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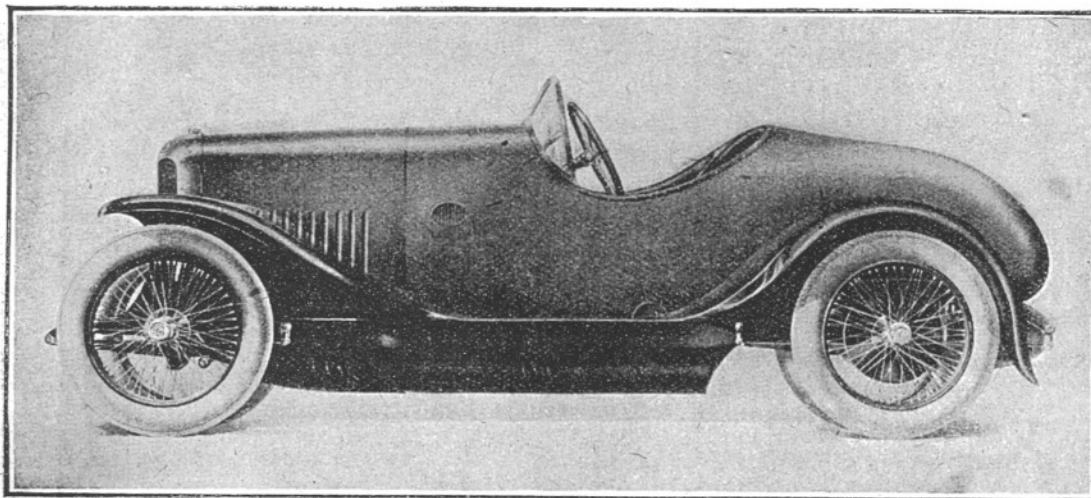
PARIS SALON, 1919:

A general view of the Main Hall of the Grand Palais

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*AGENCIES FOR CERTAIN TERRITORIES STILL OPEN.*



## THE 25 H.P. DIATTO

A Chassis of Conventional Italian Design, having a Four-Cylindered Monobloc Engine, a Separate Four-Speed Gear-Box, and a Unified Back Axle and Propeller-Shaft Casing



WING to the peculiarly arduous conditions under which Italian cars are tested for service, they, even more than others, have always represented a more hardly-contested compromise between high motor-efficiency from a laboratory or test-bench standpoint and the adverse conditions begotten of the road. To define the matter more exactly, the issue has lain between the most favourable development of thermal efficiencies on the part of the motor, on the one hand, and on the other the effectiveness of the radiator, which, the more it assures the motor against the possibility of seizure, by sufficient cooling along all those miles of continuous test-climbing, the more it helps to destroy these very efficiencies. This, one maintains, was always the true aspect of the Italian car as such, narrowed-down to a contest between antagonistic volumes, so to say, of heat on one side, and cold water on the other. But in post-War Italian car-production it seems to have become a little more apparent. Mere gradual reduction of the water-volume—the laboratory indicator—would theoretically favour h.p.-output increase, but in practice, under those very conditions already stated, it would obtain no better result; in fact, would lessen the reliability-factor, which is the first of automobile essentials. A partial solution appears to be to employ an actually reduced water-volume more effectively, in a purely physical manner; that is to say, probably by the greater water-velocity of a higher-gear pump, and certainly with a taller radiator, and consequently a proportionately longer exposure to the cooling medium. At any rate, this is the most significant design-point one remarks in many Italian examples.

#### An Efficient Radiator

Actually, the most outstanding example of this practice happens to be a certain car made in the South of France.

But as, if anything, it fails by excess, one turns to the 25 h.p. four-cylindered Diatto—and to the dimensions of its radiator as its main feature—as the most characteristic model of the principle at its best—sufficient, but nowhere excessive. One sees this radiator to be of more or less rectangular shape, of no great thickness or width, and thus actually containing only a moderate amount of water, but of a height that leaves half the bonnet space un-filled by the motor. Moreover, there is no fan fitted, and thus the motor—which, except around its valves, is by no means excessively water-jacketed—is kept in the ideal power-condition of a constant high temperature, yet is never liable to seizure.

