunate error a 15 h.p. Austrian-Diamler chassis was described as a 15 h.p. Austin chassis in our issue of Tuesday last. We give above a photograph of the 18-24 h.p. Austin chassis taken on the stand at the Show.



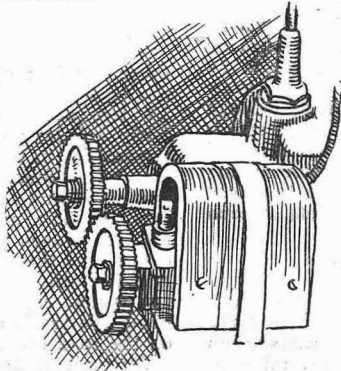
The Deasy dashboard, with petrol tank in upper part. The petrol gauge, oil circulation indicator, switch, and minimum throttle lever are fixed on the dash.



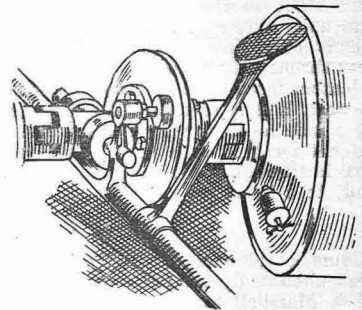
Daimler foot-brake adjustment brought to a convenient position outside the frame.



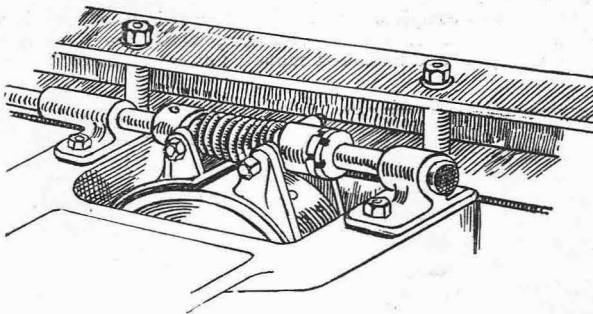
Spring coupling between clutch and gearbox on 10-12 h.p. De Dion.



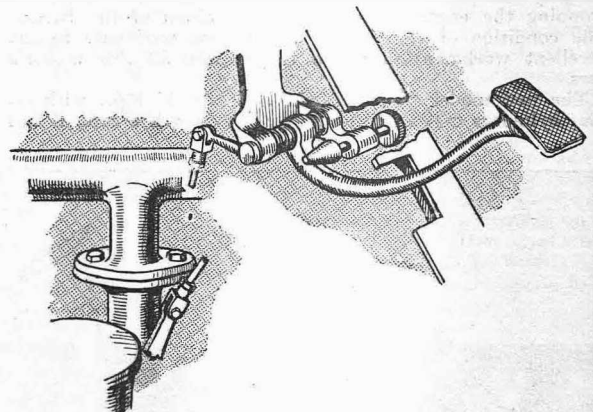
The magneto drive on the Sizaire-Naudin.



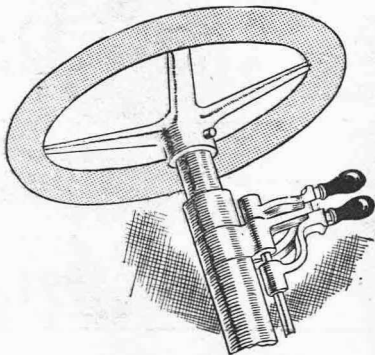
The clutch of the 12-18 h.p. Riley (an inverted cone) disengaged by the cams. The clutch brake is also shown.



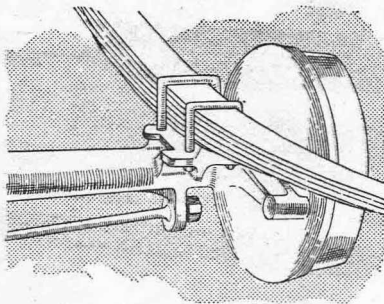
The Armstrong-Whitworth foot brakes and method of adjustment.



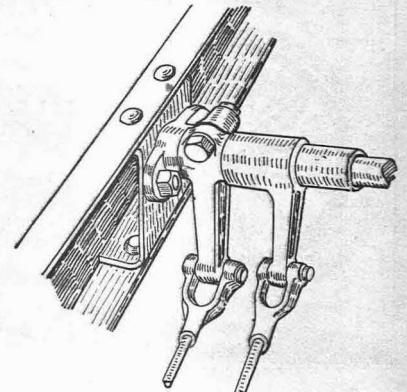
Minerva accelerator pedal.



The throttle and ignition levers on the 6 h.p. Rover car.

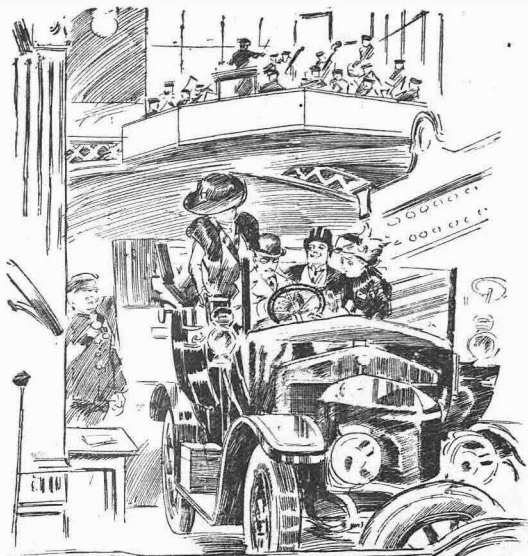


The back axle of the Vulcan cars with its spring pad, stay eye, and brake fulcrum in the one forging.

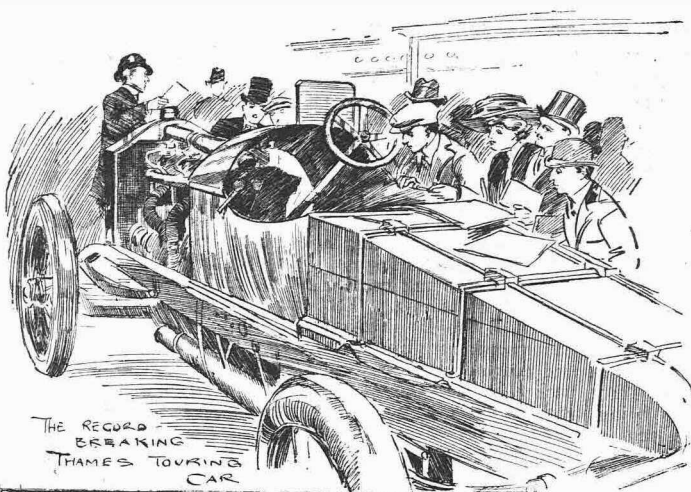


Box fittings on frame for carryshafts. Singer cars.

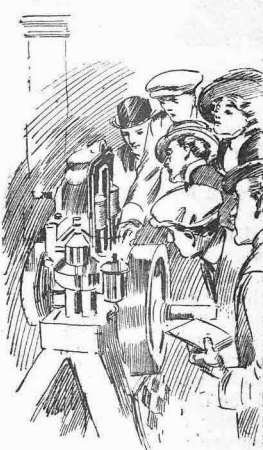
SOME INTERESTING FEATURES.



NEW MODELS
ATTRACT MANY TO THE DEASY STAND



THE RECORD -
BREAKING
THAMES TOURING
CAR



EVERY WORKING
MODEL
HAS ITS USUAL
AUDIENCE



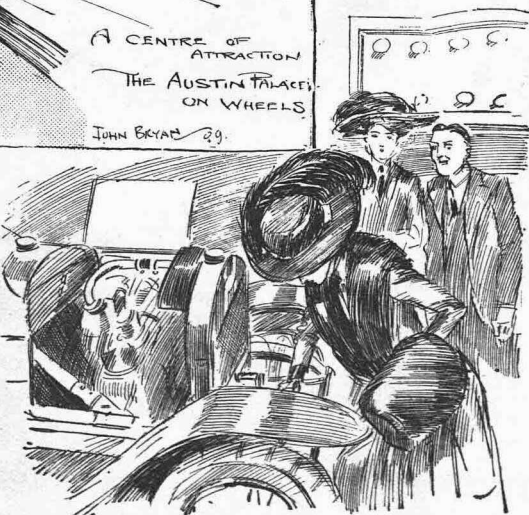
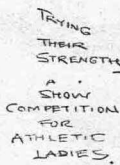
A CENTRE OF
ATTRACTION
THE AUSTIN PALACE
ON WHEELS.
JOHN BRYAN 29.



"THE RUSHMORE
GIANT
WALKS THROUGH
THE CROWD



A BREATH
FROM THE POLE BY THE
ARROL-JONNSTON
EXHIBITS



OLYMPIA SHOW—Contd.

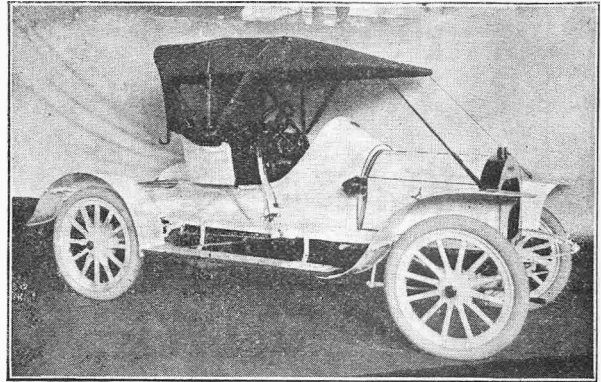
Enfield Cars.

The Enfield programme consists of three models, namely, the 10-12 h.p. two-cylinder car, the 16 h.p. four-cylinder car, and the 18-22 h.p. four-cylinder car. The 10-12 h.p. car consists of one of the two-cylinder units used in the 18-22 h.p. engine, magneto ignition alone being relied upon, and lubrication being forced. This car has a leather clutch and a three-speed gearbox. The 18-22 h.p. car has been improved by detail modifications; forced-feed lubrication has been introduced, and, whilst magneto ignition is relied upon solely, provision has been made for fitting a contact breaker, the timing of the ignition being variable. The frame has been altered, the engine now being carried on an underframe of channel-iron instead of tubing. The water pump is now driven off the end of the camshaft at the front end of the engine. The transmission is effected through a leather clutch, and a four-speed gearbox, the direct drive being on the third speed. The back axle has been strengthened, the differential case being made slightly stronger than before, whilst the steering gear and brakes have been improved.

The improvement to the foot brake, which is situated at the rear of the gearbox, consists of increasing the diameter and width of this drum. The shoes are ribbed and lined with fibre. They are bolted from a bell-crank lever, and a second short bell crank, which has its fulcrum attached to one brake shoe. In addition to a winged nut adjustment on the right between the two shoes, each of the short connecting rods is adjustable, so that there is any amount of room for taking up the wear of the fibre linings. A smart two-seated body is built on the 16 h.p. chassis. This body has a large scuttle dash, to the inside of which is fitted a petrol tank. The tank conforms to the contour of the dash, and is consequently arch shape. The circulation system is thermosiphon. The engine has four cylinders, 86 mm. diameter by 108 mm. stroke, the cylinders being cast in pairs with the valves on the near side. The Trier and Martin carburetter is fitted on the off-side of the engine, and the induction pipe is carried over the top of the cylinders. Four separate exhaust pipes lead into a first expansion chamber, and as these are swept well away from the valves, they do not impair accessibility. The method of lubricating the engine is by means of a vertical shaft driven by a skew gear, which in the ordinary way would drive the commutator from the top end. This shaft is continued downwards and operates an oil pump of the gear-wheel type; the pump sucks oil from the base of the crank chamber through a strainer and delivers it to a three-way connection screwed into the side of the crank chamber. From this connection three pipes are taken, one to each of the main bearings. These pipes are fitted right in to the bearings and force the oil between the shaft and the journal. The crankshaft is drilled down the webs, allowing the oil to flow to the big-end bearings, whence it is sprayed to the piston and gudgeon pins.

Benz Cars.

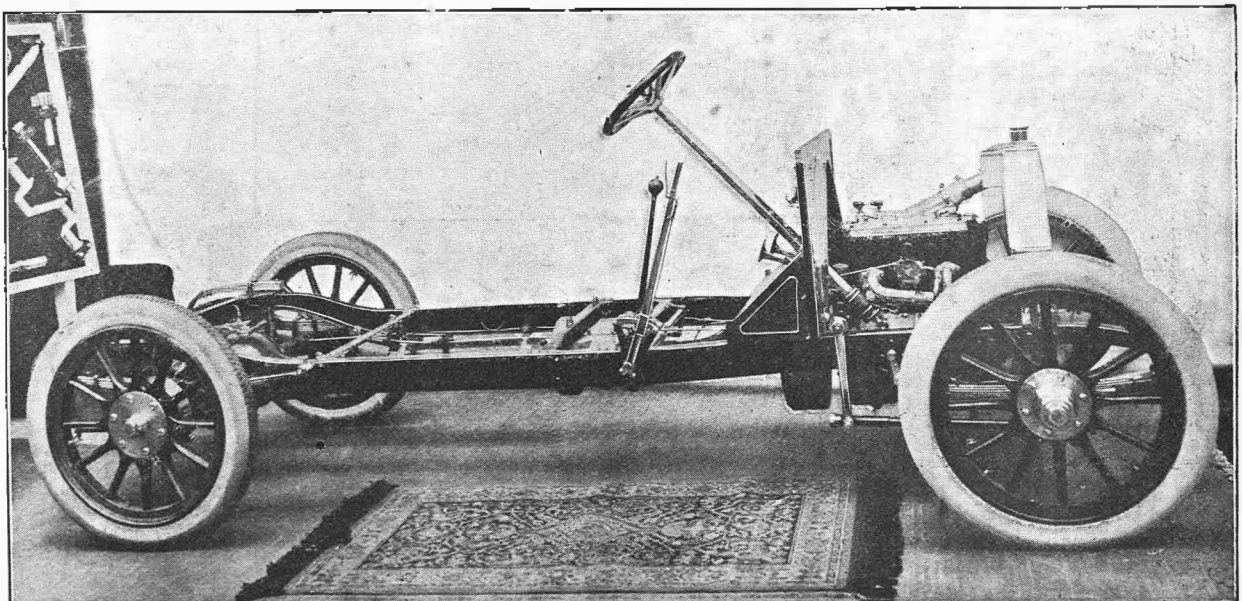
On the Benz cars there are some features which, though not novel, are seldom to be found on other present-day cars. The two sturdy water-cooled brakes on the chain countershaft are probably unique at the present day. In few cars also does one find, as in the Benz, that of two countershaft brakes each should be independently operated, though one is interconnected with the clutch. The dashboard is interesting. On the top there is a lever controlling the size of the carburetter jet by means of a needle. In front of the steering column there is a float tickler. On the near side one finds a screw-down grease cup, which serves the water pump at the front of the engine, the idea being that when it is placed



16 h.p. Enfield car.

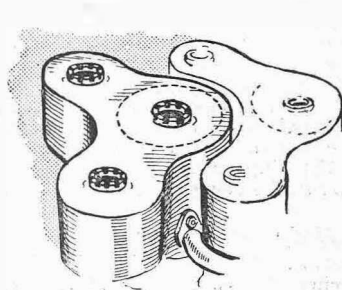
in such a prominent position this important lubricator will not be overlooked. As on many other high-class foreign cars, an exhaust cut-out is still fitted. On their stand the Benz firm is showing two specimens of its 18 h.p. model and two of its 40 h.p. type, one of the latter being a polished chassis, in which are to be found the general features of Benz design, for, in the main, all models are alike. There is, indeed, only the exception that on the 18 h.p. cars the engine has the valves all on one side, whereas on the bigger models the valve pockets are opposed.

High-tension ignition has now been adopted in place of the low tension, to which the Benz engineers were for so long attached. There is a mechanical lubricator from which oil is supplied by separate pumps to all the important parts. This mechanical lubricator is, in fact, really a system of forced feeds. On the 40 h.p. model, either live axle or chain transmission is furnished. Both are fitted with four-speed gear-boxes, with a direct drive on top in the case of the former.

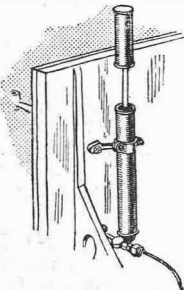


The 15 h.p. Iris chassis.

The leather cone clutch transmits the power to the gearbox through a telescopic shaft, two spring couplings being interposed between the clutch and gearbox. Although two rear-wheel brakes are fitted, in addition to the two water-cooled countershaft brakes, a double sprag is a standard fitment on these cars, and amongst other details that may be mentioned are the accessible hand adjustment for tightening the fan belt and the long underscreen which extends almost to the rear axle. A smart 18 h.p. side-entrance touring car, painted white with gold mouldings and upholstered in green leather, fitted with a leather cape hood and folding windscreen, forms a very attractive model on this stand. A somewhat similar



The shape of the Bentall engine, the valve chests being placed at an angle to secure compactness.



The air-pressure pump on the dash of Rolls-Royce cars.

40 h.p. car is also staged, but this has an ordinary Cape-cart hood, and is provided with a curved dash, but has no windscreen. There is also exhibited an 18 h.p. limousine.

Stella Motors.

The exhibits of the Stella Motor Co. consist of three complete models of a standard 20 h.p. car and a polished show chassis. The cylinders are cast in pairs 90 mm. by 120 mm., having the induction valves on the right and the exhaust valves on the left. The carburetter has two jets and an automatic air valve, operated by the engine suction, the throttle being controlled by hand or pedal. The cooling water is circulated by a very simply-designed centrifugal pump, driven by a small separate shaft fitted with two universal joints, off the exhaust camshaft. This pump can be dismantled by the removal of one nut, and the internal vanes drawn out. There are fitted facilities for two separate ignitions, but the standard is a low-tension Bosch magneto, and the ignition tappets so designed that they can be adjusted quite easily. The second ignition, which is practically an

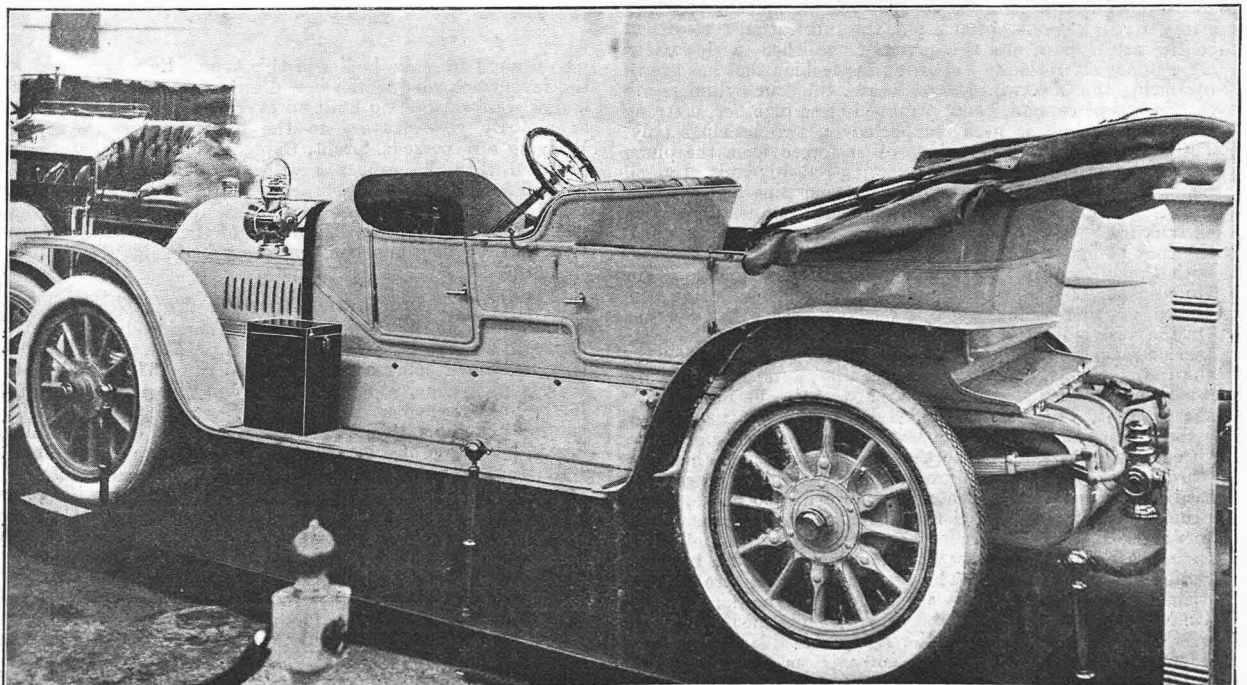
auxiliary, and also an extra, is fitted, with the exception of the coil and accumulators. The lubrication is by gravity feed from the dash and by splash from the crankcase, with a slight improvement that the oil is guided through channels to the various bearings. The drive passes to the gearbox through an external leather-faced cone clutch. The pressed steel inner member has the major circumferential face serrated by means of diagonal slots, which afford primary contact with the external cone. All brakes are of ample surface. The propeller shaft is carried in a case equipped with a special head, which serves as a torque member, the shaft having a well-designed encased universal joint at its forward end. The differential is of an exceptional size, the gearbox being fitted with rotary and separate thrust ball bearings on each side. There are also two rotary bearings and a thrust ball-race behind the pinion. The wheels are each fitted with double ball bearings, and the axle is free from all strains, excepting driving stress. The front and rear springs are semi-elliptical, the latter being fitted with swinging shackles.

The Phanomobile Cars.

This is a novel form of tri-car, which has been designed to carry passengers or goods up to 10 cwt. The motor and driving mechanism are carried about the front wheel and controlled by a tiller, the handle combining the double duties of steering and also operating the change-speed mechanism. An 8 h.p. two-cylinder V motor, air-cooled, is used, having a belt-driven fan attached to each cylinder. The final transmission to the front wheel is by roller chain. A jockey pinion is introduced to take up any backlash and the action of the spring forks. Two speeds are used, the gears being contained in the flywheel. This car, with a two-seated body, only weighs 4 cwt., and speeds up to 35 miles an hour can be attained. A four-seated body is also shown, the motor fitted to this pattern being of 10 h.p.

British Motobloc Syndicate.

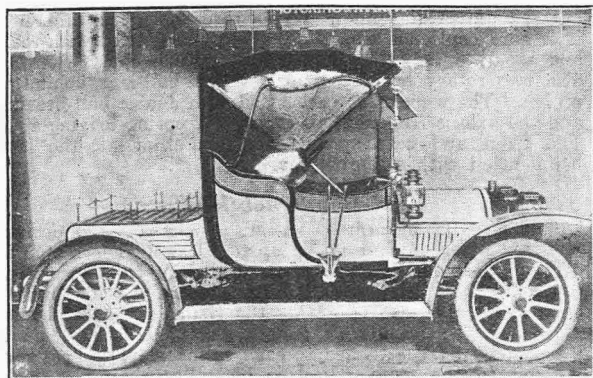
The British Motobloc Syndicate are showing three complete cars and one standard chassis of their 14-16 h.p. model. One car has a landaulet body fitted; another shows a four-seater touring body; and there is also a two-seater runabout. The engines have the cylinders cast in pairs, having a bore of 80 mm. and a stroke of 100 mm. The valves are actuated from the one side and by one camshaft. The inlet valves are placed in the cylinder heads, and are actuated by short levers and connecting tappet rods, the exhaust valves being placed in the usual position and directly operated. The camshaft is now so arranged that by removing two small studs in the side of the crank casing it can be drawn freely out of position. The induction pipe from the carburetter is led up between the two cylinders, and is coupled to either by a



The 40 h.p. Benz car.