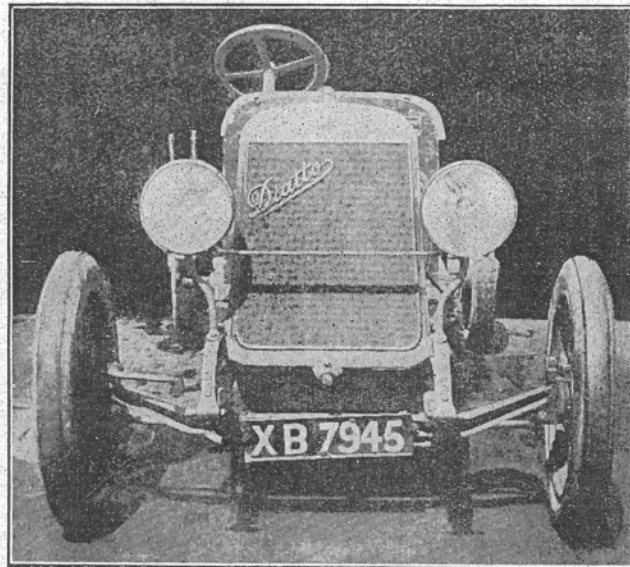
#### Conventional Italian Design

Otherwise this Diatto chassis—which is of a well-known and long established Turin make, though little seen in this country hitherto, and is now among those handled by Mr. Giulio Foresti, 66A, St. James' Street, London, S.W.1—does not, in the main, depart from conventional Italian practice. Not even sufficiently, one would say, for its design to be as distinctive as certain others of its own city. Its purpose is claimed, in fact, to be no more than that of a sporting model for hard and reliable service, with as few "bits" as possible. And, clearly fulfilling that purpose as it does, one

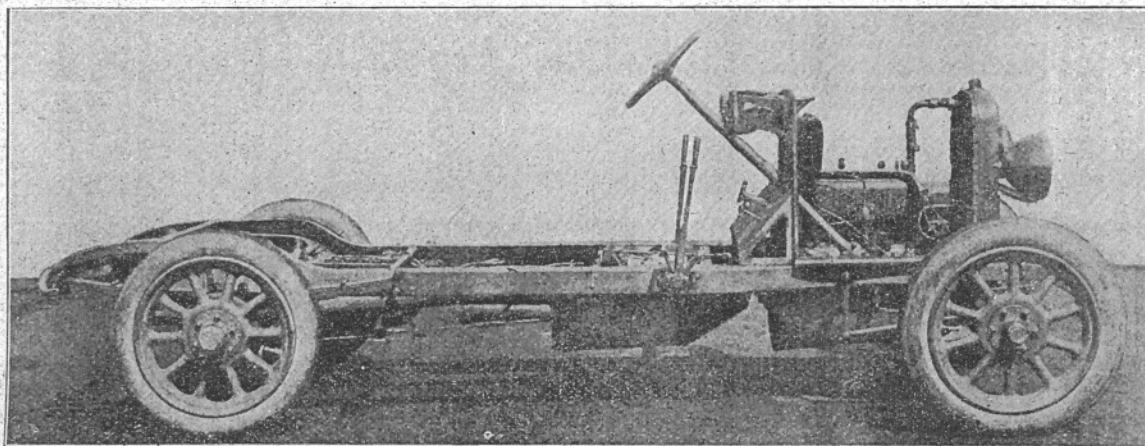
sees that in practically any other—as, for instance, a touring, family or town-use car—it should have a margin of effectiveness well in hand.

#### The Engine

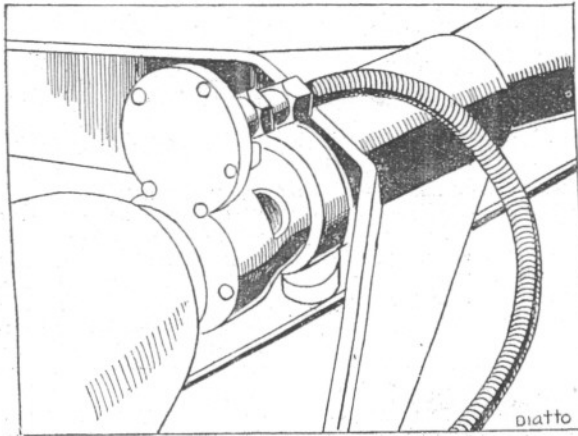
Its four-cylindered motor—85 mm. bore by 120 mm. stroke—is an L-headed monobloc exactly like a score of others, with its transverse induction from a Zenith carburettor on the off side to a gallery within the valve-chest, and an applied exhaust manifold, ribbed much as usual for radiation. It has the same transverse shaft-drive to the