OLYMPIA SHOW.—Contd.

flanged tee-piece. The cooling water is circulated by means of a single vane positive pump. The lubrication is through a sight-feed fitted on the dash, and is by splash from the crank-chamber. The carburetter now fitted has been considerably modified, the old piston valve being superseded by a butterfly valve for throttle control. The ignition is a high-tension Nilmeliore magneto, driven by means of a skew shaft off



20 h.p. Stella car.

front of crankshaft. The drive from the crankshaft is taken through a multiple disc clutch, which is housed in the gearbox, the crank-chamber casing and the gearbox casing being one casting. The primary shaft runs immediately below the secondary shaft, and the drive to the cardan is transmitted through a universal joint at both ends. The cardan shaft is solid and encased. The driving gear is the ordinary type of bevel pinion and crown wheel. The back axle has been increased in size and stiffness, and is formed by two cone tubes flanged at one end and riveted to cast differential axle box. The pedal actuates an external brake having two slippers, which are suspended from the transverse member at the rear of the gearbox. The side lever actuating the internal-expanding brakes on the two driving wheels through a compensating gear carried on the back axle.

Unic Cars.

Considerable improvements have been made in the 1910 Unic model of 12-14 h.p., which is shown by Messrs. Mann and Overton, of Commercial Road, Pimlico. A much larger and stronger rear axle has been fitted, the lubrication system and control are altered, and the governor abolished, with various other minor alterations. Following the fashion that has grown up during the last two or three years, the four cylinders are cast in one piece, and, being arranged close together, a strong hollow crankshaft is used, supported on two bearings only. Through this hollow crankshaft oil is forced from the pump to the main bearings and connecting-rod big-ends, the oil being then thrown out on to the gudgeon pins and cylinder walls. In front of the dashboard under the bonnet there is an oil tank from which the supply in the sump can be replenished, the cock being on the driver's side of the dashboard, together with the glass level gauge and pump pressure gauge. The Unic carburetter is used, the automatic air inlet being controlled, not by a spring, but by a dashpot filled with glycerine. On the near side of the engine is the shaft driving the high-tension magneto and the water pump. There is no fan behind the radiator, but vanes are fixed on the periphery of the fly-wheel, over which a guard is placed, to help the induction of the draught, which is also aided by the close-fitting underscreen. The clutch is of the leather-cone pattern and drives through a universal joint to the gearbox, in which three forward speeds and a reverse are provided by sliding gears. Immediately behind the gearbox is a powerful footbrake, to the drum of which is attached the sliding universal joint of the forward end of the propeller shaft. Three-quarter elliptical springs are used at the rear, the front ends being used both as radius and torque rods. The rear-wheel brakes are of large diameter, operated through a system of balanced rods. The Unic frame is swept in at the front and dropped behind the gearbox, and upswept over the rear axle, this design being adopted to provide as low an entrance as possible for the landaulet body. A peculiar arrangement is employed for the exhaust outlet, the fan-shaped end of the pipe being directed across the frame to the offside of the car.

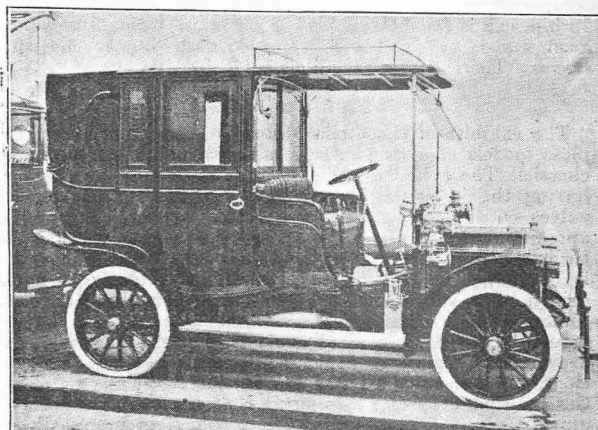
E28

Renault Cars.

The Renault exhibit is always attractive, by reason of the exquisite finish and typical French workmanship. The 10 h.p. and 18-25 h.p. models, being new introductions, are attracting general notice, and they certainly are very fine examples of light engineering work applied to motor construction. The former was originally designed as a 9 h.p. model, but so powerful proved the engine that it has been described as 10 h.p. The cylinders are cast en bloc, with a bore and stroke of 70 mm. by 110 mm. The cooling is, of course, thermosiphon, with the familiar type of dashboard radiator. A flywheel fan assists cooling, the clutch is of the usual type of inverse cone, with tongues formed on the inner member, to give an easy engagement. The control pedals are of the push-down variety, and the clutch-withdrawal mechanism, with stirrup and cam projections, is particularly neat, giving as straight a pull on the thrust ring as could be possible. A three-speed gearbox is employed, and a triangulated rod with spring mountings at its forward end conveys the torque from axle to frame. The new 18-25 h.p. model has six cylinders, cast in threes, the bore and stroke being 80 mm. by 120 mm.

Torpedo Body Originator

In view of the large number of "torpedo" bodies shown at Olympia, it is deserving of record that the real and sole originator of this increasingly popular type of body is Capt. Theo Masui. The design was registered last year, and Capt. Masui proposed to issue licences to coach-builders



12-14 h.p. Unic car.

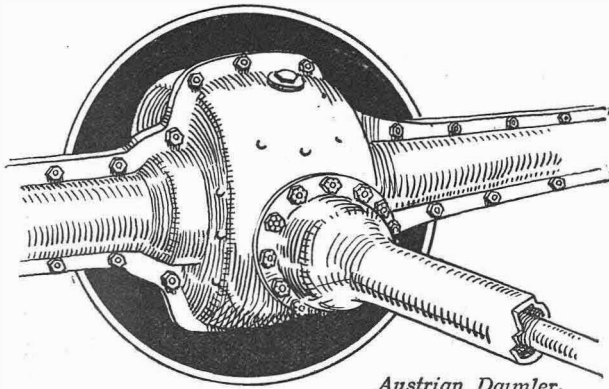
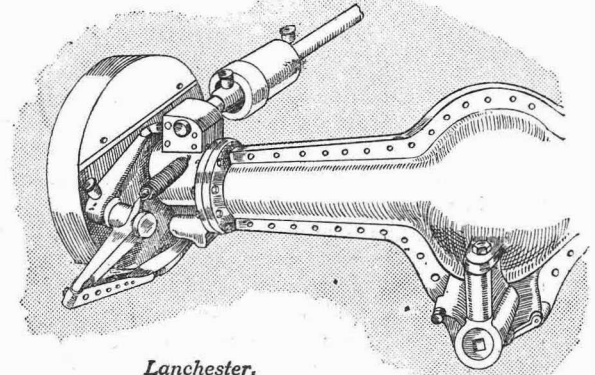
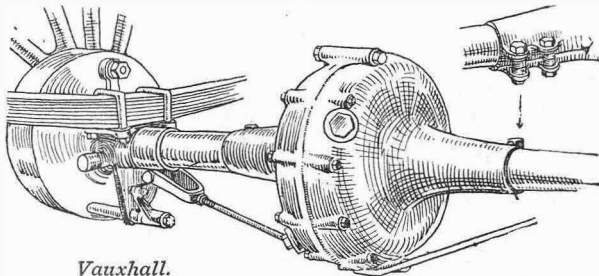
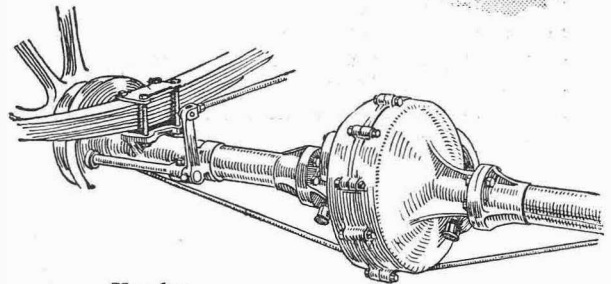
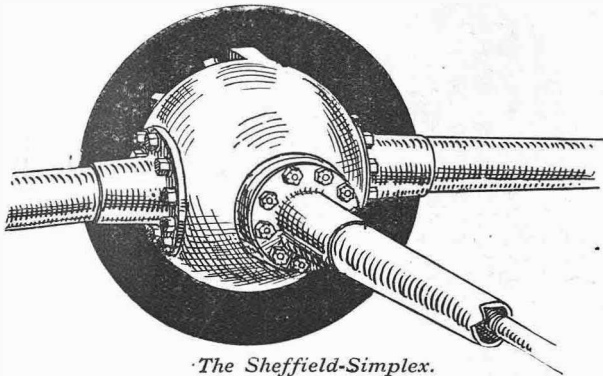
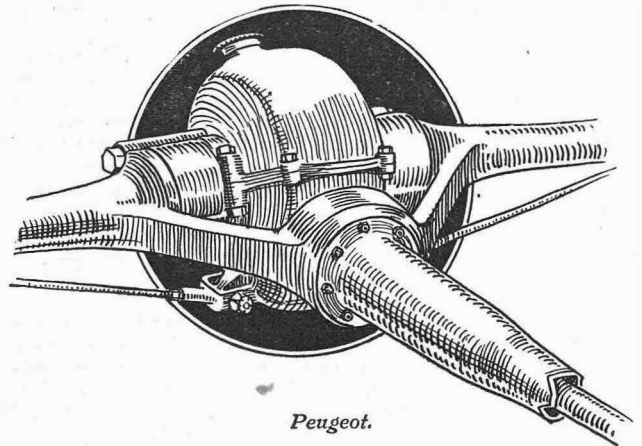
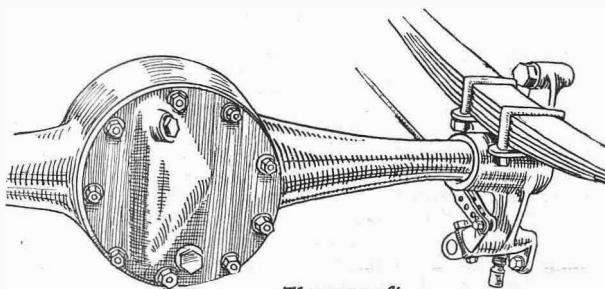
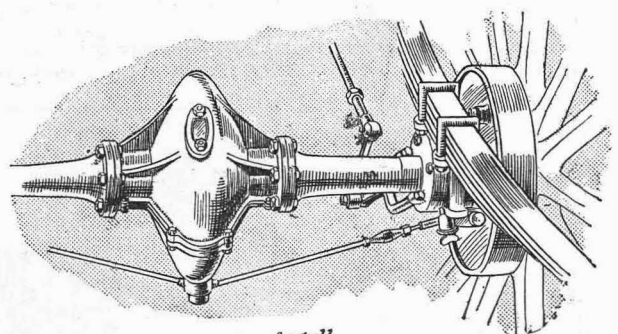
who desired to make bodies of this type. So widespread was the favour accorded to the new design, however, that torpedo bodies were soon being built on every hand, without so much as a "By your leave" to the originator of the design. Waiving any personal profit, Capt. Masui made the sporting proposal that the guinea royalty on each body should be handed over to the Cycle and Motor Trades Benevolent Fund. One might be pardoned for thinking that this scheme would considerably swell the funds of the benevolent association, but, so far, only one sportsman has paid.

A New American Make on British Lines

Exhibiting at the Stanley Show are the Mitchell Motor Car Co. with a range of three cars, a 24 h.p., 30 h.p., and 50 h.p., the last-named being a six-cylindered car. The Mitchell factory is at Racine, Wisc., U.S.A., and showrooms have just lately been opened at 20, Conduit Street, London, W. The cars, although made in America, are designed on British lines. The specification of each car reads well, but we shall be better able to form an opinion upon them when we have seen the cars. The prices are quoted for the cars complete with lamps, jack, horn, full tool equipment and stanchions for a Cape cart hood. The 24 h.p. three-seater sells at £235, the 30 h.p., with five-seated body, at £335, and the 50 h.p., with seven-seated body, at £450.

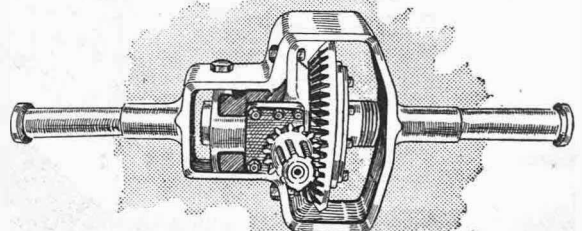
No. 2 of "Motor Cycling"

will be on sale next Monday morning with a fully illustrated report of the motor-cycle exhibits at the Stanley Show.

*Austrian Daimler.**Lanchester.**Vauxhall.**Humber.**The Sheffield-Simplex.**Peugeot.**Thornycroft.**Argyll.*

Comparisons of Styles and Methods: No. 2.—Back Axles.

The Austrian Daimler axle is in two sections of pressed steel bolted together, the torque tube forming the tail-shaft housing. The Maudslay is made from a solid steel bar cut in the middle and drifted to shape, the ends of the bar then being drilled through. The differential case of the Sheffield-Simplex axle is of aluminium, nearly spherical. The Humber type is very prevalent, the differential case being split vertically, and the centre pieces being malleable castings shrunk and riveted to the steel tubes. The Peugeot axle has two arms connecting the side sleeves to the front of the case. The joint in the case is at an angle. In the Vauxhall axle the steel tubes are clamped to the main casing. The Thornycroft is a steel forging, with a front cover of steel. The Argyll, again, is a typical example, the case this time being split horizontally. The Lanchester is another example of a longitudinally-jointed axle, with the well-known worm drive.

*Maudslay.*

Modern Methods of Lubricating Engines.

BY CYCLOMOT.

ADVANCE in motorcar construction and in all the subsidiary functions of motor mechanism has been continuous from Levassor's day, but no advance has been more rapid than that recently made in engine lubrication methods.

Two years ago blue smoke invariably followed in the wake of the average motorcar, and last season's cars were not entirely free from the defect, but, of the majority of the 1910 cars, it is almost safe to prophesy that smoking under any conditions will be a rare circumstance.

It has always been a favourite contention of mine that the simple method of doing anything is the most difficult to devise: that it only requires mediocrity in inventive capacity to design a complicated contrivance. Genius alone is able to arrive at the same result quickly by simple means—to recognize the straight road instead of following the devious course.

And all the difficulties of effective lubrication would seem to have been overcome by simple means, arrived at by a gradual abandonment of the complicated methods that had to be tried before the straight course was discovered.

The two methods of engine lubrication that have come into vogue in the past few months are, first, the trough system and, second, the mode of feeding by pump through a drilled crankshaft.

The trough system was really introduced a year ago by the Wolseley Co. on Wolseley-Siddeley cars, being described in *The Motor* of 27th October, 1908. In this system, four troughs (to take a four-cylinder engine) are cast, in some manner or form, across the lower part of the base chamber, below the paths of the big ends of the connecting rods and at a certain distance above the bottom of the base chamber, according to the quantity of oil which it is desired to carry in the sump. These troughs are fed constantly with oil, and their lips are machined to a certain level so that a definite quantity of oil shall be retained in each.

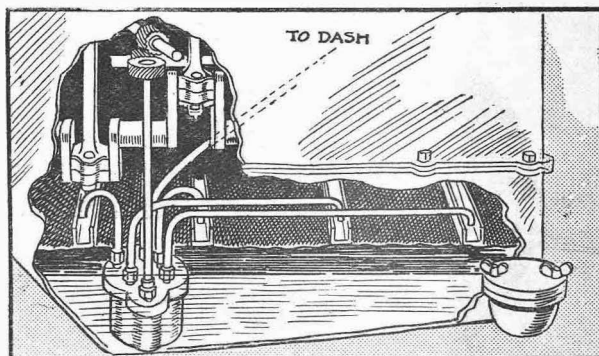
On the under face of the cap of the big-end bearing is a scoop which dips into the oil in the trough and conveys it through an orifice in the cap to oil-ways cut in the white metal lining to the bearing. The system was patented by the Wolseley Co., yet a number of makers have adopted it for the forthcoming season, and I have, in consequence, heard one or two remarks, from people who do not know all the facts, about "infringement" and "copying."

But the explanation is simple: like many other clever devices and methods, the idea is now public property, be-

cause it had been patented and used before the Wolseley Co. devised and used it, the patentee, however, never completing his patent, for some reason or other. Thus, although the idea of using definite-level troughs was original with the Wolseley Co., they have no exclusive right to its use and, therefore, other concerns are absolutely within their rights in adopting it on their own engines.

One concern which has adopted troughs has hesitated to arrange to feed by pump direct into the troughs, instead spraying the oil on to the big-ends as they rotate, so that, so far as the cars are concerned, the troughs are not put to their proper use. So far as my information goes (and I confess that I have not conducted a Patent Office search) there is no cause for this hesitation.

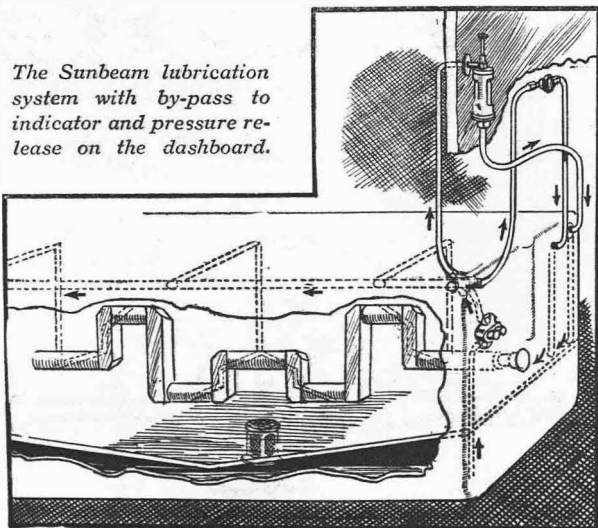
The old method of pouring oil into the lower half of the base chamber and allowing the big-ends to splash through it, thereby lubricating the bearings, the crankshaft journals and the cylinder walls was always too indefinite. It was difficult to gauge the right level, and even impossible to obtain it, because the required level would alter with each alteration in engine speed, rising as the engine speed rose and the oil became spread over the walls and parts of the crankcase, and falling as the engine speed fell and the oil drained down into the base. When an engine is



The lubrication system of the Daimler engines, the pump distributing the oil to the troughs. Dealt with in Tuesday's "Motor."

running, it is probable that one half of the oil is spread over the walls of the crankcase, the cylinder walls, the bearing blocks, and all the moving parts, whilst the other half has drained down and is available for the big-ends to splash through, and then it may be at the right depth. But, when an engine has been standing quiet for some hours, the whole of the oil will have drained into the base, and the big-ends, instead of dipping into, say, a quarter of an inch of oil, will dip perhaps into half an inch, and the consequence will be an excess of oil on the cylinder walls, a smoking exhaust being the result, until the oil has been set in motion and one half of it put constantly out of use by being spread over the interior of the engine. And baffle plates below the pistons will not correct the fault, because the size of the orifice obviously is determined by the quantity of oil required on the walls when the engine is running.

Now, the trough system provides a constant level at all times, and does it in so simple a manner that one wonders it was not thought of before. The level in the troughs is right for high crankshaft speed and also for low-speed, and there can be no excess when first starting up. And, as the scoop feeds the oil under pressure to the big-end bearings, the second advantage is obtained of the lubrication of these bearings being ample. The splash being constant, the amount that reaches the cylinder walls is always constant, so that the system gives all the required advantages, and all that is required is that the feed to the troughs shall be regular and ample: and this is easily effected by the pump. The only point that seems to

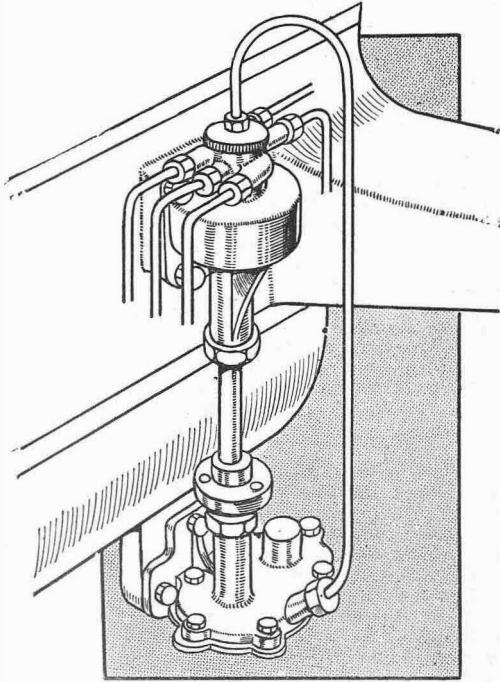


The Sunbeam lubrication system with by-pass to indicator and pressure release on the dashboard.

METHODS OF LUBRICATING ENGINES.—Contd.

require nicety of design is the scoop. The mouth of this must be of the right area and the lips must be sharp, or the oil will be pushed along instead of being scooped in.

On quite a number of 1910 cars the trough system has been adopted, and in only one case have I any criticism



Oil pump and distributor on the Minerva (Knight system) engine.

to offer. The troughs on the engine in question, instead of being deep (say half an inch) and having vertical walls, take the form of elliptical dishes with sloping sides, and I fancy that, when the car travels fast, or negotiates a rising or falling gradient, or rolls about on a rough road, the oil in the dishes will run out and, for some revolutions, the engine may run deprived of its oil supply.

The second form of lubrication that is being employed

is quite good, but it is not quite so definite as the trough system, because the quantity of oil in use at a given moment depends upon the power of the pump, and that must vary with engine speed. The oil is fed by pressure to oil-ways that convey the oil to the crankshaft journals. Some of the oil will squirt out at the ends of the journals and the rest will enter the passages drilled through the shaft, the webs and the crank-pins, whence it emerges into the oil-ways cut in the linings of the bearings, squirting out at the ends of the bearings on to the cylinder walls. A certain amount of smoking may have to be dealt with when this system is employed, and this can be done by means of a by-pass by which the pressure of oil can be varied.

It will be seen, from this brief explanation, that, at last, it is possible to secure definite and regular lubrication under varying conditions of engine speed and with an absence of smoking. And, as the outcome of the discovery of the simple means, the lubricating system can be effected at a fraction of the cost that the old complicated systems entailed.

Auto-bumpers.

It is curious to note how differently constructional devices are estimated in different countries. As a case in point it will be remembered that, some years ago, Mr. F. R. Simms patented and produced a projecting arm or buffer, which was supposed to protect both the car and the person or object collided with, in case of collision. I never saw any of these devices in use on the road, and it only made its appearance, I believe, at one show, where it met with more ridicule than support. But it would appear as if the idea embodied is much more favourably received on the other side of the Atlantic, for a somewhat similar device, known by the rather expressive term of "auto-bumper," has been steadily advertised there for a couple of years past. Further than this, the firm advertising it have recently met with competition in this line and have met and defeated their opponents in the Law Courts and are now advertising the obtaining of a permanent injunction. Firms do not go on for years advertising articles which do not attract the public and they do not, as a rule, fight cases for infringement in the Law Courts, if the trade done in the articles in question is not sufficient to justify the expenditure, so that, as indicated above, it would appear that this somewhat quaint device is appreciated to a considerable extent there, whilst it has received very little support over here. H.S.