Front view of the Diatto 25 h.p. chassis, displaying not only the radiator-design, but also the stoutness of the steering connections



THE 25 H.P. DIATTO CHASSIS: Off-side view: The height of the radiator will be specially noticed.



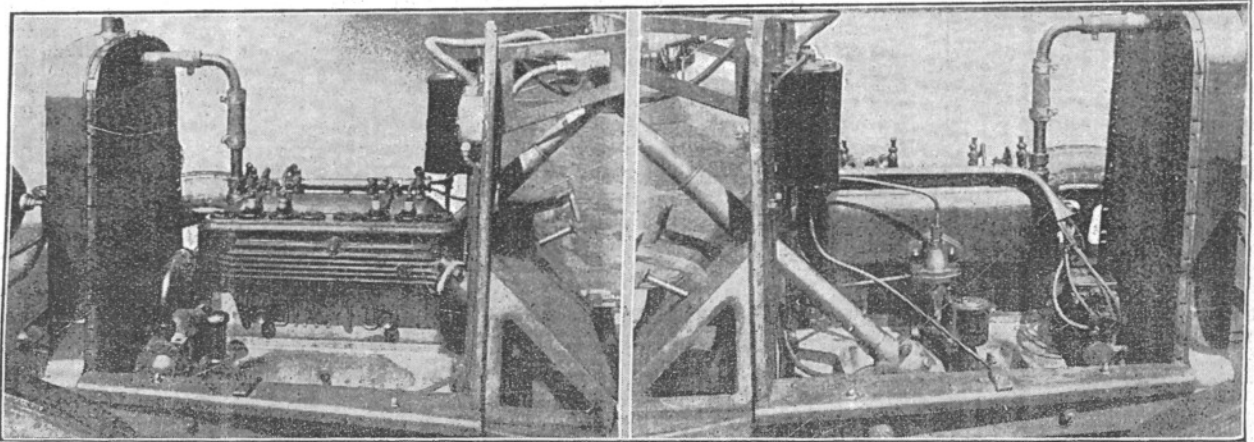
The Diatto method of working the speedometer-drive from the front end of the propeller-shaft

suspended below frame-level on the near side. The Smith starting motor is located rearwardly of the flywheel, on the off side. A feature is the adjustable accelerator pedal (illustrated in one of our sketches), which has a milled head and sleeve, the rotation of which quickens or slows the pull of the pedal on the connecting spindle to the throttle, and so hastens or dulls the action of the latter for slow or "open-road" speeds; all without reference to any control-lever, which thus becomes superfluous on the steering wheel. Electrical connections are made in a manner which looks reliable, and is at least substantially accessible and on sound lines, as will be seen from the illustration of the junction-box on the dash-board front. Internally the lubrication is also conventional, force-fed from the usual spur-gear pump to the three main bearings, but no further; with splash for the cylinder-surfaces. For the rest, noting the four-point suspension of the motor itself, the Autovac petrol-feed, and the worm-and-full-wheel steering-block on which Italian practice continually relies, one observes that the frame is on the light side, depending for its strength on flange-width midway rather than on depth of section—again after the Italian habit in these matters.