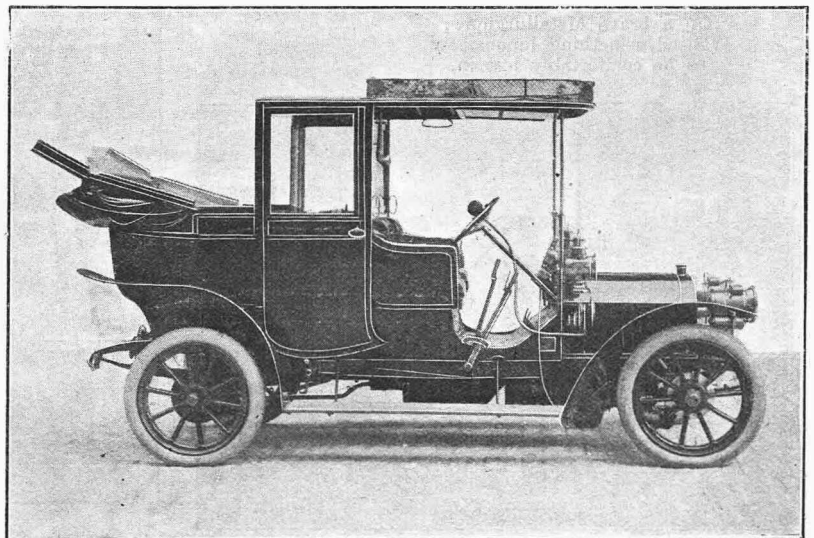
Where Mercedes Models May Be Seen.

Messrs. Milnes-Daimler, though not exhibiting at Olympia, are making a special show of their new models, and receiving visitors at their London depot, 221, Tottenham Court Road, W. Here the famous Mercedes models are displayed in a fine showroom. The appended photograph is that of a 15-20 h.p. Mercedes landaulet supplied by Milnes-Daimler, Ltd., 221, Tottenham Court Road, London, W.C. The special feature of the chassis is that it enables a very comfortable landaulet body to be fitted on. The rear of the body provides ample accommodation for three passengers, and two occasional flap seats are arranged behind the driver's seat, thus a total accommodation of seven seats is provided. The chassis is fitted with a four-cylinder engine and a leather cone type of clutch. It will be noted that there is useful luggage space on the canopy.

A very prompt settlement of an insurance claim in connection with a recent taxi smash has just been brought to our notice. Within a few hours of the claim being made an inspection took place, the damage was assessed, and a cheque for the full indemnity under the

damage section of the policy was paid. The transaction was carried through by Mr. Harold Townend, the insurance expert of 23, St. Swithin's Lane, E.C.

When the King of Portugal drives a car, He resembles a hardy annual
Read by motorists near and far—
Because he's a Motor Manoel.



The 15-20 h.p. Mercedes landaulet.

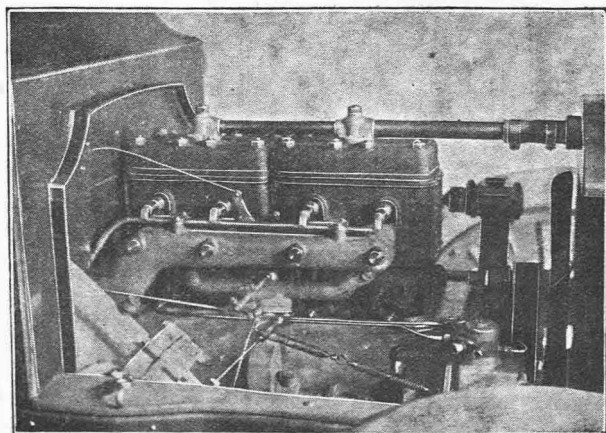
Olympic Dust ; or Gerundive Attraction.

TO Olympia resplending
 I had wandered, apprehending
 Nothing serious, intending
 Just a glance around or so :
 So I went with footsteps wending
 To the gallery, where, lending
 Light refreshment to the Show
 Old Bibendum was bibending.
 And I watched him as he leant
 Sometimes ponderously pensive,
 Then anon with ribs extensive
 He bibended and bibent
 Till I grew quite apprehensive.
 Still I gazed with fascination
 At each re- and de-inflation
 Of his stormy-petrol chest,
 Till at last in desperation
 At each hiccoughed trepidation
 I decided it were best
 To depart and take a rest ;
 And he waved a salutation
 As to speed the parting guest.
 But—and here you'll murmur, "Rot!"
 Or, "Decomposition!" merely—
 When I tried to leave that spot,
 I discovered I could not
 Get away. Although severely
 Did I struggle, I was clearly
 Mesmerized, was it, or what?
 With his weird, hypnotic passes
 He had fixed me, *a la* Bodie,
 And the glamour of his glasses
 In the socket of his eye.
 And the tip of his cigar
 Locomotion seemed to bar,
 And I tried to turn and fly,
 (Unsuccessfully) like Cody.

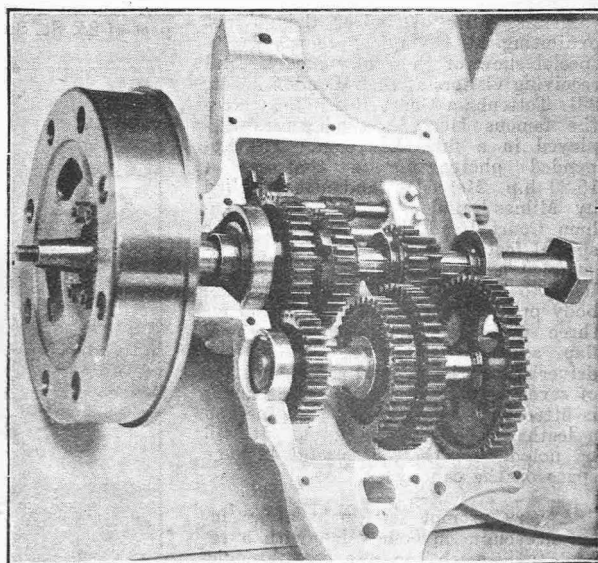
But I couldn't get away
 From Bibendum and his brother—
 Were there two of him that day?
 Earthly twins, as one might say?
 Second sight? Kind reader, stay
 By my side! It seemed his brother
 Punctured chuckles tried to smother
 As he smole at my dismay.
 All the gallery was wagging.
 Things were sparking, buzzing, hissing ;
 Palmer-cording being spun,
 British rubber never flagging ;
 And I knew that I was missing
 All the glory and the fun.
 O! I wanted something solid,
 Less pneumatic, so to speak,
 Like Pelissier, potted-Pollied
 On a brave Metallurgique ;
 Wanted something limousine-y
 To be comfortably lost in,

Like the tiny teeny-weeny
 Three-roomed villa shown by Austin.
 For a drink of pure Thames liquid
 From the sixty-gallon tank
 Of the "Feed the Brute!" a quick quid
 I would furnish from my bank,
 Though my means are *moderato*.
 I would willingly be scored
 By a bombshell *obligato*—
 What relief it would ad-Ford!
 I was missing all the Show.
 I was missing all the pretty
 Daimler Knight-Lights—and, you know,
 All the Price's—What a witty
 Lot of things I could have said,
 And what puns could have perpended.
 Had I not been so misled,
 So unhappily Bibended!
 I was missing all the Jams
 And the Rajahs so improper
 In their Lanchesters, lined cham-
 Mois, with wings of beaten copper.
 And I missed the modern wonder
 Through my big, bibendum blunder
 Of a Napier standing still
 On a very little hill—
 Or a pimple, or a pimplex.
 And I missed the Sheffield-Simplex
 With its aluminium wide-board
 Like a wedding-present great—
 Yes, I missed that piece of plate,
 So it isn't on my sideboard.
 And I missed the Straker-Squire
 With its shower-bath lubrication.
 And I couldn't be a buyer
 Of the friction-drive gyration,
 Or a Valveless, Roller, Royce, Rover, Thornycroft
 or Humber,
 Renault, Hotchkiss, Arrol-Shackleton, Stan-Talbot,
 Vaux-et-Vin-all,
 Nor a little Express Messenger with catalogues en-
 cumber
 Till the weight of what I didn't want had warped
 his column spinal.
 But this isn't half the list
 Of Olympian joys I missed—
 To say nothing of my train.—A moral ending
 Can be easily supplied
 On the carburetter side
 Of this fantasy.—It's "Don't get caught
 Bibending!"

FRED GILLETT.



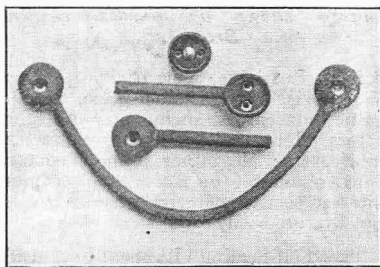
Cooper piston valve engine dealt with in Tuesday's "Motor."
 £34



The gear box of the 16 h.p. Adams car, showing its compact-
 ness, the size of the teeth and the size of the footbrake.

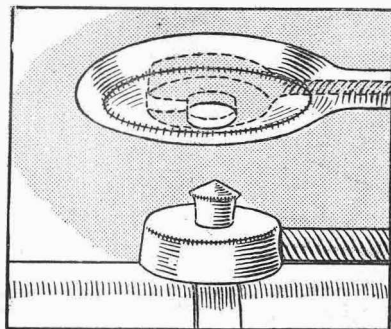
SOME ACCESSORY EXHIBITS.

Messrs. Peto and Radford are making a feature of the dynamo electric lighting system, which has taken such a large part in new car accessories, and added so much to the convenience of motorists of late. They are showing a small dynamo, weighing about 22 lb., fitted up with their standard cut-in and cut-out device, and so arranged as to be fitted to one or two sets of accumulators; and a feature is that it can be run charging one set of



The "Rubber Seal" connection, single and double wire circuits, introduced by Peto and Radford.

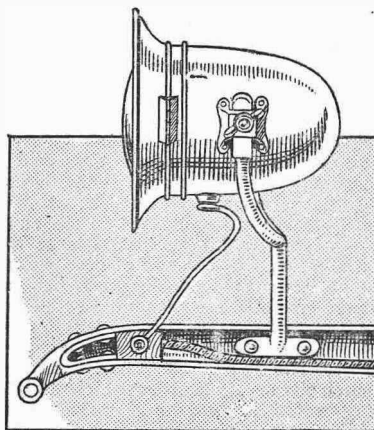
accumulators whilst the other set is discharging. The dynamo works as follows: Fixed to the shaft is a friction clutch with an ordinary centrifugal governor. Also a bushing, on which the pulley runs, is fastened to the shaft. When the machine is started up the clutch grips the pulley, and the armature is turned with the clutch until a certain speed is reached, which speed can be predetermined by means of an adjustment fitted



The "Rubber Seal" connection. The current is brought to the insulated stud, and the connection has its wire lead imbedded in rubber, and can be sprung on and off the stud.

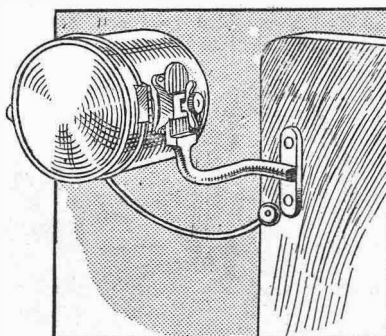
to the governor. If, after a time, the engine accelerates, the clutch is automatically taken off, and allows the pulley to slip. Thus the speed of the armature remains practically constant through a very wide range of speed of the engine, and the rate of cutting the lines of force is kept constant—thus, the volts remain constant, the whole being arranged with great simplicity.

Another feature of this is the dust-tight casing, which is made of iron, which does not carry any of the magnetic circuit. It is claimed for this machine that no overheating ensues. The machine is fitted with ball bearings, has automatic greasers under the bearings at either end,



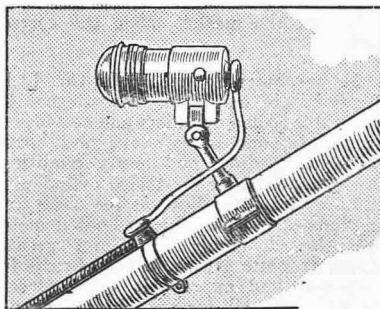
"Rubber Seal" connection to head lamp.

the brush springs are of coppered steel, and are rendered self-lubricating. In the type as now sold there is a dust-proof brass cap, which entirely takes off, thus



"Rubber Seal" connection to side lamp.

obviating any difficulty which might be experienced with a hinged case. There is also an arrangement of friction drive (from the flywheel) in case the user should not wish to use the belt drive. On the other hand, a chain drive can also be supplied. Hence it is able to adapt itself to any of those arrangements. The maximum output of the dynamo is about 6 amp. at from 10 to 12 volts, but the usual running output required is 4 amp. to 5 amp. Practically speaking, the volt-



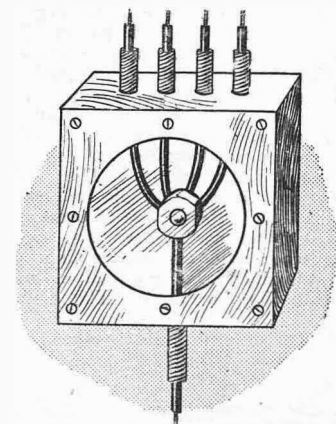
"Rubber Seal" connection to dash lamp.

age remains constant also, in so far that when the current is increased, the volts, instead of dropping, remain the same. The switchboard is fitted with volt and ampere meters. In the centre there is a plug and socket for use with the inspection lamp, and on either side of these are flush cut switches with button arrangement. Moreover, a button switch is inserted on the centre of the switchboard to enable one to obtain the pressure reading. There is also shown an electric vulcanizer, to run off the main, which has an automatic cut-in and cut-out, which keeps the heat of the vulcanizer constant. It is claimed that it is distinctly economical in current, the amount of energy taken being from one to two units. It heats up in from four to five minutes, and can be left for as long as necessary with scarcely any attention at all.

A new type of this apparatus has an arrangement by means of which four air tubes can be vulcanized at one time.

The "Rubber Seal" connectors just introduced by the company are fully illustrated in all their modes of application, and they not only simplify the connections between the lamps and the studs brought to convenient places on the car, but are waterproof and are very readily slipped on and off.

A further novelty is a small meter for registering the strength of magneto machine magnets. It is simply a small dial with aluminium pointer controlled by a hair spring; the instrument, being placed between the poles of the magnet, is turned round slowly, the pointer being pulled round with it until a certain point is reached, when it will be let go; and the point at which it is thus released will give the reading proportionate to the strength of the magnets, and thus it can easily be seen if these magnets require remagnetizing or no.

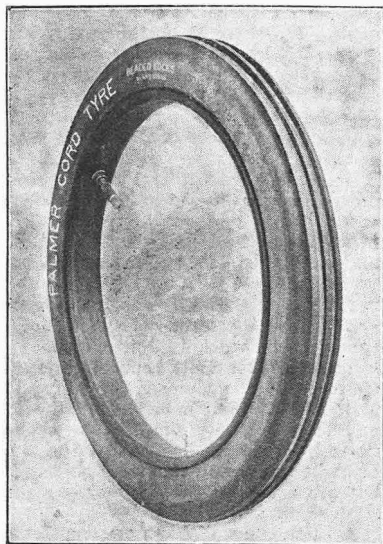


The P. & R. joint box: the main lead entering below, and any required number of branch leads being distributed from centre stud.

The Palmer Tyre, Ltd., are exhibiting a new Palmer cord light car tyre, in which all the special features of strength and durability of the cord construction are retained; at the same time this new tyre is so flexible that it can even be fitted without the use of tyre levers. Although the makers do not claim this as one of its advantages, it is certainly much easier to manipulate than any

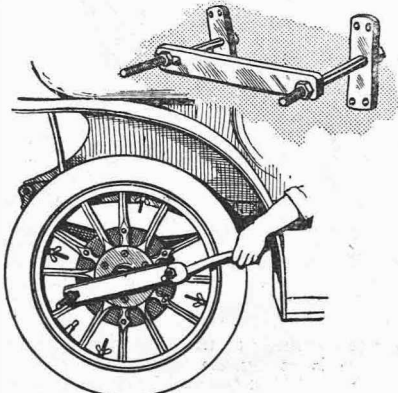
ACCESSORIES.—Contd.

canvas-lined tyre, and as far as comfort is concerned, the degree of luxury experienced in riding has never been excelled by any pneumatic tyre. The difference between this new make and the old one is the placing of the cords. The cords are now placed very much closer together; in fact, the number of loops of



The Palmer cord tyre.

cord in a 90 mm. tyre is increased by about 40 per cent., so that while each individual cord is smaller than in the old type of small-car tyre, the strength is maintained by reason of the greater number of cords per inch. The Palmer cord light-car tyre has the standard three-ribbed tread, but for these new tyres the ribs are deeper and wider in section than previously, the result being an increased mileage of, roughly, 30 per cent. as compared with the old type of 90 mm., 100 mm. and 105 mm. The whole range of Palmer cord tyres with ribbed tread and metal studs is shown, including the comparatively new 7 in. (175 mm.) cover, which is claimed to be economical in the long run as well as exceedingly comfortable. The Palmer Deflation Alarm, a simple and reliable device that indicates loss of pressure before a tyre has become quite deflated and while the car is running. The alarm is given by a very loud and unmistakable clapping noise. The device is



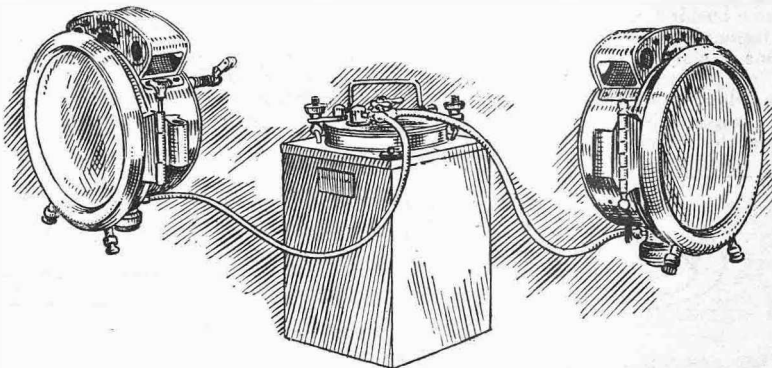
The "Orno" wheel extractor shown by G. T. Riches and Co.

E33

not rendered inoperative by mud and dust. The ingenious Palmer cord-laying machine which created such interest at last year's exhibition is working daily. Notwithstanding the abnormal cost of raw rubber, and the increase in prices of motor tyres generally, the prices of Palmer covers and the quality, too, remain the same as hitherto.

G. T. Riches and Co., Ltd., 19, Store Street, Tottenham Court Road, show, in addition to the specialities described in last issue, the Mira electric horn, having an electric motor, with strikers attached to flywheel, which is fixed to the shaft. These strikers hit against a large diaphragm, causing a sound of good volume to be heard at a considerable distance. There are to be seen several new electric switches of the "push-and-pull" type, of various colours to match car upholstery. There are, also, roof lamps to match these. A cheap but efficient eight-day watch in brass and nickel is exhibited, and flower-holders form a new feature of this company's goods.

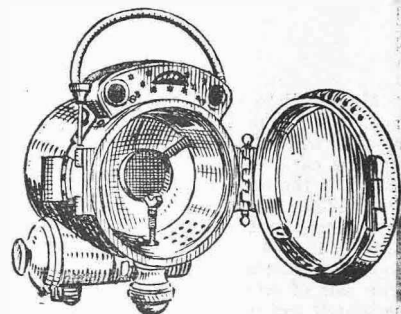
Messrs. David Moseley and Sons, Ltd., Manchester, are showing detachable motor tyres, the non-skid sanded pattern of which has been completely altered. The studs are now riveted through a band, which is superimposed on the cover, thus doing away with the liability of the studs pulling out and cutting the inner tube. The firm have abandoned making a moulded tyre and have reverted to a flexible casing over which is



Autoclipse lamp set with separate generator, shown by Messrs. Brown Bros., Ltd., Great Eastern Street.

superimposed a separately covered tread. It has been found in practice that this method of manufacture results in greater durability. In the plain tyres for 1910, a selection of which are shown, a new quality of tread rubber is being used, for the better resistance of small stones and flints. The tough grey rubber tubes shown are moulded to avoid nipping, these, it is claimed, being the only tubes on the market made the correct shape.

Messrs. Stern Sonneborn Oil Co., Ltd., London, are exhibiting Motosternol oil for water-cooled cylinders and bearings of motorcars, omnibuses, vans and boats, in light, medium and heavy qualities; Autosternol A. for air-cooled cylinders of motorcycles, gearline oil for axles and gearboxes, ordinary heavy-bodied motor oil, electric motor oil, motor grease, Fram graphite grease, belting bricks for motorcar and motorcycle belts, Occentoline 800F. oil for superheated steam, Coolericid for cooling the hottest bearing, Clutcholine for use on metal or leather clutches, elastic gearing paste, metal



New Autoclipse self-contained headlamp shown by Messrs. Brown Bros., Ltd.

polish, Rusticide, Ferruticide, burning oil, lubricating oil, dust-proof Stauffer motor lubricators, spring pressure lubricators, light make D type and spring lubricators; altogether a most comprehensive exhibit of more than ordinary interest to the motorist who wishes his car to run easily and wear well.

The Self-Sealing Rubber Co., Ltd., Birmingham, have an exhibit of Hermetic special non-skid rubber tread motor tyres, as well as steel-studded non-skid and ordinary tyres. Hermetic best quality motor air tubes, patent frictionless security bolts, Hermetic special repair bands and tyre gaiters and special rubber patches for quick repairs to motor air tubes are other goods on show.

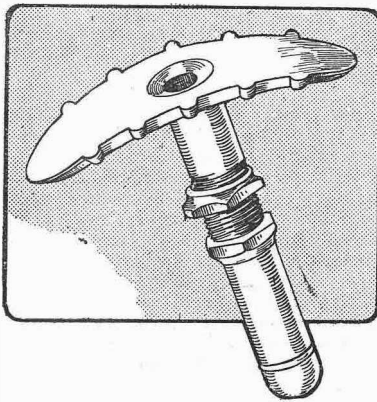
Messrs. H. M. Hobson and Son, Ltd., are showing the "Pogon" plugs on their stand, and a feature is that the magneto two-point plug is the same price as the ordinary accumulator type. Another detail of interest is the ebonite high-tension terminals, which merely require placing on top of the plug to ensure connection. These are too well known to require further description. They have a "Bougie" switch, by which means it is possible to discover instantly which of one's cylinders is misfiring without any risk of short-circuiting the magneto or coil.

An Outside Exhibit.

The Gas Lighting Improvement Co., Ltd., proprietors of Carburine and Glico motor spirit and Glico lubricating oil, have, unfortunately, not been able to obtain space in the Olympia buildings for the Motor Show, but they have taken temporary offices at 11, Hammersmith Road, West Kensington, W., is within two minutes walk of the main entrance to the exhibition, where they will be glad to meet their friends.

ACCESSORIES.—Contd.

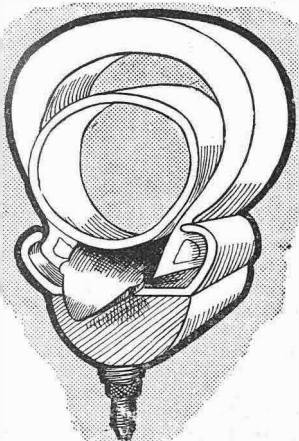
For heavy limousines the Michelin Co have a wheel which takes two tyres side by side, which are mounted on detachable rims. These twin tyres are not only more comfortable to ride on, but also wear longer, and are cheaper to run than a single big tyre. For heavy, fast cars a patent bolt valve has been



Hobson's tyre clamp.

introduced by the Michelin Co., and this renders security bolts superfluous, since it acts perfectly in holding the inner tube by itself. With this bolt valve the inner tube can be put into the cover, and the two mounted on the wheel in one operation.

The High Tension Company show a very interesting novelty, viz., the "Mira" electric horn, which is made in two sizes. The principle is as follows:—A small motor has attached to it a fly-wheel to which are fixed diametrically two pieces of hardened steel (such as a link of a cycle chain). When the current is switched on to the motor it is driven

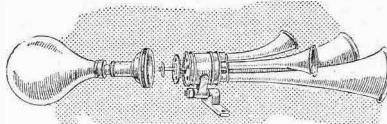


Hobson's tyre clamp in position.

round, and with it revolves the flywheel, which is keyed to it, as thus are also the small strikers; these, as they revolve, strike against a steel diaphragm, which vibrates loudly, and it may certainly be said that the effect would be to clear the road instantly, as the makers claim for it. Both sizes of horn can be operated with either four, six or eight volts, and the current consumption is extremely low (from about 1 to 1½ amperes). There are very few working parts, and the instrument is unaffected

by dust or wet, and another point in its favour is that it is made in London. It is sold with electric push and two yards of flexible cord complete for instant attachment. Another feature of this stand is a high-tension coil which can be used on either two-volt, four-volt or six-volt circuit with equally good results, and no damage can accrue to the coil on the higher voltage named.

Messrs. Godin are showing several electric horns of their well-known pattern, which has already been upon the market for over a year; but they have added to their ordinary shape of horn the long shape which can be fitted to the wing of the mudguard. A point about the construction in these is the absence of exterior terminals, which should obviate any trouble which has often been caused by such adjustment. There is also an electric siren, operated by a small motor directly connected to the siren vanes. This is fitted with a very neat arrangement of electro-magnetic brake, which is so arranged that, when the button is pressed, the brake is released and allows the motor to work rapidly straight away; but as soon as the circuit is broken the brake is automatically put on, and thus cessation



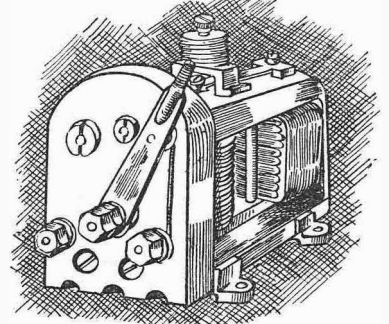
Godin four-tone horn, showing the diaphragm, which in being sucked back when the pressure on the bulb is released, makes a quarter turn and thus exposes each horn in turn to the air pressure.

occurs. Another very important exhibit is the Godin coach horn, which has as its main feature a totally-enclosed structure, and thus the working parts, which usually are on the outside of the instrument, are far less liable to become disarranged. There are four holes inside the top of this horn which lead directly to the four reeds of the four horns. Above these holes is fitted a patent device, which is worked as follows:—There are two sets of indented circular teeth, and to these is fitted a small plunger with a small projecting piece engaging in the teeth. When the bulb returns to its normal position, it draws up the small plunger by the suction of air, and opens a hole opposite one of the horns, hence, on next pressing the bulb, that particular horn is sounded. When, however, the bulb again returns, this plunger is again lifted, and, by means of the teeth above the hole, is turned round into the next position, so that another horn is sounded on the succeeding stroke of the bulb.

There are on show 50 models of Ducellier lamps of all types, head, side and tail. Among the new features to be noted is a new acetylene generator. The new carbide is placed in a cage-like device, at the bottom of which is a sieve arrangement of moderately large mesh, whereby the disused carbide can fall to the bottom. In the centre there is a perforated tube, through which the water runs in the usual way, so that, when the generator is finished with, one still has the unused carbide ready for use again without any further trouble.

The generator is rectilinear in shape, and has a closing device consisting of two side rods, which clamp the top of the generator to the bottom, and thus obviates any leakage of gas.

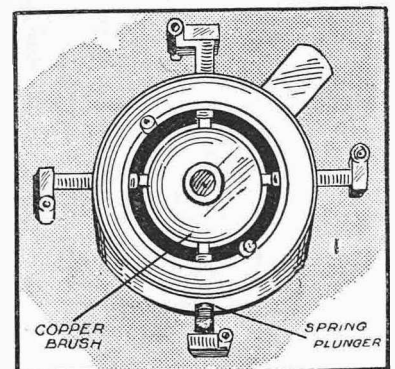
Trier and Martin show the well-known T. and M. carburetter, which remains unaltered, with its multiple jet, single-lever control, and simplicity of design. To demonstrate the method of fitting, a model is shown mounted on a board with



Trier and Martin's easy starter with cover removed.

a complete carburetter, induction pipes, and control. An excellent little device is shown for the first time in the shape of an easy starter, for use with the magneto. The coil is small, the casing being but a few inches in height, and only some inch and a half to two inches in diameter. No alteration to the existing magneto installation need be made; there are no H.T. leads in the apparatus, and as the spark is obtained at the break of the magneto contact, instead of at the make, as is usual, the timing is the same whether the easy starter and accumulator is used or the magneto. Certainly such a device, moderate in price as it is, is well worth installing to avoid any handle grinding. The other specialities of Trier and Martin make—distributors, contact breakers, lubricators, etc.—are, of course, on view.

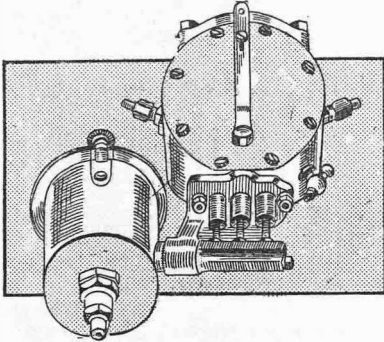
Messrs. Prested are specializing in accumulator car-lighting sets. The accumulators for these are enclosed in a neat teak case, with drop front and a cover, to which are fixed the terminals. The sizes made are large and various. Another feature is the new Prested coil, consisting of two trembler units, with a two-way switch, so that, should either one or other of them become temporarily disarranged (due to trembler sticking or other cause), the other can be immediately switched on. On either side the



Prested contact breaker.

ACCESSORIES.—Contd.

terminals are fixed, and the whole apparatus is rendered interchangeable. Moreover, the coil is enclosed in quite a compact case. The platinum screw has a lock-nut of an improved type. The lock-nut screws on to a split cone, and the platinum screw, in turn, screws inside this cone; hence, when the lock-nut has to be turned, it does not loosen the screw at all, as used to be the case in the



H.P. carburettor. Prested—Three-quarter view from under.

old pattern. The Prested plug is shown as before, and still retains its popularity. Also a new distributor is being exhibited, which has a copper-gauze brush, regulated with a spring, which presses against the revolving cam, which, in turn, is earthed, and thus ensures a perfect contact throughout. The terminals are easy of withdrawal, being arranged so as to be pulled out, and no screws are employed in these.

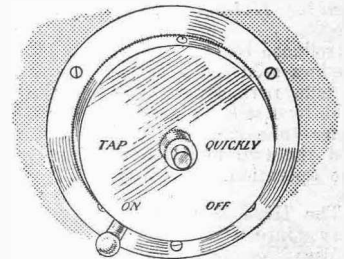
Messrs. Prested have on their stand, besides their apparatus already described, the "H.P." carburettor, the chief features claimed being the positive action and the arrangement of multiple jets and choke tubes, together with a pure air inlet at the side, which is used for scavenging when the gas is cut off. The cover of the float chamber is easily detachable by means of hinged bolts, and the carburettor is neatly made and finished. The simplicity with which it can be tuned up is much in its favour. It is also very economical in working.

A combined exhaust cut-out and whistle is also shown, made in brass and giving a variation of eight notes, any of which may be used at the operator's pleasure. There are two levers fitted. By pulling one the whistle is brought into action, and by means of the other the "cut-out" is brought into play. A feature to be noted in these is that it is fixed to the "live" side of the exhaust, and it follows that when the whistle is in operation the back pressure is considerably reduced. The fact also of operating the exhaust ensures that all soot is dispelled, and thus the reeds are automatically cleaned.

In addition to their usual range of pneumatic tyres, the Gaulois Co. is showing a system of pneumatic suspension which is designed to permit the use of solid tyres. The system is known as the Amans, and for its attachment to any car no alteration whatever is required to the chassis, as may be seen from inspection of a car fitted with this system on the Italia stand in Olympia main hall. The system demands the addition to the four car springs of an apparatus which at first sight resembles a large shock absorber, and this is really what the apparatus is, but in a very refined form. A ball-jointed lever in a housing attached to the spring controls the motion of two opposed air pistons in the main body of the device. When the spring rises as the wheel encounters obstructions on the road, one of the pistons compresses air in the front of its cylinder; behind that piston a partial vacuum is formed to remove, which air is admitted through a ball valve. As the spring tends to return, the recoil of the piston is cushioned by the compression of the air behind it, and, as this compression rises above the pressure in the front of the piston, which is simultaneously being reduced, air passes from the back to the front past a leather cup washer of the hydraulic ram pattern. Whilst these operations are occurring in one piston they have been taking place in a converse fashion in the other piston; that is to say, whilst the pressure is rising in front of the first piston which was considered, it is falling in front of the other piston, and being raised behind it; so that for every movement of the spring a double air cushioning effect is obtained. If the operations are closely studied, it will be

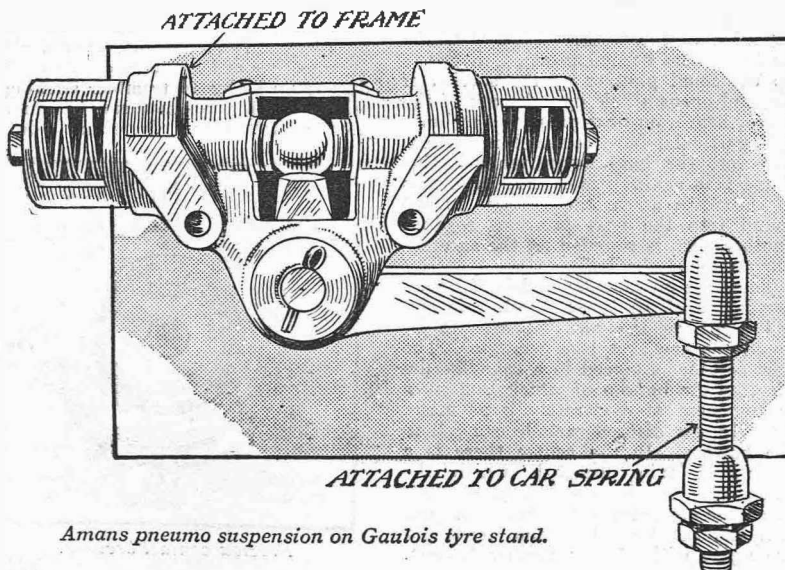
gathered that, even if any air leak occurs anywhere, it makes no difference to the efficiency of the apparatus, owing to the introduction of air through the ball valves. The solid tyre used in conjunction with this system has the same section as the ordinary pneumatic tyre, but with this difference, that the section is full. It is pressed over an ordinary rim, and held by three rod sections, which, on being drawn down by bolts inserted through the holes ordinarily used for security bolts, cause the bottom of the tyre to be expanded hard into the lips of the rim.

Simms Magneto Co. are showing, as a leading feature, their switch-starter, by means of which the car can be started from the driver's seat without the use of any exterior coil. The switch is worked as follows:—A four-volt cell is placed in series with the switch and with the primary of the double-wound armature, and, on breaking the low-tension circuit, a high-tension current is produced in the secondary of the armature, and this will at once automatically fire whichever of the cylinders is full of charge on the firing stroke. The whole arrangement is



Simms's magneto switch-starter.

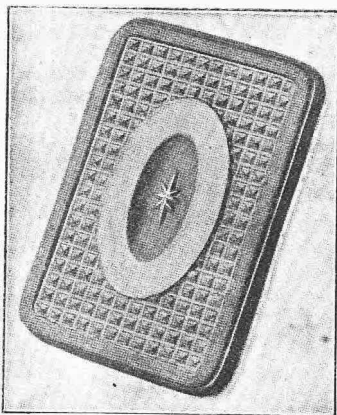
extremely simple, and, it is claimed, is less liable to get out of order than any other self-starting device. The appearance of Messrs. Simms's new S.U. 1 and S.U. 2 magnetos should also have particular attention paid to them. In these types the contact breaker is of new design, the former fibre rollers being replaced by a steel ring, with recesses cut out of it to give the make-and-break. This type of contact breaker also appears in the new S.U. 4 type, and is ready to take a switch starter in this latter type. The S.U. 4 has a simplified design of a distributor and high-tension conductor bar, which has enabled all this "U" class to be produced more cheaply than the former corresponding types. The firm also have a recent type machine on exhibition which has been lightened some 30 per cent. by the substitution of magnesium in place of standard gunmetal fittings. A six-cylinder magneto of this type weighs 12 lb. only. Simms's special magneto plugs are also in evidence. A special feature is made in the construction of all Messrs. Simms's apparatus, in that, in the grinding-down, parts shall be as accurate as possible, even to the one-thousandth part of an inch. An entirely new type of magneto is S.M. 1, which is a ball-bearing type, doing the same duty as the previous plain-bearing machine, and useful for motorcycle and similar work, due to the fact of it being a special high-speed machine. Another feature of interest is a papier-mâché magneto cover, which is entirely oil- and water-proof, the only projections from which are the terminals, the timing lever and the drive, which must necessarily be exposed.



Amans pneumo suspension on Gaulois tyre stand.

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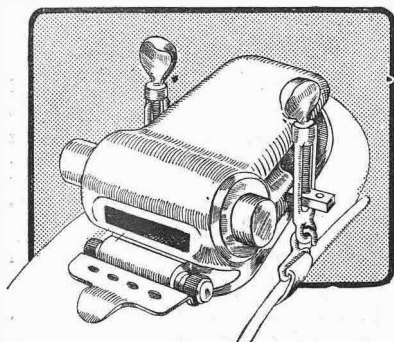
On Stand 188, Berliet Motors show sheet steel chain cases for motors in large variety. Their La Grippe motor pedal cover is neat and easily fixed to a step of any size. Their automatic lock-



La Grippe motor pedal cover.

nut is ingenious, depending on the action of a coiled spring, which will only operate freely in one direction, and is easily freed when required by the insertion of a nail or piece of wire into the head of the nut.

Messrs. J. Lacoste have several interesting features. Among them may be mentioned their Serisol terminals. They are instantly detachable, but, at the same time, ensure absolute contact. The material they employ (Lacostiso) is used

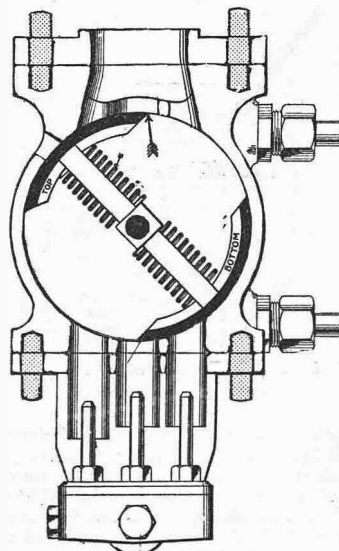


Lacoste automatic vulcanizer.

largely for other apparatus. It is claimed that it is a very high insulator, having a resistance equal to, or better than, the best vulcanite or ebonite. Any shape or size insulating bases, etc., can be immediately moulded and fitted to the remaining parts of the apparatus, without employing any tool upon the moulding as it is turned out, which will save considerably in the cost of production. Among the instruments shown made from this material were electric pushes and other similar apparatus, which were very neat in design, and would contribute to the beauty of any car to which they were fitted, besides being very lasting under wear and tear. Messrs. Lacoste's contact breakers are too well-known to require any lengthy description, but in this year's type the centrepiece has an alternative arrangement, by means of which the roller spring can be screwed so that the roller can be turned either clockwise or counter-clockwise.

The Self-sealing Rubber Co., Ltd.—Of the range of tyres made by the Self-sealing Rubber Co., Ltd., round and square-treaded and steel-studded, the two former types being either plain or grooved, there is one which is particularly interesting because it seems to afford a measure of relief to the strains on the wheels of the tyre. Right round the centre of the tread there is a groove which, together with the transverse grooves, affords space for displacement of the rubber as it is distorted under load when running. For filling up holes in tyres this firm supplies a tyre stopping known under the name of Hermetic. It is made up in squeezed tubes, or in perhaps a rather better form in sticks. In the latter case it is applied to the tyre with the aid of a hot iron. This firm's security bolt affords a safeguard against the nipping of the inner tubes. The head of the bolt is covered with waterproof material, and for the bedding of the inner tube there is a small pneumatic pad.

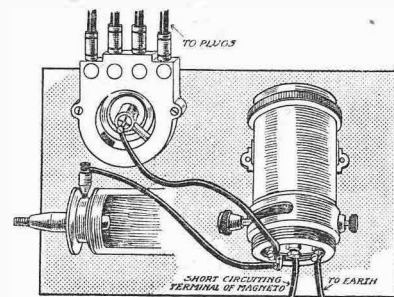
W. J. Harvey, Ltd.—The chief attraction here is the R.V. speed indicator made under Frodsham's patents, at prices ranging from 3 guineas for the plain speedometer up to 12 guineas, which model includes a maximum recorder and trip mechanism. The flexible driving shaft is of very neat and strong design, while backlash is reduced to a minimum. The drive can be attached to either the road wheel or cardan shaft. A fine show of electric lamps is staged. The "all-British" electric projector is shown in various sizes to suit all types of cars. The chief point about this is that the lamp is entirely weather and air-proof, thus rendering any cleaning or polishing inside quite unnecessary. In the recent trials held by the R.A.C. the results obtained from this projector, entered by C. H. Gentry, were exceedingly good, and the range of beam, as stated in the report, attained a length of 189 ft. Another feature which will appeal to motorists is the possibility for having these lamps enamelled to match the colour of the car. A dynamo set is also shown which can be carried on the step of the car. It has only one moving part, and the machine can be run at variable speeds without affecting the light.



SECTION OF No. 1 Type 3 B.H.P. CARBURETTOR.
(JUGGING & PARKER PATENTS)

Section of No. 1 type 3 B.H.P. carburettor—Prested.

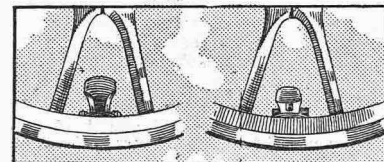
Nilmelior (England), Albert Place, Tottenham Court Road, London, W.C., show the following:—Their ordinary type of high-tension magneto is fitted with self-starter, working from the dashboard with the accumulator. It consists of a small coil with a special switch, so arranged that by moving over the switch-lever, the coil is brought into action from the accumulator, and, by pressing the starting knob at the side, the spark occurs in



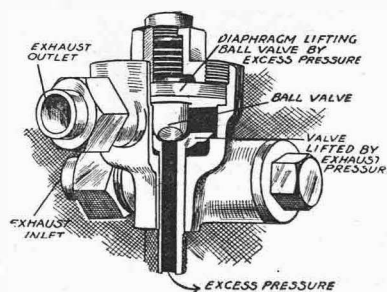
Nilmelior dual ignition with contact starting device.

the cylinder which is on its firing stroke, and, at the same moment, the switch of the self-starter is thrown back on to the magneto contacts, and then the machine continues running on the magneto. The dual ignition should be seen. A coil such as last described is fixed on the dash, and has a switch handle at the base, worked by hand instead of automatically, as in the last case. A special new magneto, of very light construction, for purposes where a light weight is a great consideration, is also on show. The carbons, of square type, are strongly constructed, so as to stand great wear and tear. They are also very easy to dismantle, examine and replace, being merely fitted with a split pin. A six-cylinder high-tension machine is also on show of the ordinary type. A new contact breaker is also provided on the trembler coils—it is pivoted in the centre, for which it is claimed a very much higher speed is obtained and a very regular spark.

Insulating wires and cables and sparking plugs are shown by E. Walker and Co. in a great variety of sizes. Excellent flexibles, twin and single, are a feature.



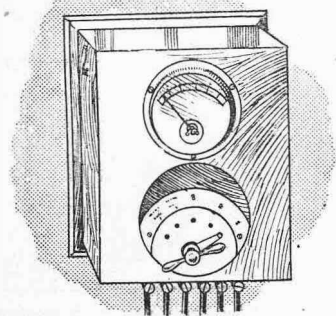
*Closed. Open.
Clincher detachable rim bolts.*



"Enots" pressure regulating valve, shown by Benton and Stone.

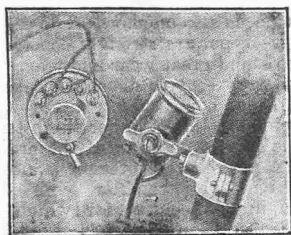
ACCESSORIES.—Contd.

C. A. Vandervell and Co., of Acton Vale, W., make a speciality of electric lighting, the dynamo being made under the Leitner patent. The distinctive features of the latest model, which is made in three sizes at present, are:—The armature—the only moveable part, and



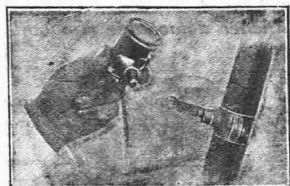
C.A.V. switchboard for lighting.

an absence of anything in the shape of a centrifugal governor or moveable resistance, or other parts which are liable to get out of order. The whole is enclosed in a dustproof, malleable, cast-iron case, which is fitted with brass inspection covers. The system comprises dynamo, cut-in and cut-out auto switch, switchboard and battery, it being en-



Vandervell's combined steering pillar lamp, tail light indicator, and inspection lamp.

tirely automatic in working. The armature runs on ball-bearings. The carbons are easily taken out (being fitted to small brass holders) and replaced by the mere releasing of a set-screw at the side. The headlights are finished in either brass or nickel, and take metal filament lamps, which are held in special anti-vibratory lamp holders. There is a new type of

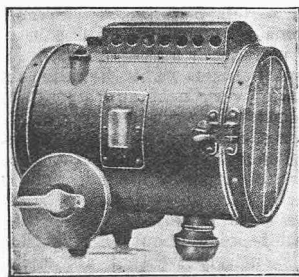


C.A.V. lamp, detached for use as an inspection lamp.

Ruthardt magneto, which is fitted with dual ignition arrangement, and which is very light for its power and very efficient. The dual contact breaker has two contacts, one each for coil and for mag-

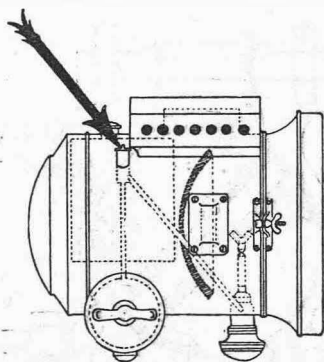
neto. There are also special side lamps and tail lamps, which attention should be drawn to. It should also not be forgotten that the C.A.V. tell-tale lamp is a great advantage to motorists. Should the back lamp filament break and the light be extinguished, and the circuit be broken, the tell-tale lamp is immediately lighted automatically.