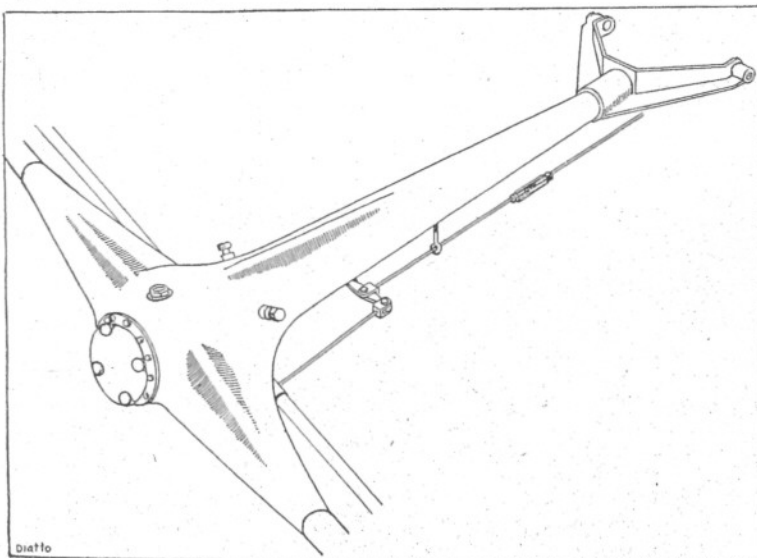
pump on the near side and the automatically advanced and retarded magneto on the off side that one remembers for many years, and is still unsurpassed for general purposes. A Whittle belt-and-pulley drive from the front end of the crankshaft serves for the Smith dynamo—which is

**The Transmission System**

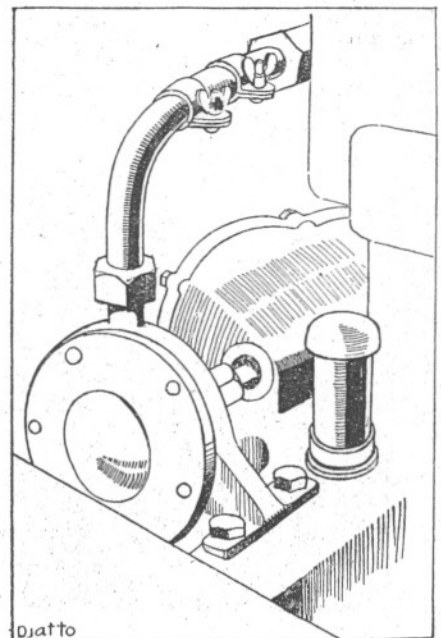
Transmission begins with a multiple-plate clutch, thence by a separate substantial four-speed gear-box, behind which is a scroll-cam-operated band brake, acting upon a drum enclosing the housing of the universal joint to the propeller-shaft. The attachment of the torque-tube is effected by the



Near and off-side views of the 25 h.p. Diatto four-cylindered motor, showing the water-connections and other external details



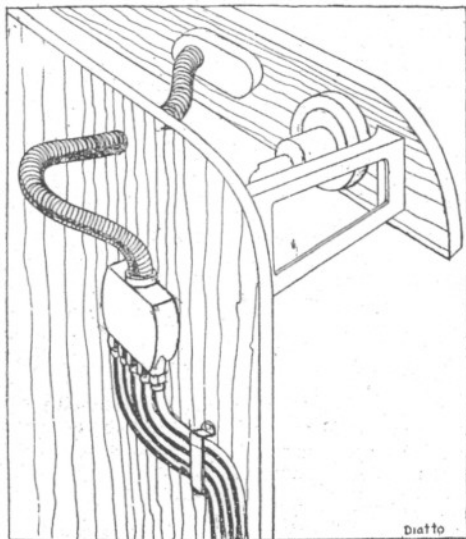
The Diatto torque-tube and rear axle unit: A beautiful example of pressed steel moulding for grace and strength. Note also the method of suspending the single brake-connection.



Diatto water-circulation detail



usual yoke, in which the torque-tube head is free to oscillate, and is grease-cap lubricated. But the modelling of the said tube, in one T-unit with the axle, is the most sightly example of press-work and seamless welding one remembers, each of the three members being moulded into four quartering



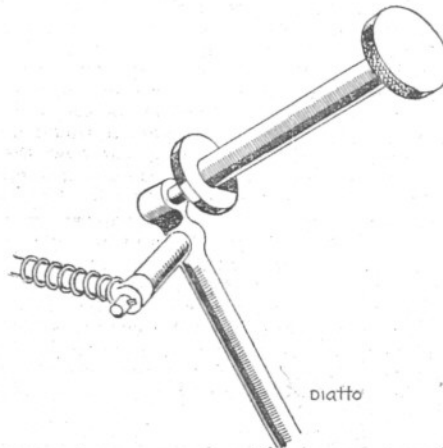
The neat installation of the electrical connections on the 25 h.p. Diatto chassis

ribs, in the manner of a tree trunk, again showing the mechanical value of the merely beautiful as such. Behind this unit is a large inspection-plate, through which everything is inserted for assembly, the two sleeves being pressed into either arm and set into internal webs to complete a fully-floating axle.