Dunhill and Co., the well-known specialists in motor accessories, have a large display. Among the electrical accessories shown is the Adnil horn, which gives a very pleasing but penetrating note. The whole is extremely well made, and the switch is watertight and the flex cord is braided. They have on show also a Testaphone horn, which, as is now well known, gives the notes of the French cavalry bugle. There are shown some mascots for fitting to the front of the car. These are made in brass and oxydized silver, but can be made in solid silver to order if necessary. Again the Agabeg electric recording speedometer is shown. A star wheel is attached with a



Dunhill's Dreadnought headlight.

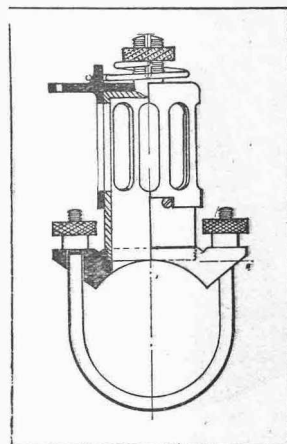
spindle worm inside the switch casing in mesh with a toothed star wheel which makes one revolution every mile, and also makes an electric contact at the end of every mile thereby closing the circuit of the electro-magnet in the speedometer casing, causing a small armature to be pulled down, and, as the armature has a needle attached to it, punctures a hole on a card. The number of teeth re-



Dunhill's Dreadnought lamp, showing construction.

quired in the switch wheel will depend upon the diameter of the road wheel, on which is attached the worm that rotates the star wheel. The weight is about 45 lb., and the device should prove a useful addition to any car. One of the features of this stand are the new self-contained Dreadnought acetylene headlights of Dunhill's own manufacture. An arrangement is also fitted which con-

sists of concentric strips of metal by means of which glare is almost entirely obviated. There is also on show a very large number of motor garments, and among these is a very cheap line of ladies' tweed fur-lined overcoats with fur



Bailey's air scavenging valve.

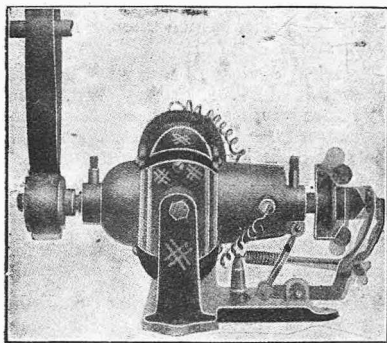
collars. Every equipment is also made for aviation, which in these days should prove of use to those engaged in this form of sport. In addition to these fur-lined coats, a variety of rugs are shown.

The K.T. Syndicate, Ltd., London, are showing on Stand 283 the K.T. pneumatic tyre, fitted to wheels, and capable of bearing from 10 to 30 cwt., using either double studs or the recently-improved single row. Samples of rubber treads which have been in continuous wear are also on view, as well as various types and sizes of rims and rubber studs, showing how they are fixed to wheels under compression. An untired K.T. artillery wheel, to show the endless, weldless bonding rim, which, it is claimed, locks the felloes so as to make a dropped or broken felloe impossible, and also shows the improved method of keying the spokes and the centre of the wheel, is another exhibit here, and there are also on view wheels fitted with K.T. tyres which have been lent by a user after thousands of miles have been travelled with them in different countries and on all kinds of roads.

Harvey Frost and Co. are showing a novel form of vulcanizer for vulcanizing solid tyres such as those used on motor-buses or other commercial vehicles. The generator forms a separate unit and is portable. From this a flexible metallic steam-conducting tube is led to the vulcanizer, which is fixed to the wheel by means of a special clamp to the part being repaired. The new vulcanizing materials are arranged in three grades, which take varying periods to vulcanize. Thus the rubber in the deepest recesses of the cut can be thoroughly vulcanized without any fear of vulcanizing the outer parts of the tyre, and thus prolonging the life of that particular part to a much greater extent than was formerly the case. A novelty is an outfit for repairing by vulcanization the Cape cart hoods of motorcars. The outfit is being sold at the very moderate price of 6s. Harvey Frost and Co. are also showing an auxiliary outfit for the repairing of studded tyres to be used in conjunction with any of their vulcanizers. This again is an extremely cheap and useful outfit.

ACCESSORIES.—Contd.

Messrs. Markt, Ltd., have as their main exhibit the Jones speedometer, of which the chief feature is that the price has been considerably reduced, due to the large output. The method of working is probably too well known to require any further description, but it may be said that they have a cardan-shaft system of drive. A spring-tensioned bracket keeps the belt entirely taut, this

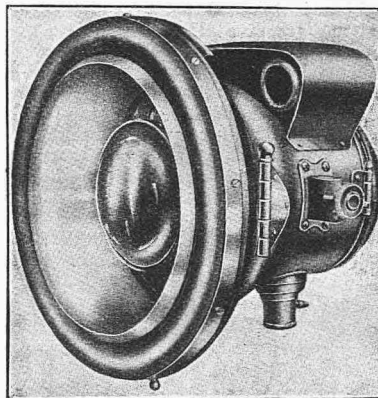


Markt and Co.'s lighting dynamo showing action of governor.

being fixed to the chassis. There is an adjustable pulley, which is so arranged that the diameter of the grooved slot can be altered, and thus the speed can be adjusted; the spring bracket, as explained, allowing of no slackness of belt. Moreover, the spring bracket will take up any slack which may be due to the propeller shaft moving up and down on an uneven road surface. The spring bracket has nothing to work loose or rattle. Another interesting feature is a marine tachometer, suitable for ships. There is a reading for "ahead" and "astern" on either side of the scale. It is worked on the fan principle, under Goodlad's patent. This instrument is also made for other purposes, such as engine revolution counting. The Jones electric horn is also shown. It produces a tone similar to a high-grade bulb horn, with all the conveniences, power and penetrating qualities of the power-operated horn. It is pleasing to the ear, and is said not to be harsh or rasping, but, at the same time, can be heard at a very great distance. The distinct qualities of this horn are claimed to be instant beginning and instant cessation of sound, and economy of current consumption. It is also simple in construction, and cannot easily get out of order. It is also very easily attached. Complete wiring to accommodate any car is furnished, with a push-button attached, which may be operated by the foot, or from the steering wheel, or the side of the driver's seat. It operates on a six-volt storage battery or five-dry cells. Moreover, the terminals supplied are of the ball type, and thus the trouble that is often due to wires shaking loose from

screw terminals is entirely obviated. Also, for cleaning, these can be easily removed. Messrs. Markt and Co. further show a novelty in the Motsinger auto-sparker and lighting dynamo for charging accumulators or for carriage lighting.

Messrs. Powell and Hanmer have several new lamps, among which electric lighting plays no small part. Among these may be mentioned their eight-volt side lamps and four-volt tail lamp. The points of notice in these are the terminals at the back, which are not fixed by screws, but are of the plug type, and it is claimed for this that it is very easily detached in order to take off the lamps for washing or other purposes. In these lamps metal filament bulbs are employed, from which a powerful, soft light is given. The reflector is made of aluminium, and is easily detachable. A point with regard to the lamps used is that they have one central pin only, the bayonet cap being earthed to the lamp, thus short-circuiting is perhaps less liable to take place. They are also making a new acetylene lamp, to be used with separate generator for side lamps or small head lamps for cars or motorcycles. To these is fitted a hood in front for preventing upward dispersion of rays. Among the other exhibits are



Powell & Hanmer headlight.

separate drip-feed generators arranged in a neat teak case, a double unit being a feature, and a condenser is fitted at the side in place of a gas bag, in order to allow of any water which may have got through to drip down and thus not choke up the jet.

T. B. Andre and Co.—Gauthier cut-outs and gear replacements form a large part of this exhibit, together with Malicet and Blin components. An engine is shown for car work, made by the makers of the now famous Gnome aerial engine. It is conventional in design, however, being of the six-cylinder type, with valves all on one side operated from a single camshaft. The Fors is a new type of accumulator, for which some special features are claimed. Each plate

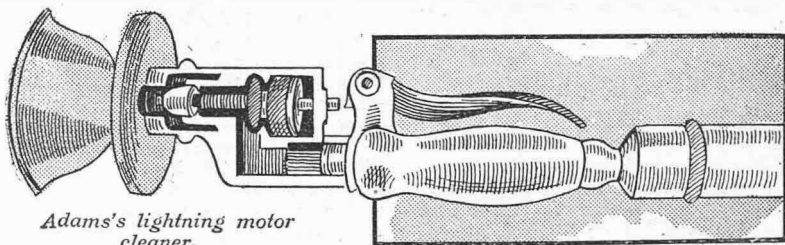
consists of a circular lead grid with the paste inside. This gives lightness, as a minimum of lead with a maximum of paste is possible, while the circular plates can hardly be buckled. It is claimed to hold a charge for an indefinite period, and not to sulphate, however the cell is mistreated or neglected. Now that accumulators are so largely relegated to the position of stand-bys, or are simply used for starting, the problem of a cell which will hold its charge and not deteriorate becomes important, and if the Fors fulfils the claims made for it, it should have a wide field.

Rushmore Lamps.—These excellent and well-tried lamps and generators remain unaltered, the lens, mirror, and patent automatic shaking grate generator being found in every respect satisfactory. A new device is, however, a lens glass known as the Multiplex Lens Door Headlight. This differs from the ordinary type, inasmuch as the usual flat glass strips are replaced by heavier strips two inches in width. These strips are flat at the back, but the front surfaces are ground to a convex curve. The effect is to concentrate the light in a horizontal direction, and it has been found that a distinct steadying action on the light is obtained, the flickering due to an irregular gas supply being prevented. Marine searchlights, capable of giving a light at five miles sufficient to read a paper by, provide excellent examples of the class of work which has made the name of Rushmore famous in the Old World as well as in the New.

Messrs. J. Liversidge and Son, Ltd., are showing all their standard models of tyres of various sizes, including the De Noers grooved solid tyres. They are further showing a working model of the Allen-Liversidge front wheel brake; this will hardly need a detailed description, being now fitted by many well-known car makers. They also demonstrate its action by a model car which is set to traverse an inclined plane, the action of the brakes upon the rear wheels and alternately on the front wheels illustrating how much simpler it is to prevent a car skidding when fitted with brakes on the front wheel, the model proving that the application of the brakes to the front wheels practically stops a skid which has already commenced.

A useful novelty displayed by Adams on Stand 247 is the motorcar elevator, designed to do away with the necessity for a pit by drawing the car up two inclined channels, pivoted on a wheeled framework. It can be adjusted to take all gauges, wheelbases and weights. Their "lightning" motorcar washing nozzle is self-closing by the water pressure itself, and greatly facilitates the cleaner's work.

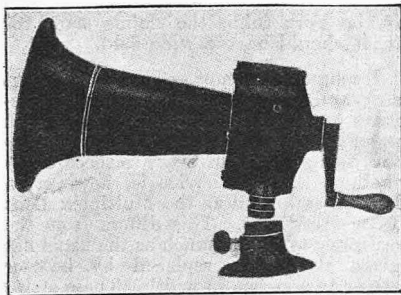
The original and sole agents for the Oleo plugs and igniters, Leo Ripault and Co., make an extensive display on Stand 268. This plug has now been in use for 11 years, and is too well known to need description, over a million and a half being now in use. There are in all some 200 different types, and the latest departure is the Aviation plug, which is studied to run under the worst lubricating conditions and at the high temperatures common with aerial motors. Their newest speciality, shown here for the first time, is the powerful Apollo horn, which, with 1 ampere and 8 volts, gives a penetrating note, the pitch of which can be altered at will.



Adams's lightning motor cleaner.

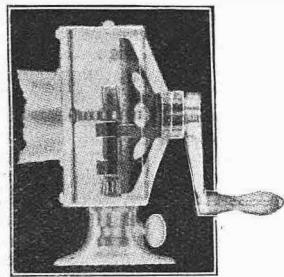
ACCESSORIES.—Contd.

The Motor Accessories Co., 55, Great Marlborough Street, W., have, among other novelties, the Klaxon horn. This has a small electric motor with the armature running eccentrically in its end bearing, the shaft has affixed to it a 10-toothed rotor made of hardened steel. This rotates at about 3,000 r.p.m., and in so doing the teeth hit a button fixed



The Klaxon horn. Hand-operated type.

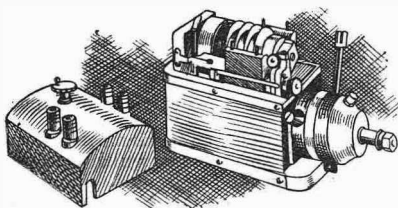
in the centre of a Vanadium steel diaphragm, causing this to vibrate at an extremely high rate, the result of which is a deep and penetrating sound, which can be heard at a great distance. The working parts are enclosed. The horn can be supplied either in nickel, brass



The mechanism of the Klaxon horn.

or black finish. The motor is fitted with a ball race at the extreme end, and only one oiling cup is used, which lubricates the whole of the working parts. Another feature is the Muirhead high-tension accessible magneto, in which all the important parts (such as contact breaker, distributor, low-tension brush, high-tension brush and condenser) are quickly accessible. The great point in the construction is that the magnets themselves lie horizontally instead of vertically, as is usually the case, and the way in which we saw demonstrated to us the facility for the removal of brushes, terminals, contact-breaker and so on, seemed to fully justify its title.

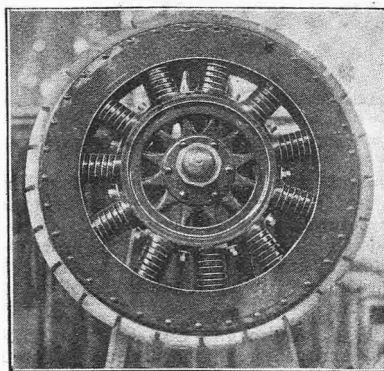
Another exhibit is the Saver clutch, worked as follows: There is a central boss, which is attached to the clutch shaft, made of chilled cast-iron. Round the centre drum are two bands in the form of a hand brake made of cast steel; a toggle joint is brought into action by a pin attached to the immovable part of the clutch, operated by a pedal. This pin, in pressing against the apex of the toggle joint, expands same, forcing one end into a hook, which is provided at the end of the band, thereby lessening its diameter, which contracts on the drum. The rearmost pin comes into operation first, its tension is so adjusted



Muirhead magneto.

as to be just unequal in taking up the drive of the car, as the clutch pedal rises after the second pin comes into operation in the same manner as the first. The tension on this band is approximately equal to that on the first, with the result that when the two bands are in operation, the friction on the centre drum is sufficient to take the full drive of the car. The tension is regulated by a side screw operated from the outside, and is provided with a fine thread, in order to render adjustments easy and rapid. The whole, of course, runs in oil. There are to be seen various types of lamps, jacks, etc., as is also the Gillett-Lehmann carburetter.

In the Sirdar steel-studded tyre it is noticeable that a very large rubber cushion is inserted between the casing and the tread, so that when even a number of studs are ripped out through prolonged wear, the tyre still remains waterproof, even under severe road conditions. On the same firm's stand is to be seen the Panflex spring wheel. The outer rim, which is transversely corrugated, floats on the 11 stout helical springs, which are surmounted by hard vulcanized rubber pads. Under load these pads are pressed into the corrugations, and thus clutched to the outer



Panflex spring wheel.

rim. The springs are laterally stiffened, and the head guides are deep in the rim flanges. It has the appearance of considerable stiffness.

This firm also handles the Jackson detachable rim, in which half a dozen removable wedges serve to hold the tyre rim.

"Terry's for springs" is quite a well-known saying, but in addition to springs the Redditch firm have on view a number of excellent motor tools and parts.

Roller chains and chain wheels of every type suitable for motor trade use form the principal items of the exhibit of Brampton Bros.

ACCESSORY SUMMARY.

Willians and Robinson have a display of castings in iron and aluminium of the types they produce for so many of the leading firms.

The Steel Barrel Co., of Uxbridge, show their welded steel barrels and complete petrol storing and measuring installations for various sizes of garages.

Cowey speedometers, known wherever the motorcar goes, are shown by their makers in a range of patterns, and at a variety of prices which should suit all requirements.

Electrical devices of many kinds form the exhibit of W. J. Harvey, Ltd. The R.V. speed indicator and electric communicators are both excellent arrangements of their kind.

David Brown and Sons, of Huddersfield, show a number of manufactured parts for motorcars, including a 25 h.p. valveless engine and axle and gearbox for a car of the same power.

The Hoffman Manufacturing Co., Ltd., demonstrate the efficiency of their ball bearing at their stand, and, of course, they show their famous ball bearings applied to every conceivable purpose.

Brown and Barlow, Birmingham, show every pattern of their well-known B. and B. carburetters. Either for a 6 h.p. car or a 60 h.p., complete carburetters on the well-known lines are to be seen.

S. Bowley and Son, of Battersea, show the range of lubricants and greases, aluminium and rubber paints, etc., for which they are so well known. The familiar Express spirit cans are also in prominence.

The growing use of the windscreen for touring cars has called a variety of fittings into use, and the productions of Lowe, Bevan and Co. deservedly rank high for finish and ingenuity of construction. Fittings of every variety are to be seen at this stand.

Ubas steel is well known for its excellent properties and its extreme toughness when case-hardened. This hard, various, mild and crucible cast steels, together with case-hardening compounds, form the chief items of the exhibit of W. T. Flather, Ltd., of Sheffield.

Drykitt, Ltd., is a familiar name to the motorist, and the motoring clothing shown for the use of either sex displays a very wide knowledge of motoring requirements. The Lovat tweed coats for ladies, with detachable leather and camel-hair linings, are particularly notable.

The Tormo Manufacturing Co. show various types of journal and thrust bearings of the ball type, in addition to Eagle hand spokes and nipples for the building up of wire wheels. The F and F double row ball bearing is designed for heavy loads and occupies no more space than the usual single race type.

E. J. Hardy and Co., Coventry, show the latest pattern Longemare carburetter, in which the jet area is adjustable by a milled edge nut. A very fine air regulation is also given by superimposed slots, and a large milled edge disc with a wire catch to ensure no alteration from vibration, etc. The Frankonia generator is also a good fitting, it being designed so that a charge of gas is always retained ready for starting.

THE PROBLEM OF OUR ROADS.

By H. P. MAYBURY, Civil Engineer and County Surveyor of Kent.

SINCE the advent of the mechanically-propelled vehicle, no subject has been more before the public than that of the maintenance, repair, and improvement of our highways, and at last it has received the consideration due to it from the Imperial Legislature. Having regard to the revolution the motor has effected in our ideas of speed and distance, it is a matter for congratulation amongst highway authorities and their engineers that they have been able to maintain the permanent ways of the country in a respectable state of efficiency and at such a comparatively small increase in cost.

One cannot imagine an entire change in the rolling stock of one of our important railways being contemplated, save in conjunction with the consideration of the capabilities of its iron roads and bridges to support and satisfactorily carry same. And yet this essential accompaniment is precisely what the Motor Car Act of 1903 ignored. It gave the motorcar—and subsequently the commercial motor—its charter of freedom, without stopping to inquire whether the roads and bridges upon which these vehicles were to travel were reasonably sufficient or capable of supporting them.

The Britisher, however, has the reputation of being able to muddle through, and invariably has a knack of coming out all right. That road maintenance has been no exception to the rule will be conceded by the most critical motorist.

The latter will remember the burdens which Parliament has in recent years put upon the ratepayers for educational and suchlike purposes, and will wonder how it has been possible to provide funds to maintain the roads up to their present standard.

For several years, we were told, our county administration was defective, that State control would be the panacea for all the shortcomings and defects existing, and that a good object-lesson could be learned by inspecting the "Routes Nationales" as controlled and maintained by the French Government.

That bubble was effectually pricked at the time of the International Congress, which was held in Paris just a year ago. I have before me a report made by one of the engineering delegates upon the condition of these French roads, an extract from which is set out below:—

"The visits of inspection made to various localities within 50 miles of Paris revealed the fact that, excepting the portions recently treated with tar or freshly-laid macadam, the condition of the 'Routes Nationales' compared very unfavourably with that of some years ago. Serious deterioration was perceptible in the uneven and worn sett paving, in the excessive cross section—generally nearer 1 in 15 on macadam roads than the French *academie* 1 in 50—in the stripped, worn-out, and wavy character of macadam surfaces, in the numerous extraordinarily-deep holes left unattended to, in the deep grooves worn by motors at corners, and in the soft, dust-making quality of the metalling used."

Now, the mileage of these State-controlled roads is 23,616, against 27,556 miles of main roads in England and Wales.

What a difference, however, in traffic conditions! The figures for 1907 showed that, whereas France had 32,530 cars licensed, we in England and Wales had 112,365, and subsequent figures go to show an even greater disproportion of cars per mile of road maintained.

Again, in this country we have from 8,500 to 9,000 heavy traction engines, whereas France has very few indeed.

No, we have nothing to learn from the French officials, and it is perfectly certain that road users receive much more consideration from their popularly-elected representatives on the various local governing authorities than they could possibly hope to receive from permanent officials appointed by the State.

The chief merit hitherto claimed for State control is that there would be uniformity. To some extent this may be true, but such uniformity may be to a very indifferent standard.

At present we have rivalry—keen rivalry. The road engineer, who has his heart in his work, sets himself an ideal, and, so far as finances are available, seeks to attain a higher standard of excellence than his confreres. Moreover, we now have initiative and experiment. Given a State-controlled department, all our ideas would be crystallized for us at Whitehall, and we should be furnished with the same set of rules and conditions for application to roads in the South of England as in the isolated, sparsely-populated districts of, say, Merioneth and Carnarvon.

At last we are to have financial assistance from the Treasury towards the cost of improvements and dust-abatement, the funds derived from motorcar and petrol taxes being, in part, allocated to these purposes.

It will be noted that road maintenance as such is not to be subsidized.

The writer is of opinion that this is an eminently wise decision. All users of the roads participate alike in the benefits and comforts derived from a properly-maintained highway.

Dust-laying operations, however, such as tar-painting and the laying of tarred macadam, whilst incidentally benefiting maintenance, is essentially an expense rendered necessary, and is undertaken by or in consequence of the motorcar, and it is, therefore, but just and equitable that the motorist should contribute largely to the cost thereof.

The same remarks apply to the necessity for improvements.

For the slow-going horsed vehicle, little risk was taken when negotiating corners or when crossing roads meeting at right-angles. With high-speed motor traffic, however, the dangers are very real, and by assisting the various road authorities to effect improvement at obviously dangerous places, the Road Board will, in fact, be ensuring the safety of the motorist in common with that of the King's subjects generally.

Motorists are to be congratulated upon the abandonment of the proposal to construct roads exclusively for motor traffic, and upon which there was to be no limit of speed. In the first place, the funds annually available would have been, relatively to the cost, so inadequate, that several years would have been expended in providing a length even sufficient for an ordinary day's tour. Again, these roads would have been absolutely uninteresting racing tracks, and would not have appealed to the great majority of motorists, who revel in and enjoy travelling over our interesting, undulating, and sometimes too tortuous roads, and through our lovely old villages. The entire cost of maintaining these new tracks would have been upon the motorist. He would thus have found all his contributions in the next decade or so expended in the construction and maintenance of a few hundred miles of racing track.

It is stated somewhere that there is wisdom in a multitude of councillors, and certainly this axiom proved correct in the present instance.

Representatives of the various motoring authorities in both Houses of Parliament combined with county administrators to induce the Chancellor to drop the exclusive motor-road proposal, wisely retaining the powers to construct new roads where such may be desirable.

In every county there are many places where comparatively short length of new roads would be of the greatest possible benefit to the community, and where the Road

PROBLEM OF OUR ROADS.—Contd.

Board would be sure of the cordial co-operation of the county authorities.

It will be interesting to see how the residents adjacent to the present roads view such proposed detours.