As one of our illustrations shows, the torque-tube carries a single emergency-brake connecting and equalising beam,

in a manner that at least prevents the rodwork chattering, if it does not better the trustworthiness of this medium of connection. Forward, too, the connection for control is no less neatly effected as, from a bracket anchorage behind the heavy U-shaped cross-member, a bell-crank is connected to a lever from the near-side end of a shaft which comes concentrically through the tubular shaft carrying the gear-change striking levers.

Practically the only other distinctive features of the Diatto chassis are the duplicated exhaust-silencer, and the



The adjustable accelerator pedal on the Diatto chassis, giving two minimum settings

method of enclosing the speedometer-drive from the front end of the propeller-shaft, as illustrated. Suspension is by long semi-elliptics, fore and aft, the front springs being set in the axle a little forward of their centres. It will be seen, too, that the steering connections are of substantial dimensions, these being properly regarded in Italian practice as the last thing to be cut for weight-saving.

Wheel-base and track are 10 ft. by 4 ft. 8 ins.

## LUBRICATION AND THE GERM PROCESS\*

In this paper the authors draw attention to the fact that the modern view of lubrication on the physico-chemical side is the existence of a residual valency or affinity between the oil and the solid surfaces of the bearing and journal. The problem has therefore to be considered as a kind of intimate relationship between the oil and the metal.

This is quite a different view from that held by investigators in the past, who thought that the property of "oiliness" so strongly manifested by fatty oils, as compared with mineral oils, resided in some particular physical characteristic of the oil itself. The modern point of view has been elaborated recently by a number of students of the subject.

The authors have discovered the "reason" why the fatty or fixed oils possess superior friction-reducing properties to those of mineral oils. They have shown that this is due essentially to the presence in fatty oils of minute quantities of free fatty acids, which are absent in the majority of mineral oils. In consequence of this discovery they have added small quantities (about one per cent.) of fatty or organic acids—which are easily accessible and relatively cheap—to mineral hydro-carbon oils.

The products so obtained possess remarkably low frictional

\* A synopsis of a paper read before the Chemical Section of the British Association at Cardiff, August 25, by Henry M. Wells and James E. Southcombe, M.Sc.

coefficients. As an example, the addition of 2 per cent. of common fatty acid to a mineral hydro-carbon oil reduces the coefficient of friction, shown by this oil on a friction-testing machine, from 0.0084 to 0.0052—a diminution of 26 per cent. By suitably choosing the type of fatty acid to be added to mineral oil, the behaviour of oils in the presence of water and other contaminating substances can be modified at will. It is also shown that the risk of metallic corrosion is even less with these oils than with the usual compounded oils, because the latter frequently develop, in working, notable quantities of free acid.

The principle of making mineral lubricating oils possessing increased friction-reducing properties, by adding to mineral oils suitably-chosen fatty acids in relatively minute amounts, has been somewhat fancifully called the "Germ Process," because the fatty acid is the germ of the idea. The value of the process lies in that oils possessing friction-reducing properties much superior to mineral oils can be prepared at relatively little extra cost to mineral oils.

Finally, it may enable the lubricating oil manufacturer to produce the highest class of friction-reducing oils from comparatively thin, and therefore cheaper, mineral oils; and incidentally this may have the utmost significance today, when we are striving to foster and develop the mineral oil production of our own country and the Empire.

LANARK TOWN COUNCIL is revolting against the revels of Sunday trippers; the processions of motor chars-à-bancs, containing young miners and steel workers, with an abundance of money, are represented as rendering the Scottish Sabbath "a hollow mockery."