One has been accustomed to hear how the motorcar, plus the general augmentation of traffic, has injured the shopping interests in a small town or village, and that, in consequence, it is with the greatest difficulty that the ratepayer can meet his obligations.

Imagine the surprise of the writer when, quite recently, a proposal was made to construct a short length of new road, which would have by-passed a not unimportant hamlet, some 15 miles from Charing Cross, a petition, numerously signed, was presented against the scheme on the ground that, by taking away the traffic from the village, trade would be affected and vested interests violated. That many such cases will come before the new Board is absolutely certain.

It is computed that the receipts from the impositions upon motorcars and petrol will amount to, approximately, £600,000 a year. Assuming that administration expenses cost 10 per cent. of this, some £540,000 will be available for improvements and dust abatement, a really substantial amount, and which, judiciously expended, cannot fail to work wonders in the direction of betterment and safety. Moreover, the fund will be an increasing one, and the net should be extended so as to take in at least all other mechanical users of the road. Why it should stop at petrol and internal-combustion engines seems somewhat of a paradox. Steam tractors, motor lorries, and traction engines are certainly as harmful to the surfaces as the pleasure or commercial motor, and should in equity be required to contribute pro rata.

It has never been suggested that the sum available would be sufficient to provide for dealing with every main or important road in the United Kingdom. It is not necessary to do this, even if the money were forthcoming.

As no contribution can be made towards maintenance, much discrimination will be necessary to ascertain where maintenance ceases and improvement or dust-abatement commences.

For instance, tinned macadam would cost, say, 2s. per super yard, as compared with 1s. 6d. for ordinary granite macadam tar-painted. Obviously, the contribution from road fund to this would not exceed 6d. a yard, and might—having regard to the relative durability of the respective materials—possibly be less.

Again, tar-painting costs approximately £40 a mile. Primarily, this is undertaken for dust-abatement, but, incidentally, maintenance benefits, and, therefore, it would appear that a substantial contribution from the fund would meet the case.

No doubt, all sorts of applications will be made to the Board for contributions to numerous schemes of more or less public utility. The urgency and necessity for such should invariably be tested by the amount of money the locality is prepared to provide, and this test is frequently successfully applied by county councils when dealing with applications from minor authorities.

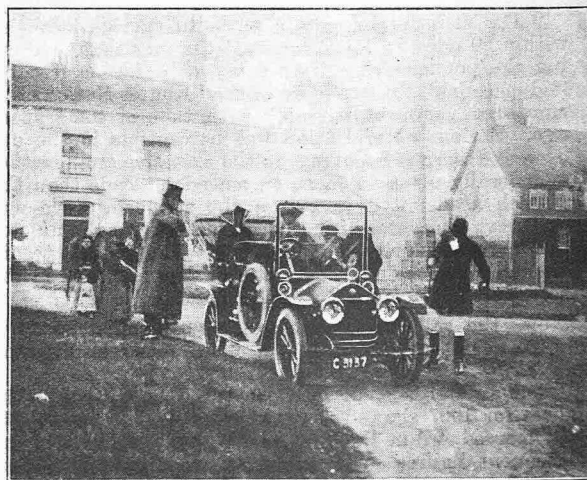
With the money available, all that is now required to make the new order of things an unqualified success and a boon to ratepayer and motorist alike is absolute confidence in the Board and its advisers. Ambition to excel will be the order of the day; permanent officials will vie with each other in their endeavours to obtain as large a grant as possible, the result being the one aimed at by the promoters of the Development scheme, namely, the permanent improvement of our highways.

That £100 Car.

I see my article on this subject in a recent issue brought "W.A.W." to the front again, and that he has a coadjutor in the motor noter of the "Westminster Gazette." The latter writer recently ventured to assert that not only can the £100 car be produced, but that it is already being produced, as a friend of his is engaged upon the building of a two-cylinder car which is to sell at or about that money, and "W.A.W." expresses the desire and wish to be given the opportunity of producing such a car as he requires at the figure. But, if I remember rightly, "W.A.W.'s" requirement was for a four-cylinder car, practically on all fours with the 15 h.p. cars of to-day, which sell at two to four times as much as the figure we have under discussion. And yet none of their manufacturers have yet declared princely dividends, and some of them have paid no dividends at all! Either the staffs engaged in the construction of the 15 h.p. cars of to-day do not know their business, or "W.A.W." is a genius who ought to be secured at once and for whose services there should be a keen competition. But I am afraid there will not be. Such is the fate of geniuses nowadays! The whole point of my article was that a four-cylindered car of 15 h.p. or thereabouts, such as many people have in their minds as their requirement, cannot be produced and sold at, or even in the neighbourhood of, £100. The only possibility of getting anywhere near that figure, in production cost alone, would be by producing them in huge quantities, and this requires huge capital and perfect organization, such capital, indeed, as no firm in this country is able to put its hands upon, and we have, perhaps, the best example possible of an attempt to do what "W.A.W." says is easy enough, in the history of the Ford car. When Henry Ford started to build this car first, the American papers told us of the big purchases and contracts for 40,000 sparking plugs and other items on a similar scale, which were placed so as to get rock-bottom buying prices, and we were told that the cars were to be produced and sold at \$500 (100 guineas) and that each car would carry a profit of \$10 (2 guineas). But with all the resources, ingenuity and skill of the American reproductive machinist at disposal, the Ford Co. are un-

able to produce and sell a car within 30 or 40 per cent. of the price announced, and although these cars are being turned out by the 10,000 in America, when they get over here, as the sole concessionaires have pointed out, gentlemen like "W.A.W." who are thinking of buying, find many of the items of equipment and detail which have been adopted and accepted in the States, owing to their cheapness, insufficient to meet their fastidious tastes, so that considerable addition has to be added to the price when these alterations and fittings are made. No, as I said in my article, it is not possible in the present state of the art to produce and sell at £100—or even 100 guineas—a car constructed on conventional lines and possessing the usual conventional details.

H.S.



Members of the Southwold Hunt arriving at Tattershall Cross.

OBSERVATIONS AT OLYMPIA.

By HENRY STURMEY.

OBSERVATIONS at Olympia." Thus I head these jottings, and I can assure you there is much to observe in this the only motor exhibition in Europe this winter. And one of the things which strikes one most after an hour or two amongst the exhibits, is the large number of foreigners—mostly French—that one encounters during one's peregrinations, thus showing that our French friends fully recognize the force of the situation and mean at least to participate, like myself, by observation. I noticed le Comte de Dion and party quite early amongst the visitors, and I have been wondering whether this is just the sort of "smashing" which he had in his mind in '96, when he prognosticated that the French industry would just simply "smash" the British one, and it would never—no, never—even get upon its feet!

But why enter into reminiscences? The present has quite enough to occupy us fully for this week at least; and so we take a general view of the show from the entrance end, and I am fain to confess that the *tout ensemble* is pleasing, and that the elimination of the dividing wall between the main hall and the annexe gives the show an appearance of size which is very striking.

The Motor office is in the annexe this year, instead of in the gallery, and the atmosphere and temperature inside are all the better for the change. Perhaps it was because of this that I looked around the exhibits in the annexe before "doing" those in the great hall, and I must confess I found some of quite the most interesting exhibits in the building located there, although about half the space here is occupied by the body builders, not that their exhibits are not most interesting, too, but I had the mechanics of the car in mind when I wrote, and certainly the Torbina car, with its very original hydraulic clutch, is one of the most strikingly interesting novelties in the Show. It is, after all, very simple, too: a fan in a box, with shifting blades to the fan. The box is filled with oil, and when the fan blades are at right angles to the line of their rotation, they fit the sides of the box and present their full faces to the opposing oil and so drive the car, but as they are swivelled on their respective centres, until they lie in the line of rotation, they allow more and more of the fluid to pass, until the connection is quite free. This is quite one of the most interesting new things in the Show.

The Hillman-Coatalen cars show good work, without any very striking features, and I must confess I noticed for the first time—although I am told it has been used for several seasons now—the arrangement in the Pilain for flooding the carburettor and controlling the air supply, with the connections carried through the radiator to the front—a little feature of some practical utility.

The S.C.A.T., which is also in this part of the building, introduces many new features. The elimination of universal joint between engine and gearbox, by mounting both on one frame, is a good point, tending to quieter running. The frame construction, too, is novel and good. It is of the pressed-steel variety, of course, but is very deep, and has the brackets for the rear springs pressed out of the same sheet as the frame, whilst another very interesting little feature is the extremely simple and neat cold-air pressure-valve for the petrol tank, which reduces the pressure from some 400 lb. in the self-starting compressed air tank, to 2 lb. behind the petrol, and, last, but not least, I noticed that Messrs. Newton are employing a new detachable artillery wheel, with a very simple and strong coned fitting.

I have always been interested in the little Phoenix, on

account of its parallel shafts throughout and direct chain-drive from engine to gearbox and gearbox to differential, without wasting power taking it round right-angled corners, and the abolition of the loose starting handle this year is a useful improvement, the handle being mounted on a permanent swivelled fixing, so that it can never get lost or be difficult to get at when wanted.

Several German car exhibits are to be found in this part of the building, amongst them the Benz and Opel firms. The former present little of novelty, but are strongly-built and exceptionally well braked, having two powerful brakes on the countershaft, whilst the Opel open (but not polished) chassis looks very workmanlike in its coat of black, and an interesting and useful feature is the fitting of a brass plate on the dashboard, recording the various flywheel markings—very useful information to have in so handy a form when tuning up and readjusting.

I notice throughout the Show a more general tendency to carry the hangers which take the forward end of the torque rod alongside the universal joint of the transmission shaft, but the Rapid sticks to the old system of mounting the torque rod carrier about three-quarters of the way between rear axle and gearbox joint. In the Adams cars the epicyclic gears used all now give three speeds instead of two only, as is usually the case, and the new four-cylinder car which the firm are showing has a sliding gear with gate change, an innovation which I should rather wonder at, seeing the undoubted superiority of the epicyclic system, were I not fully aware of the obstinacy of the buying public, and, no doubt, in the interests of business, Messrs. Adams are sound in giving the public its choice. And this reason, too, I have little doubt, has been the cause of the introduction of a petrol car by the White Steam car people, who show both steam and petrol models side by side. The new type has a bloc engine, a generally neat and up-to-date design, and a very neat and very safe arrangement of the gate change. Only a stand or two away is another old American friend, the Stanley steamer, which, in its external and body design, has now been quite Europeanized, whilst those interested in steam should not miss the new 20 h.p. model, with its very simple and very practical engine working in a closed oil-bath and possessing very great power for emergencies. The casting of the four cylinders en bloc is a new feature with the Unic, and I may incidentally here remark that this is quite a feature of the Show, almost every other exhibit, especially amongst the foreign ones, so it seems to me, being so constructed.

The little Delage is very clean and neat, and quite a taking little model, and so is the new small model of the Albruna, though I cannot say I care for the exaggerated front roll to the seats.

"Mulliner's, of Brook Street," head the exhibits in the carriage-builders' section, with some bodies on very elegant lines, with taking colourings, and Alford and Alder, who come next, show a torpedo body with Daimler-type dashboard, which makes it look very blunt and far from elegant. Curiously enough, on Melhuish's stand, next to it, is another car with torpedo body, and, like it, painted yellow, and the difference in appearance given by the flat, sloped front is very marked, and, as luck will have it, Messrs. Thorne, on the very next stand, stage a third car in yellow and on almost identical lines. I cannot say that I like a full yellow for the colouring of a car, but the last two vehicles show what effect can be secured by broad black lines along the mouldings, and this is certainly a considerable improvement upon the full yellow, unrelieved, of the first car, upon which the black lines are so fine as to be negligible.

Messrs. Salmon show a light sort of flat hood extension to a landaulet or cabriolet, which, curiously enough, is quite a feature on a number of other stands.

OBSERVATIONS AT OLYMPIA.—Contd.

Messrs. Mulliner, of Northampton and Long Acre, have some really striking designs, amongst which a cabriolet with closed-in front, on a Renault chassis, shown with the full aluminium body unpainted, at once attracts attention. At first it looks like a new finish, but Mr. Mulliner tells me it is really exhibited thus to show what is under the paint in Mulliner carriages. The extension over the driver in this car folds back in a very ingenious manner, and it all goes back together with the hood, whilst the entrance doors are very wide, and, in a limousine which is also staged here, will be seen a very simple plan by which the folding back-to-driver seats, when down for use, lock the side doors of the car and prevent their being opened unawares.

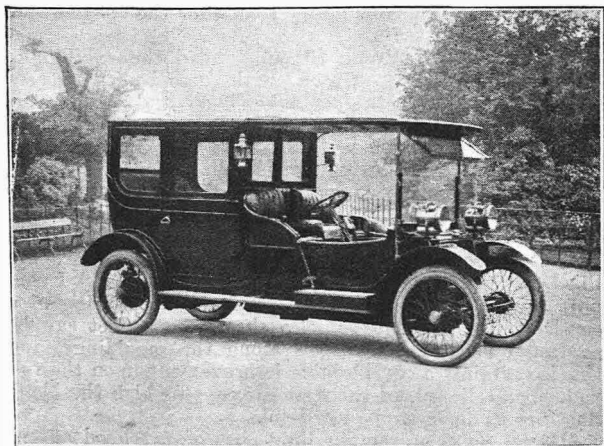
Messrs. Barker's have a very finely-finished body on a Rolls-Royce chassis, but I cannot say I altogether like the lines of the torpedo body shown by Hora, the flat front giving it a very blunt or cut-off appearance. The Motor Supply Co. show a two-seated speed model Straker-Squire, with deep hooded dash, which, whilst no doubt well protecting the driver from the wind when driving, appears to very effectually render the various dashboard ornaments ungetatable and almost unobservable—certainly quite so in the dusk of a dark day. It looks as if one would practically have to crawl in under to make adjustments! But this appears to be common to all bodies of this type, of which there are several about the Show.

Last, but not least, of the exhibits in the annexe is the new Crossley, samples of which are also shown in the main hall by Jarrott and Letts. Here again we have the four cylinders cast en bloc, designed for thermo-syphon cooling with very large water tubes and the exhaust cooled by vertically-arranged flanges along the line of the exhaust passage. Front-wheel brakes are another new feature, and I may here remark that the Crossley firm are not alone in this, as five or six other firms are this year showing front brakes, so that I expect to see the lead thus set followed much more generally in future years.

One thing which strikes me after inspecting the exhibits of the carriage builders here, and after a run round in the main hall, is the decided change which has been made in fitting neat all-leather victoria hoods to many two-seated cars. I remember introducing a hood of this sort five or six years ago, but no one would look at it, although a very excellent thing. But the so-called "Cape-cart hood" of readily-dirtyable canvas was just coming in, and the public were taken by its lightness and would have nothing of the better article. The whirligig of time works many changes, and public opinion is proverbially fickle!

The Main Hall.

So much for the annexe. The first exhibit in the main hall which caught my eye was the Humphris gear, which has been still further worked out and elaborated, and is shown built into a specially-constructed car. The



Lanchester limousine without the customary apron.
The windscreen on the front of the dash.

large axle box is very striking, and so is the unit construction of the whole of the working parts of the car, from engine to axle. A new and more efficient design of tooth face is introduced for the first time, which is claimed by a Faraday House test to have 96.7 efficiency and a new arrangement combining the Humphris disc and hole three-speed gear with an eccentric shaft device is shown, which gives six speed variations and one reverse. This is quite interesting.

Another highly-interesting thing is the new Waverley car, introduced by the Marlborough people. It is a two-cylinder, 9 h.p. car, with a V engine, two speeds and reverse, by a very simple sliding gear combined with the differential box on the back axle and fore and aft flat springs, somewhat after Lanchester style, which should make it very easy riding, and as, fitted with two-seated body, it weighs only 6 cwt. and sells at as low as £125, it should command a sale, as it certainly has some very good points about it.

I do not know that I am yet quite converted to the bloc casting of the four cylinders, but it is almost universal in the main hall, one or two firms going so far even as to cast a six-cylinder this way. It calls for considerable skill to produce a satisfactory engine of this type, both in the designing and the casting, and is probably cheaper to produce when tools are once organized for it, but one cracked cylinder or water jacket means an entire new engine, and so a repair is more expensive for the user, and the manufacturer cannot afford to have many faulty castings. On the other hand, it certainly economizes some space and makes a neater engine.

On the Grégoire stand I was much struck by the very large water tank, which tops and backs the radiator and supports the forward end of the bonnet. This is to facilitate thermo-syphon cooling, and I may here say how I have been impressed by the very great increase at this Show in the number of engines shown with natural circulation. This system certainly lends itself to the bloc method of engine construction, and it saves the cost of the pump, but the radiator should be larger if efficiency is desired, and whilst they may be all right in a climate and over country such as ours, I fancy in very hot countries, over very long, steep gradients, forced circulation may prove the most satisfactory.

On the Germain stand Capt. Masui has certainly adopted a novel means of drawing attention to his torpedo-body design by showing one fitted on a car in skeleton, i.e., the framework only, without panels. It serves to attract the public, anyway, and that is what we are all after nowadays.

One of the greatest novelties in the Show is the new piston valve engine shown by the Bentall people. It is a very interesting design, with the valve gear centrally on top of the engine, the central shaft carrying cams which operate on rocking levers, carrying the valve pistons, which latter work in outside pockets on opposite sides of the engine. It should work silently, and I shall be very much interested to see how it answers in practice, for I understand that it has not yet proved itself, having only just been finished in time for the Show. It attracts a good bit of attention, but I do not know that I think it altogether good business on the maker's part to show it, for they are not in a position to speak positively of it, or to take orders for it, and it is certainly attracting all the attention and diverting it from the goods they have to sell, viz., the very neat and useful Bentall cars, which are on view and which have several new features in their construction, notably the fitting of the gearbox in combination with the transmission-shaft casing and back-axle casing, the whole construction working on one joint in front. There are two brakes on the back hubs, acting on separate drums, and I believe it is the only car in the Show fitted with the old-fashioned trailing sprag.

Messrs. Cooper, of King's Lynn, are a new firm to the

"MOTOR CYCLING."

An Instantaneous Success. No. 1 is still on sale. One Penny.

OBSERVATIONS AT OLYMPIA.—Contd.

trade, but they come into it with a car which is something more than a mere copy of the conventional. Their new springing system is worth looking at. Quarter elliptical springs, nearly flat, arranged somewhat after the fashion of the Lanchester, are supported by a transverse spring with an adjusting rod for tension, and the arrangement certainly looks easy. There is a simple tubular torque rod enclosing the transmission shaft, and last, but not least, a novel two-stroke motor, which, whilst working on the two-cycle principle, is not a valveless engine, though it should be about as silent as one, for its valves are piston valves working in separate pockets.

In the Clyde cars, which hail from Leicester, we have an adherence to correct principles, in the use of parallel shafts throughout the car and transmission by silent chains, and either two, three, or four cylinders of the White and Poppe manufacture make up the equipment of the different models. Good cars on good lines and not merely copies of other people's notions.

On the stand of the Davy Cars, Ltd., is to be seen the Hewitt engine, which is one of the new piston valve introductions which have followed the success of the Silent Knight. Like the others, the piston valves work in separate pockets or cylinders and not in the working piston as in Mr. Knight's design, but these are also claimed to have their effect in driving, if it is only sufficient to drive their own mechanism. The valve cylinders as well as the piston valves are water-cooled by a very ingenious plan, and another feature is the separate sump tank at the bottom of the base chamber to retain the surplus oil. The entire engine is most accessible, and it will be interesting to see how it works.

The New Engine Co., with its four-cylinder opposed horizontal engine and luxurious springing, is the triumph of practicability over conventionality, and I am glad to see the signs of substantial business which accompany the exhibit. The internal gear drive by cross-shaft parallel with the axle is used by few to-day, but the Chenard-Walcker cars embody it as a constructional detail, and those who have never seen it can see it here. The De la Haye chassis is up-ended for inspection and economy of space, and naturally attracts attention. It has one of the neatest bloc engines in the Show, and the firm is one of the few French houses showing a car with a torpedo body, but doubtless this has been fitted over here.

In the Bell governor on the fuel supply we have a practical fitment, and the car is generally well up-to-date, and shows good work and sound design throughout. The Clement cars as sold on this market are now no longer French, as they are built in Coventry, a change which has been necessitated by the growing insistent demand for cars of British manufacture. This is one of the few cars working with a hot-air intake, and they show a very fine limousine with a Salmon body, which is worth looking into.

The Daimler exhibit is quite as much the centre of attraction as it was last year, which shows that interest in the Knight engine has not fallen off. The stand is packed, and it is quite difficult to get a word in edgeways with the busy staff. The huge illuminated working diagram of the engine, which forms the centre of the stand, attracts attention, as all moving things do, but that is not the only attraction. And Daimlers have many good points of novelty, apart from the engine, which are worth examination, notably the attention which has been given to the springing, resulting in the use of supplementary spiral springs at the back and cross-jointed hangers in front. Then there is the worm drive, the wire wheel, and the new 15, and last, but not least, the large wheels employed. Wheels as large as 38 in. and even 40 in. are, so Mr. Martin tells me, being recommended to customers who will consent to be advised, which is quite on the right lines. There is a crowd round the Renault stand, too, which speaks volumes for its popularity, though nothing very new in departures is shown.

On the Delaunay-Belleville stand, one of the most original departures in body painting I have yet seen is

shown in the shape of a figured design on the panels. Very chic it looks, too, as the colours are soft and the design is not obtrusive.

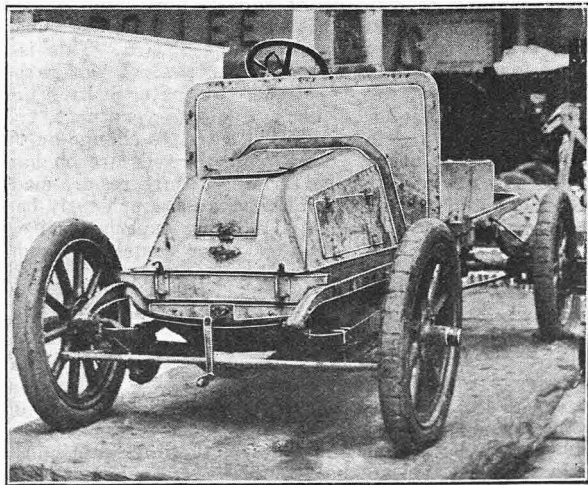
The new "J.D.S." of the Deasy firm is one of the most striking cars in the show too, for whilst it is a great departure from previous Deasy practice and from conventionality, it is not a departure from tried methods. Practically, this new model combines the worm-gear back axle—or bevels to choice—with the Lanchester rear springing, thermo-syphon cooling on the Renault principle, with a Renault type of bonnet, though I hardly think this quite so elegant as its original. There are also very neat valve covers, wire wheels and the petrol tank built into the dashboard—a combination of good features without much in the way of experiment. Anyway, I am glad to see a departure from the rigid conventionality of the day.

Humbers new "12" has a 90 mm. by 100 mm. engine, which makes it pretty tall for power at its denomination, and several neat features are embodied. The engine cast in pairs and thermo-syphon circulation, a neat three-speed gearbox with three-point suspension, and very neat gate change and detachable wooden wheels are points for observation. Messrs. Dennis Bros. use the Hele-Shaw clutch and the White and Poppe engine, and are well up-to-date, and they show, amongst others, a car with the Hower "Torunda" body.

Straker and Squire are specializing on a "15" which has several good features. I like the system of oil-retaining covers to the universal joints on the driving shaft, though I cannot say I am enamoured of two hand brakes working on the same drum. It is the heating of the drum which generally causes trouble, and using a fresh gear band on an already overheated drum will not help matters much. The speed model with tunnel dash and low hood will doubtless attract those to whom this type of car appeals about as well as any in the Show.

I must congratulate Sir Charles Friswell, too, on his knighthood, as well as upon the very attractive model his new four-cylinder 12 h.p. standard, with its worm drive, turns out to be. With cylinders cast in one, with large valves on opposite sides, and a long stroke, it should have plenty of power, and it is built, too, to "standard track," i.e., with 4 ft. 8 in. tread, which has doubtless been brought about by Colonial demand.

The feature of the Minerva is, of course, the Knight silent engine, and I am not at all surprised to see that the firm are now fitting this engine to all their several models. The Wolseley Company have done so remarkably well this season that it is not surprising to find them in high fettle, and they are showing four new models. Their six-cylinder bloc engine with copper riveted-on water jackets is one of the finest bits of work in the Show, and the new arrangements of automatic throttle regulation to ensure certain and easy starting are well worth looking at. The springing, too, is particularly well considered,



Lieut. Shackleton's Arrol-Johnston Antarctic car at Olympia.

OBSERVATIONS AT OLYMPIA.—Contd.

and their series of cars are certainly amongst the finest in the Show.

The Rolls-Royce is the only firm confining its attention to six-cylindred cars, and it is certainly one of the finest, if not the finest, six-cylinder model in the Show. To do one thing and do it well is their motto, and a very good motto too. The novel torque rod system on the Maudslay deserves consideration, and another feature on these cars is the bringing of the magneto, which is fitted high up on the engine through the dashboard. This firm also is now using a single cast engine, with, of course, their old feature of the valve gear on the top of it, and ample inspection covers to the base chamber.

The B.S.A. cars are neat little models, and, as I have been able to note from observation, very sweet and quiet in running. They are of the light and graceful order, well made and finely finished.

I feel I must congratulate Mr. Richardson on the successful point to which he has brought the Sheffield-Simplex. The gearboxless model, as he terms it, has caught on well, and new models of lesser power are now being shown. The 14-20 h.p. has the Renault type of rear radiator and bonnet with front wheel brakes, detachable wire wheels and a new and very neat micrometer adjustment to the magneto, which is good, but perhaps the greatest attention is attracted here by the all-aluminium canoe-shaped body with unpainted sides, green upholstery, tyre cupboard under the back seats, and single doors admitting to both front and back seats. As a speed model for—as Mr. Richardson tells me—the French trade it ought to rather catch on.

The new Arrol-Johnston "15," as might have been expected with Mr. Pullinger at the helm, is a really good car, and I am not disappointed in her now I have seen her. It has the Renault type of radiator and bonnet, with front-wheel brakes, cylinders cast in pairs, with very neat valve covers, and the check rod system to prevent excessive roll on the springs is retained from the older models, and permits the use of full elliptic springs, though I cannot say I see the point—save physically—of the boat-shaped keel stern of the body, though the rest of its design is all that can be wished. Of course, the now celebrated car of the South Polar Shackleton Expedition comes in for a large amount of interested attention. I observed it with much interest.

The Vulcan exhibit contains a body of the Sedan chair type, which strikes me as singular rather than elegant. In the chassis, I notice, worm drive is a feature, with the cylinders cast in pairs, and thermo-syphon circulation with an inlet on each side, which is good. The readiness with which the intake piping can be removed, exposing the jet, is a small but excellent feature, and so is the new tell-tale fitting to the oil circulation, which can be "observed" even in the dark. In the La Buire I notice the lubrication tank is fitted under the bonnet, with the sight-feeds and control carried through the dashboard. This is a good idea for working in cold countries. I was rather taken with the new single-cylinder two-seater Swift. There is nothing uncommon about it, but it is very neat, very simple, and very practical. The new gate change on the other models is also a good thing. Argylls are on hand with their new models. No striking departures are made, but the details of the several chassis have evidently been very carefully considered, and nothing experimental embodied, which policy should make for confidence among buyers.

A very neat axle casing and air-cooling flanges on the back-wheel brake drums are features in Sunbeam construction, whilst one of the smaller details which "gets there" is the adjustability of the pedals, which should mean a lot in comfortable driving. The Stars are now amongst the cars with four cylinders cast in one, and the chassis is one of the very few in the Show with a square gearbox, and the ring and pin type of torque rod hanger is a simple notion not used by many, but which I rather like. The body on the two-seater Star reminds one of the seat of a canoe, and it might almost be termed "The Tablet."

Of course there is a considerable amount of attention being given to the new cheap model of the Darracq, and the pressing of the sheet steel frame is certainly a departure, being quite away from the usual style of thing, and I must say the car has been very closely considered from the point of view of cheap production. The fine wide gear faces of the Vauxhall cars on the next stand take my fancy immensely, and the new six-cylinder model is one of the few of this size with cylinders cast in one. The great attraction on the De Dion stand is the fine limousine with the eight-cylinder V engine. There can be no doubt that the balance must be as nearly perfect as possible, and it ought to be a delightful car to ride in.

The Rover is one of those firms showing no chassis, and the exhibit loses in interest thereby, as does also that of the Napier close by, and during the few minutes I was there I heard one visitor exclaim in almost indignant tones, "Oh! surely they have a chassis somewhere." Reverting to the Rover, it is curious to note that this firm, which originated the bloc casting of the four-cylinder engine five years ago, are now not even casting their pairs in one and are punning their faith to the separate unit. The feature of the Napier stand is the Colonial model, but I do not quite follow the caption of the explanation that the flywheel is carried in front of the engine "so that it is lifted over obstacles by the front wheels." I do not follow the argument at all.

The Calthorpe is one of the very few firms in the Exhibition still using the stranded wire connections for the brakes. Upon quite a number of cars shown this year the ignition is fixed, and the throttle uncontrolled except by foot accelerator. This makes for simplicity, cheapness, and a clean wheel, but I cannot say that I like it. I think the driver loses something of his personality and of his control over his engine. The Metallurgique have one of the finest limousine bodies in the Show, and a neat adjustment is now fitted to the accelerator pedal, which should be worth having.

I am extremely pleased to see the way in which the Lanchester people have brought their cars to the front. There is no very striking novelty this year, but they have, I think, the finest body in the Show on a six-cylinder car built for Mr. Hudson, of soap fame. The body alone, I am told, cost over £450. The mudguards on all the Lanchesters are a feature, and the six-cylinder touring car model is about the only car on the road in which special provision is made for seating the chauffeur when the owner is driving.

The new arrangement of double elliptical springs on the Austin cars is distinctly one of the best things in the spring line in the Show, and I fancy the new low-powered two-seater will sell well, as it is a sound and substantial little car. But the *pièce de résistance* in the Austin exhibit is the big picnic or camping wagon, with its lavatory accommodation, lockers for stores, dining table for six, and berthing both inside and out. The sort of thing to make one independent of hotels for a week.

The big six-cylinder record-breaking Thames, of course, attracts attention, and the Gobron Brillie is, as always, remarkable for the fineness and elegance of the body fittings and finish, whilst the working model, in skeleton, of the opposed piston engine is likewise an interesting and useful attraction, and it is interesting to note that the firm is now showing for the first time a two-cylinder model with direct drive, both lines of construction hitherto unknown in connection with this firm. It strikes me as being very good and likely to catch on.

Electric vehicles find a place only upon one stand, and here the Electric Vehicle Co. have a model so completely disguised as a petrol car that it would be difficult to tell the difference by external observation. The batteries are under the bonnet, where the petrol engine usually reposes. It is well worth looking at by those interested in the electric idea.

"MOTOR CYCLING." The new illustrated newspaper for motorcyclists. No. 1 Now on Sale.

LIVENING UP OLYMPIA

A CONTEMPORARY STATES THAT MOST MOTOR SHOWS ARE RATHER DEPRESSING ENTERTAINMENTS

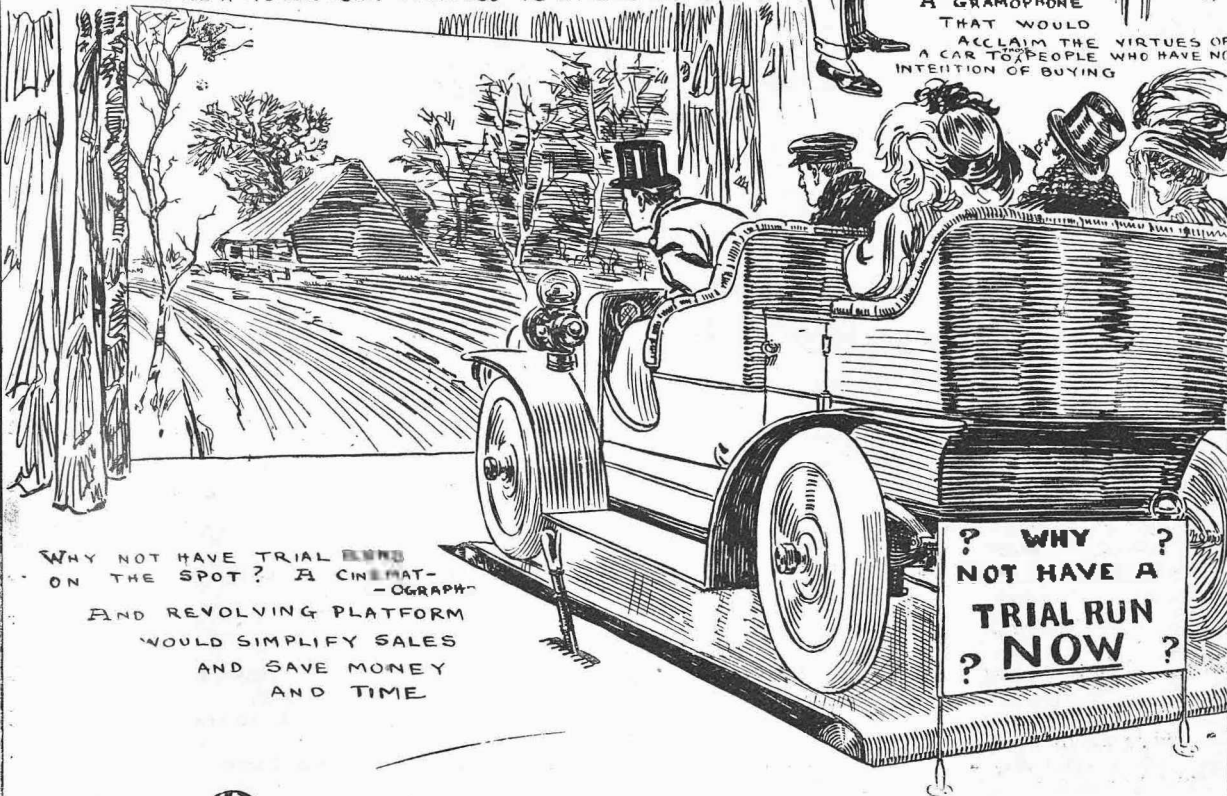


WHY NOT HAVE A MOTOR-HORN VIRTUOSO TO GIVE US SAY-1812?



TO HELP TIRED SALESMEN

A GRAMOPHONE THAT WOULD ACCLAIM THE VIRTUES OF A CAR TO PEOPLE WHO HAVE NO INTENTION OF BUYING



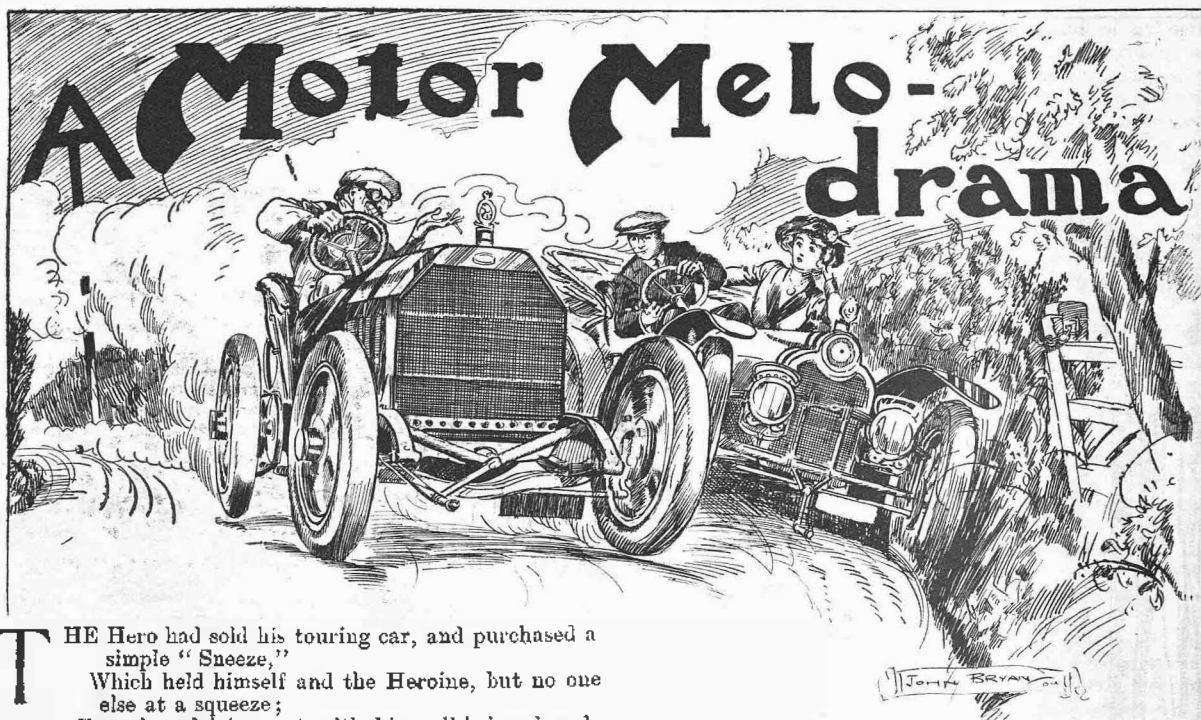
WHY NOT HAVE TRIAL RUNS ON THE SPOT? A CINEMAT-
-OGRAPH-
AND REVOLVING PLATFORM
WOULD SIMPLIFY SALES
AND SAVE MONEY
AND TIME



ROLLER-SKATES WOULD BE A GREAT BOON-ESPECIALLY TO JOURNALISTS- TO ENABLE PEOPLE TO VISIT ALL THE STANDS WITHOUT FATIGUE



BUT IF YOU REALLY WANT TO TOUCH THE GREAT HEART OF THE BRITISH PUBLIC GIVE IT FREE REFRESHMENTS. OLYMPIA THEN WILL BECOME LIVELY ENOUGH



THE Hero had sold his touring car, and purchased a simple "Sneeze," Which held himself and the Heroine, but no one else at a squeeze; For when driving out with his well-beloved and teaching her how to drive He thought that two were more company than a tonneau containing five.

The Villain, however, he knitted his brow with a Drury Lane "Har! Har!" And determined to harass the happy pair in his Ninety racing car; And he hung behind, and he hung before, and he hustled and hedged, and just As the Hero would pass, he would throttle, hang fire, and wilfully give him dust.

This game continued for miles and miles till the Heroine, fairly sick, Having burst into tears, got out and walked, and, not knowing the Villain's trick, Said that though she loved the Hero well and would be his friend in need, She would never marry a man who couldn't exceed the Villain's speed.

The Villain, with a dentist's smile and a Woodbine cigarette, Invited the Heroine into his limousine to get, And he offered her wealth and a Shantung coat, if she'd take him for better or wuss— While marriage settlements (she was rich) they could then and there discuss.

'Twas then that the Hero upped and said, that, though by the roadhogs' code Of honour the Villain had managed to give him dust on the open road, He'd wager his chance of his lady's hand that he'd give back rap for rap If the Villain would meet him car for car in a Brooklands Handicap!

The Villain smiled, said the match was on, and he'd bide by the result, And they entered themselves for a certain race called the Handicap Occult; And the villain nobbled the entry forms with such adroit despatch That his Ninety was given a two-mile start, and the Sneezer put at scratch.

The Hero started at "twenties (on)" and the Villain at only "threes." (It isn't often that Brookland Bookies give generous odds like these.)

To make assurance doubly sure, the Villain had schemed and planned; He had emptied the Hero's petrol tank and had filled it up with sand.

The flag was dropped, and the race began, but both of the cars stood still; And even the bookies paused and stayed in their hurried flight from the Hill. So busy in filling the Hero's tank, the Villain—it now was known— Had made a mistake, and, in absence of mind, with water had filled his own.

But the Hero had got a whisky flask, and he emptied his tank of sand, And slowly he got his car to move ere the Villain could understand The fact that the Hero, though handicapped, was "in it" after all. It behoved him to find some fuel, too, if he wanted to win the crawl.

The Hero contrived to pass the Fork, when his engine gave up the job. The whisky gave out, and his pistons ceased their hitherto fitful throb. The Villain meanwhile had managed to beg, or borrow, or probably steal A petrol supply, and was coming along with a smile on his steering wheel.

The Villain had still a lap to go; but the Hero was in the Straight, Hung up just an eighth of a mile from home, and his rival going great. But see! 'tis the Heroine, light and slim, leaps over the paddock rails, And she sees the Hero ready to faint, though his courage never fails.

And she takes a bottle of eau de Cologne from her dainty reticule, And she cries, "Try this as a last resource!" And the Hero says, "If you'll Fill up the tank with eau de Cologne, I think I can beat him yet!" And she waved her scented handkerchief; and the Hero won—you bet!

FRED. GILLET.

OUR NEIGHBOURS' ROADS.

AMONG the various methods employed to induce people to mend their ways is one which may be termed the process of shaming by comparison.

Most of us probably first made the acquaintance with it in quite immature years, and perhaps retain recollections of being admonished to notice how very good the other boy was, when we knew—or, at any rate, had a very strong suspicion—that if our worthy guardians had had the same opportunities of observing him as they had of us they would not have regarded him as so suitable for a pattern. Since then we have observed the popularity of this method in politics, Free Traders and Tariff Reformers, to take a current instance, both holding up protected countries as object-lessons in support of their respective contentions. We have observed it, too, in affairs less political; for years advocates of housing reform have told us to look how immeasurably ahead Germany was of us in that particular, and yet it would appear that, while there is doubtless much that we might learn from Germany, German expert officials are not only complaining of the existence of great evils under their system, but are actually ascribing them largely to the absence of some of the features possessed by the English-dwelling system, which, if they could, they would pay us the compliment of copying. And, lastly, we have become familiar with similar methods in regard to highway matters.

The misguided person who, in Gilbert's words, "praises in enthusiastic tone, all centuries but this, and every country but his own," has not neglected to impress upon us, as far as continual reiteration can do so, that in all that pertains to roads we are badly behind most of the civilized powers of Western Europe, France in particular.

The practice of exaggerating the good in other people's systems in order to get one's own improved, probably has its uses in some cases, but in such a one as roads—which, happily, is not, and, we hope, never will be a party question—where our business should be to put our heads together quite disinterestedly and calmly to devise the best means of betterment, its employment is certainly nothing but a hindrance. For the fact is—in my view—that British roads do not emerge from a comparison with those of our neighbours so unfavourably as it is the fashion to represent, and, in support of this assertion, I propose to subject the latter to criticism, mainly from the point of view of a passing roadfarer—which, after all, constitutes the principal test of any administrative system—drawing largely on observations made, in the course of the past summer, during a two-months tour through six countries.

Criticism of the circumstances of road travel in Britain has directed itself at one time or another against a number of features, but among the points in the resulting indictment the following are the more important.

It is said that our roads are defective in plan, in engineering, in surface, in methods of repair, and in mode of administration; it is complained that distance marking and signposting are carried out unsystematically and in a parochial spirit, that there is great unreasonableness in the attitude of authority towards automobilism, and that the older forms of traffic display prejudice, lethargy, and often malice in their conduct on the road, and this indictment is accompanied by the assertion, sometimes implied, sometimes stated, that in respect of all these faults Great Britain either stands alone or is discreditably behind the great nations across the Channel.

Pleading guilty to the indictment, let us look how things really are abroad, not with the object of picking holes in our neighbours' affairs and so being able to argue that two blacks make a white, but simply to learn where we really are, where the world does stand in the matter of road travel.

In no particular is there less doubt about the superiority of some of our neighbours' roads over those of England—though not over those of Scotland—than in the matter of the amount of attention that has been paid to their courses. As far as concerns Switzerland, however, so often held up to us as a model, two observations are pertinent, as reminders that here, at any rate, comparison does not give us cause for shame. Had there been Alps in England, there would have been well-constructed roads over them; that is to say, that if we had possessed mountains across which carriage communication was necessary but only possible by skilful engineering undertakings, we should have supplied the need; as it is our mountains are such that the usual haphazard cart-track process of road planning has been possible.

Secondly, in non-mountainous Switzerland the roads are far more ill-planned or unplanned and generally inconvenient than are ours. Similar faults of waywardness, narrowness, and indirectness are observable nearly everywhere throughout the Low Countries (i.e., Holland and Belgium, excluding the Ardennes), and also over a large part of Germany. In these regions one recognizes at once all the awkwardness and irregularity that betray an automatic and unregulated upgrowing of a road system, such as we are familiar with at home.

In the hilly districts of Germany and in the Ardennes of Belgium and Luxemburg, however, we do find that infinitely more pains have been taken to correct the original inconveniences in the main roads than have been taken in England.

But it is in France, of course, that the process of rectification has been carried out to the furthest extent, and there England (though, again, not Scotland) must yield to her Gallic friend the palm. Nevertheless, for French roads, as I have seen them, far too much is usually claimed, and they are open to considerable criticism. In mountainous parts the highways are certainly laid out with consummate skill, but elsewhere the observant traveller in time gains the impression that straightness and directness were the most prominent aims in the road-maker's mind, and if he knows the historical circumstances under which, in the 18th century, the rectification of the old roads took place, he will not be surprised at those qualities having been more considered than ease and convenience.

Examples of this almost Romanlike disregard for the lie of the ground could easily be cited. Among those evident on the Paris-Bordeaux road may be instanced the wilful disregard of the wide bends of the valley of the Loire, between Vendôme and Châteaudun, curves which, if the road had followed them as the railway has since done, would have saved travellers a considerable amount of climbing.

Again, on the Route Nationale, between St. Omer and Abbeville, the persistent sacrifice of ease for directness is most striking, especially when the well-planned course taken by the railway in some parts is noticed.

On the Route Nationale No. 167, from Lannion to Vannes—not a road of prime importance, it is true, but one of sufficient consequence not to have been declassified and ranked as a Route Departementale when the latter class was created—there occur, near Mur, some exceedingly steep hills whose natural gradient has not been reduced by bank or cutting, nor by any deviation from a straight course.

But, really, examples are scarcely necessary, for it could hardly have happened that in such broken country as that between Calais and Brest, the great straight roads that traverse it should, without the aid of stupendous banks and cuttings—which do not exist—have been the easiest.

The extreme and persistent straightness which characterizes the main roads of France is attained at the expense of much power wastage entailed on the traveller

OUR NEIGHBOURS' ROADS.—Contd.

by having to raise loads up many avoidable inclines, and also by the sacrifice of beauty, both of which might have been avoided by more careful laying out and without impairing the limit of reasonable speed. So much for plan.

If any generalization as regards surface conditions be permissible, it is this: that in such respect Britain, France, and Germany are all on about the same level.

In Belgium (with one or two very rare exceptions), in the north-east of France, and in the neighbourhood of many French towns, the roads are of pave, very badly maintained, and the highways in the north-west of Germany, between the Harz and the Frisian coast, are even worse. The roads of Holland, whether brick or metalled, can only be called indifferent, and the same must be said of the metalled roads of the Ardennes, with negligible exceptions.

The non-alpine Swiss roads are entitled to no better mention than the bad ones of central Ireland, which from their bumpiness and greasiness they much resemble. But in France and Germany, generally, one finds the same variations between excellent and bad that one does at home and in very similar proportions. For the distinctly poor surface of many French roads, it seems to me unfair to blame the automobile, as there have been attempts to do.

There is no mistaking the kinds of damage that motors cause, and one finds the trail of the car badly on a few popular routes, such as the Paris-Trouville and the Paris-Bordeaux highways, and the popular road along the banks of the Loire, which are all very rough. The vicinity of Rouen, too, is badly motor-holed (and so, also, it may be noted, are some of the German motorbus service routes, i.e., in the Black Forest and the Harz), and the bends on the beautifully-smooth mountain road in the Vosges bear scars for which motorists are not only responsible, but censurable. But the greater part of the deterioration evident is such as comes from ordinary wear; in fact, on all but a few routes motor traffic appears to be very slight.

I had one or two opportunities in Germany of travelling over roads of "Kleinpflaster," which, it may be remembered, is a mosaic of small square flat-topped stones laid in a fan-like pattern, and the condition of the surface did not seem to justify the high opinions of it which have reached us from time to time.

I do not know how it may have been behaving in Buxton, where I saw it being put down last year, but the German stretches were developing a similar unevenness to that which overtakes ordinary stone setts, and, further, owing to the curves in which the stones are laid, Kleinpflaster has a peculiarly irritating and confusing effect on the eyes of anyone moving rapidly over it, which is absent from paving composed of similar small flat-topped stones laid squarely or diagonally, such as are encountered now and then in North Germany.

The use of tar, or other dust preventives, though it has been adopted, does not appear to have been employed to anything like the same extent abroad as at home. And generally, in the methods of repair, so far as I could see, the more wide-awake of our surveyors have little

reason to fear comparison. The great road from Rouen to the north-east was being repaired in one place with very large flints, rolled into an unscarified surface, with some sand and a great deal more earth as binding. The work, as in the other two cases I saw in France, was being carried out by contractors, and for the effective warning notices, placed at neighbouring road junctions, the public was only indebted to the enterprise of the Touring Club de France.

Since the road was under repair for its entire width, and the detour necessary to avoid it was considerable, it would not seem that the French authorities are more inclined to show consideration to travellers than are our own. Other countries, however, furnished more surprising examples of disregard for public convenience. Twice in Switzerland—once in the Juras and once in the Oberland—the road was being remade on a slightly different site, and passage was entirely obstructed, necessitating, in one case, a considerable detour, and in the other a long wait while the base of a scree was being shovelled across the track. In neither instance was there any warning whatever. Germany provided another case, where the complete stopping of a heath road, to which the only alternative was a very soft, sandy lane, was practically unnotified; but, perhaps, the worst example was seen in Holland.

Near Zwaart Luis, on the east of the Zuider Zee, a road running characteristically along a high dyke, and



OUR NEIGHBOURS' ROADS.—Contd.

not to be avoided without a very wide detour, was completely stopped for repaving with brick, but no notification of the blockage was posted up, and only at one end was there a light after dark, and that was very dim, and so placed as to appear unconnected with the road at all.

In some parts of Germany, as in the Harz, for instance, the roadmen have an objectionable habit of placing rows of fairly-large stones on the road in such a way that traffic has to pursue an acutely-zigzag course. The object, presumably, is to compel motorists to slow down to a walking pace, "schritt fahren," in the phrase so often seen by German roadsides, but often the men may not be at work on the road at all, being engaged, perhaps, in clearing out a ditch. There are certain other inconveniences encountered on foreign roads which are seldom remembered when our highways are disparagingly compared.

Level crossings are rare at home, except in a few flat districts, but it may be averred that any other mode of a railway crossing a road is much rarer abroad. One might travel for a week and still be able to count on one hand the railway bridges passed over or under. Many crossings have no barrier at all, and one has to rely on sight or on hearing the din kept up by the bell of passing trains. Then, and this is particularly the case in France and Belgium, light railways cut into and across the roads in the most unexpected and dangerous way, and, further, the comfort of travel is most unpleasantly interrupted at so many towns and villages by deep, axle-breaking transverse gullies and by stretches of most abominable pavé.

Besides these features, which have hardly any equivalents at home, one recognizes abroad in varying degrees most of the lesser defects one is used to here. That is so even in France, where it is only necessary to be a little observant to see that the boasted systematization of everything—striking certainly when contrasted with our methods—is very far from being thorough. Centralization, though it has achieved much, has not produced, by any means, complete uniformity, even on "routes nationales." On these highways the boundaries between the departments are often as noticeable from surface variations as those between our counties, and often as eccentric in their crossing and recrossing.

Sometimes there may be 10 stones to a kilometre, sometimes two, sometimes only one; sometimes the stones are squared and dressed, sometimes not, and the information they give varies as much as their appearance. Nor are the sign-plates any more uniform: some being full, some meagre, and some—quite a large number, perhaps the majority—being nearly as absurdly parochial as our own in their information. Brittany probably conforms least to general custom, though between different departments; elsewhere, those of Normandy, for instance, there is much difference, but in the former province the roads are very markedly of inferior quality, and the signpost system is very neglected, the place of the familiar blue-iron plate being usually taken by half-obscure boards, often bearing most inadequate particulars and frequently illegible.

Even the standards of width are occasionally departed from, and one finds such anomalies as the existence, in the Vallée d'Auge, on so important a road as that from Paris to Cherbourg, of an old 10 ft. wide bridge, restricting the thoroughfare not so very much less than does Wansford bridge our Great North Road. Another instance of the existence of a difference between theory and practice and one which seems to have escaped the notice of visitors to France is the fact that large numbers of important roads, both national and departmental, lack the characteristic row or rows of trees which are commonly referred to as universal accompaniments. Switzerland has a very poor direction post and distance-mark system, and Holland, except for such signs as the Dutch clubs have put up, practically none, while between the different States of Germany one finds in these particulars as much variation as in England.

In Britain direction-plates in towns or considerable villages are almost non-existent, but in France and Belgium they are laudably common. I remember in one little straggling and very puzzling Belgian town, signs marking

the way past no fewer than 10 turnings. Sometimes, however, these urban signs are very obscurely placed, though on persevering search one will almost certainly be discovered.

In France the system is more likely to fail the stranger; sometimes, it may be, because there are no plates at all, and sometimes because of some such anomaly in the system as occurs at Hesdin. Here, in the little town, the "Route Nationale" is broken, and the "Chemin de Grand Communication" which has to be traversed to link the two ends together alone has plates in the streets, so that, until the main road resumes its independent existence, mention of Abbeville is shelved for unimportant Frevent, the destination of the minor road.

The continuity of French roads is nearly as often broken by little towns as is the case in Britain and other countries, and there is nothing to show that, when the roads were straightened out, much more was done to reduce the deviousness of their passage through places than has ever been done here, and if in France there ever grows that volume of traffic which we shortly expect in England, the question of by-pass roads will be just as pressing with the French as with us.

In the matter of the treatment of motoring by the authorities, there is not much evidence of greater enlightenment abroad than at home. It is true, to employ a paradox, that that very un-English practice of police trapping seems peculiarly English, but one sees abroad a far greater number of speed limits and at least an equal inconsistency between them. One finds, for instance, in the busy city of Angiers an 18-kilom. speed limit, while three miles away, on a wide, straight, and traffic-free road, only a 16-kilom. limit will content the few inhabitants of a straggling village.

Every other village seems to have its speed limit, varying between 8 and 20 kilom., and in Germany there is nearly always either a limit or an admonition to go at a walking pace. On the whole, there are certainly far more notices to motorists in foreign countries than here, but I suppose that only residents can say in which land they are enforced the most. Possibly it may be that Switzerland is the most backward in its attitude.

Numbers of roads and some of its passes are closed entirely (the reason in the latter case being given as the danger of the post-horses taking fright at motors), and others are closed one day in the week (as the Brunig Pass, from 9 till 4 on Sundays), or certain hours in the day (i.e., two streets in Bienne, between 7 and 10 p.m.), very irritating restrictions.

Quite a number of roads in the Black Forest are also completely closed and for the same reason as the Swiss passes. In a country deriving so much of its wealth from visitors as Switzerland does, the private touring car probably upsets the existing order of things too much for it to be very favourably looked upon, and the wording of the notices certainly looks somewhat ominous; thus: "Speed limit, 10 kilom. an hour; fine 50 francs," or "Motors forbidden; fine 130 francs."

Obscurity in the position of notices is not a thing confined to these shores. The Bienne restriction notice just referred to looks as if it were meant not to be seen, while in the north of France speed limits are often printed on poster paper and placed on advertisement boardings, where no one would dream of expecting to see them. In the attitude of the non-motoring road user Britain occupies no exceptional position either. In some parts of England nearly everyone will make way for the motor readily and unasked, and in all parts some will do so, and it is the same abroad. There, one may recognize all the obstructive types one knows at home, sullen and obstinate drivers, slow-witted but willing ones, careless ones, inattentive ones, and so on, as well as rash and heedless pedestrians, and imprudent, reckless, or incompetent cyclists—none of these are peculiar to Anglo-Saxon character.

In conclusion, then, whilst not seeking to deny our own faults, and while readily admitting that we, like other nations, could profitably copy or adapt some of our neighbours' ways, I would not agree, from my glimpse of other lands, that the British motorist is, weighing one thing against another, any worse off than his Continental

OUR NEIGHBOURS' ROADS.—Contd.

brothers. We and they may be said to be brothers in misfortune, since we all have to face in our own ways the same great problem of adapting our highways to a form of traffic for which they were never built and for which they are all, if to varying degrees, unfitted.

I would have liked to have brought forward some considerations to show that the French system, either of

roads or of their management, is not one for us to set before ourselves as a pattern to be copied, and that we have no cause to be ashamed of our largely unique position in so much that pertain to highways, but to have done so would have unduly prolonged this article, and the bare reminder that there is something to be said for much that is too readily conceded to be anomalous and defective must suffice.

REGINALD WELLBYE.

From the Feminine Point of View.

Cars with Easy Controls for Motoring Ladies.

I HAVE become hopelessly bewildered as to what makes to select as having specially easy controls. A perigrination round Olympia discloses the fact that nearly every modern car is built to what seems to be almost perfection in the matter of ease of driving. By endeavouring to shut my ears to the voice of the salesman, and make my eyes work on their own account, I succeeded in disentangling the idea that the following-mentioned cars would be the most likely to suit the average lady driver, with a few others to please special tastes.

The 14 h.p. De Dion is excellent in many ways, and is a good-sized car for general everyday use, particularly if a cabriolet body be chosen. The control is delightful, and simple to a degree. There are only two pedals—one for the clutch, the other for throttle and brake. Half depression operates the throttle; with full depression the brake is in use. The action of this throttle and carburettor is particularly interesting, and should be especially studied. A detailed description would take too much space this week, but it allows of a rich mixture to be in the cylinder for easy starting up—a great point in its favour as a lady's car. The change-speed arrangement is good to manipulate: no gate, but none of the disadvantages of the old quadrant type. Only a mere pressure on the knob on top of lever is required, and forward and backward movement for first and second speeds; whilst to go from second to third, all that is necessary is to leave knob to its own devices and push the lever straight forward.

Another charming little car of about the same power is the small F.I.A.T. (12-14 h.p.). It is a perfect miniature of a highly-finished large automobile, and would be a trustworthy purchase for anyone. The driving is quite simple, there being no unnecessary lever. If money is not a primary object, the 15-20 h.p. is a finer all-round car, and is just about the most useful size for the average lady motorist's needs, combining speed, splendid hill-climbing qualities, reliability and ease of control. It has separate clutch and brake pedals, and accelerator pedal between them. This, by the way, is, I think, the most convenient position. When the accelerator is placed to the right of all pedals, as in some makes, it seems a little too far away for absolute comfort if a very quick movement is required. This year F.I.A.T.'s are fitting on the above type a lever on steering wheel, enabling the magneto to be advanced and retarded at desire.

The Sheffield-Simplex Co. have produced a very interesting chassis of medium power. The method of control on these cars will be appreciated by most

motorists, as it is claimed for it that it gives a particularly accurate and sensitive movement of the throttle. It consists of a flat pedal, moved laterally, leaving only the ignition lever to be operated by hand. I shall give personal experience shortly of this uncommon (though long-established by this firm) way of regulating a car's speed, as I hope to be driving one this week.

Those of us who still dread the moment when gears have to be "shot," should have a look at the "gearboxless" model of the above make. It is, of course, higher-powered, being a 45 h.p., but these bigger cars are often less tiring to drive than their smaller sisters—which is a point worth consideration by those who can afford the upkeep of a large car, especially so in the present instance, for the claims made for this "gearboxless" model are wonderful. There is a low gear built for emergency, but in ordinary circumstances it is never used, the engine being so powerful and flexible.

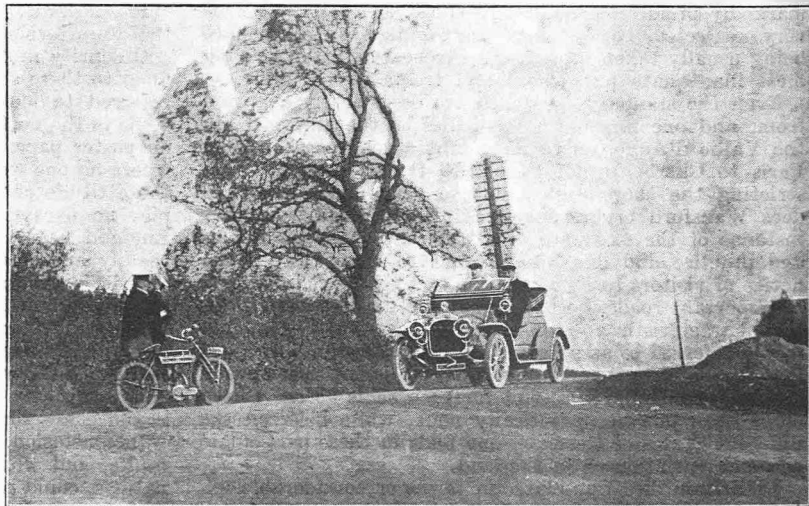
The Rolls-Royce is another car delightful for any lady to drive who likes a big machine, for nearly anything can be done on top gear. The control levers on the steering wheel are also an aid to easy manipulation, for all the positions for throttle and ignition are plainly marked, and the movement is all made for comfort. As regards reliability and workmanship, nothing need be said; it is too well known.

Panhard models have several points to gain the motorist's favourable opinion. The peculiar control on the wheels for ignition and throttle is very smooth and nice to use, the mere turning of toothed drums on the steering wheel effecting the

necessary movement. Some of the quadrants with lever moving over teeth are very stiff. There are, on the type I liked best, four pedals to be used, but the extra one will often be found a great relief to lady drivers, as it is for engine braking, and it is an advantage in hilly districts to be able to avoid the full strain sometimes required to keep the ordinary brakes hard on.

Passing on to the next stand, I fought my way through the crowd, gazing with awe and admiration at the fascinating advertisement of the "Silent Knight" in the Daimler show. Not having space to describe it, it is best to get to the actuality in the form of the fine little 15 h.p. model, justly called "the lady's car." Many improvements are shown this year, the introduction of this lower power being one. The actual details are beyond the scope of this article, and not essentially connected with the control. The new engine is wonderfully flexible, and showing such good pulling power at slow speeds, there will not be the same temptation to rush hills, with fright urging you to squeeze the last ounce out of your engine to avoid a troublesome change on a bad gradient.

In my onward rush to collect as much information as possible in a short time, I next came on an old friend in the shape of the small Delaunay-Belleville. The 10 h.p. model can be had with four or six cylinders. If these, which I doubt not, are as pleasant to drive as the 15 h.p., I think purchasers will be pleased with their investment if they are their own chauffeurs. Nothing new is introduced for the control, an accelerator pedal "that's all." They do not want a



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FEMININE P.O.V.—Contd.

lot of fussing with; they are good-tempered cars, and decidedly easy to drive. Their special change-speed method is worthy of notice.

For those who like extra simple methods of gear changing and to have their hands free for steering, should contemplate the Adams cars, fitted with planetary gears operated by the foot. This year the firm also supplies the ordinary type.

If the prices and powers of the cars mentioned are too high for some readers, who contemplate purchasing a car to keep in their own care, let them turn their attention to the firms of repute who do not pretend to give enormous value for money, but may be relied upon for a good car at a reasonable price. For instance, firms like the Austin Co., De Dion, and the Swift Co. all turn out good stuff in very small cars. In the 12-16 h.p. class, there is another car which should really be studied, from a purchaser's point of view—I mean the Crossley. Its name alone ensures good workmanship. It is especially powerful for its size; and those who appreciate good turns of speed ought to remember to inspect this well-known engineering firm's models.

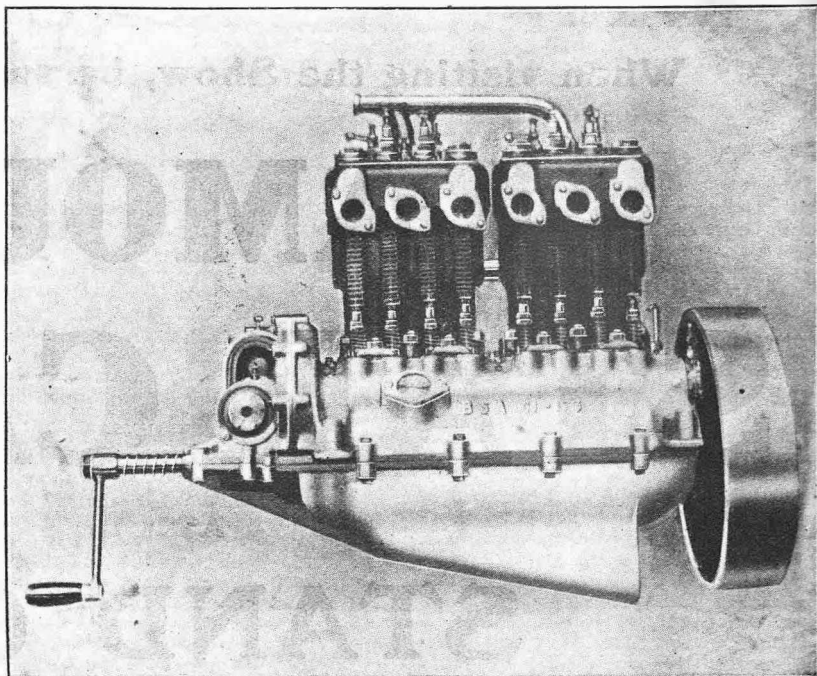
MECHANISTE.

NUMBER ONE.

No. 1 of "Motor Cycling" has had a great reception at the hands of the public. If you have not had a copy get one today if you can. Art Supplement and many attractive features.

The plant for the manufacture of "Rapidin," the new motor spirit, has now been installed, and the production of the spirit will commence in about two weeks time. A site for the factory has been acquired at Dartford, Kent. A new company, to be called "Rapidin," Ltd., will be formed to exploit the spirit.

The shareholders in Messrs. Dennis Bros., Ltd., have just met and received a dividend of 10 per cent. on the year, absorbing £10,000, whilst the sum of £21,000 is carried forward. The directors are to be congratulated, especially as the orders in hand are double the value of those of the preceding year.



The engine (valve side) of the new 15 h.p. B.S.A. car, described in last Tuesday's issue.



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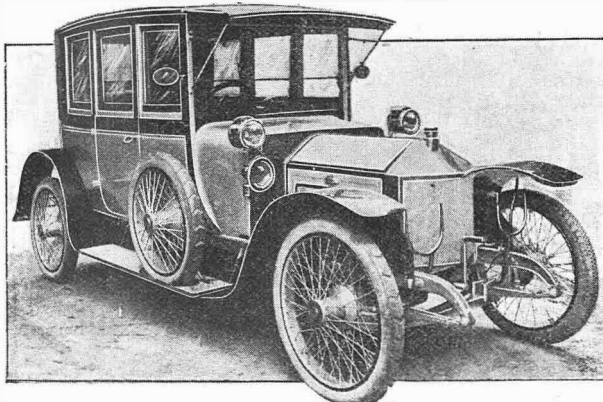
Telegrams—"Coradio, London." *Telephone—4224, 4225 Mayfair.*

The Road Races of the Past.

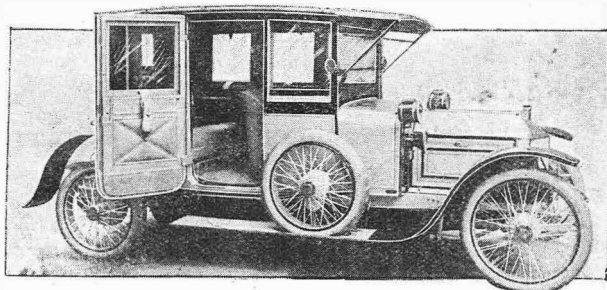
Those who take an interest in the history of the great road races that rendered such valuable assistance in the gradual development of the modern automobile vehicle will be glad to learn that the Royal Automobile Club is publishing a volume entitled "A Record of Motor Racing," by Mr. Gerald Rose. The work is obtainable from Messrs. Reveirs Brothers, 5, Fetter Lane, London, E.C.4. or at stand No. 2 at Olympia, the prices being as follow:—Bound in cloth, 10s. 6d.; bound in full roan, 15s.; bound in full morocco, £1 15s. It contains a large number of carefully verified tables, with 149 illustrations, seven maps, and a coloured frontispiece.

New Speed Limit for Reigate.

A 20-mile-per-hour limit for motorcars came into force on Monday over the following lengths of road in the borough of Reigate:—London to Brighton Road: from Castlefield Road to the south end of the White Hart Hotel; High Street, Reigate: from the Brighton main road to Park Lane; Redstone Hill, Redhill: from Redstone Hollow to Station Road; Station Road: from Redstone Hill to Oxford Road; High Street, Redhill: from Clarendon Road to Cromwell Road.



A front view of the Van den Plas body on a Metallurgique chassis. Exhibited by Warwick Wright, Ltd.



A view of the interior of Metallurgique showing the deep seat and couch back of driver's seat.

Signposting the Great North Road.

The work of signposting Watling Street having been completely carried out by the R.A.C., a like enterprise is to be proceeded with immediately on the Great North Road. The original proposal was to post the road from London to York; but it has now been decided to extend this useful work still further by continuing it to Edinburgh, which means that the road provisionally scheduled will be turned from Doncaster, whence the direct road to Edinburgh will be taken.

Motor Schools.

The Royal Automobile Club will at all times be pleased to supply particulars of officially-appointed motor schools in London which have been examined by experts in order that the Club may be quite satisfied that the plant is sufficiently extensive, and that the pupils are taught on such practical lines as will enable them to enter successfully for the Club's certificates. The Club is fully aware that there are motor schools where the instruction is not of a practical nature, and where the pupils do not receive an adequate return for their fees, and for this purpose the Club has instituted a system of examination for the enrolment of motor schools of which the equipment and the method of instruction have been passed as satisfactory by the examiners.



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