IN a written reply to Major Wall, who asked the Minister of Transport whether he will consider the possibility of requiring all drivers to be insured against third-party risks, many owner-drivers being unable to stand heavy claims, Mr. Neal said that the difficulties surrounding the suggestion are such that the Minister does not see his way to adopt it.

THE northern branch of the Junior Car Club are holding a rally on the occasion of the North-Western Centre's Hill Climb at Heyden Bridge on September 5, at 2 o'clock, after which it is intended to proceed to the Jolly Sailor Hotel, Marple, for tea, meeting there at 5.30 p.m.

LAMBETH COUNCIL report that they have sanctioned a new 'bus service to the Crystal Palace, on the understanding that the London General Omnibus Company contribute 2d. per car mile for road maintenance. The company, however, in agreeing, do so on the understanding that the matter will come before the Ministry of Transport.

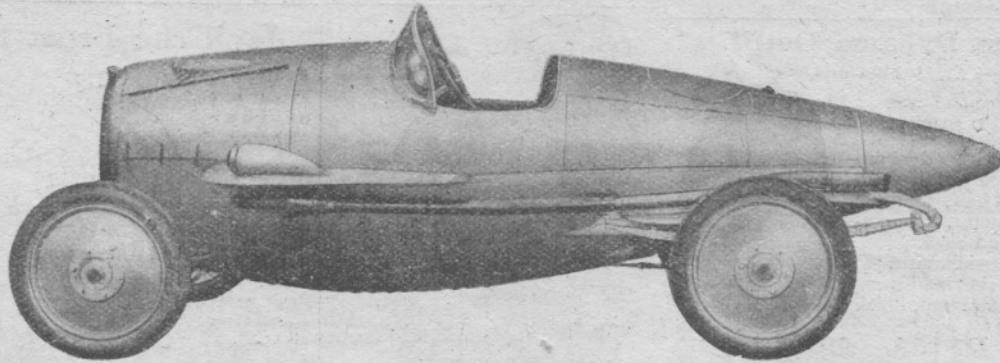
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## THE ITALIAN LIGHT CAR RACE.

FOLLOWING on the success of the French cars in the three-litre race at the Brescia meeting comes the news of the four-fold Bugatti success in the event for the 1½-litre cars, run on September 8. In the big event only three out of the six starters finished the 30 circuits of the course, but in the race for smaller cars seven finished out of eleven starters, although they were only set to cover 20 laps. The cars were started in pairs at one-minute intervals, Friederich on one of the Bugattis being the last to be sent off. He soon showed, however, that his place was in front. He was leading at the end of five laps, but at the half distance he had dropped back to fourth place owing to a burst tyre and a run of 10 kms. on the rim. When he got going again he gradually

made up his leeway, and when 15 laps had been covered he was lying second. He finished first in 2 hrs. 59 mins. 17 secs., his speed for the full course of 348 kms. therefore working out to almost exactly 72 miles per hour. The next three places were occupied by de Viscaya, 3 hrs. 0 mins. 35 secs., Baccoli, 3 hrs. 6 mins. 46 secs., and Marco, 3 hrs. 9 mins. 40 secs., all on Bugatti cars. The other three to finish were Minoia, 3 hrs. 13 mins. 49 secs., Coffani, 3 hrs. 14 mins. 37 secs., Iliprandi, 3 hrs. 29 mins. 29 secs., all on O.M. (Officine Meccaniche) cars.

The Competitors who fell by the wayside were Restelli (Restelli), Ramasotti (Chiribiri), Sivani (S.B.), Scales (Chiribiri), Deo (Chiribiri), Morandi (O.M.).

### THE J.C.C. MEETING AT BROOKLANDS

AGAIN unfortunate in that their fixture clashed with others, the Junior Car Club had to be content with four or five starters in each of the half a dozen events which made up the programme of their autumn meeting last Saturday at Brooklands. Under these conditions it was hardly to be expected that there would be any really exciting racing. The results were as follows:—

**Cycle-car Handicap** (2½ miles).—G. L. Hawkins (G.N.), scratch, 1; D. S. Macaskie (Buckingham), 13 secs., 2; A. R. Garnett (Diatto), 10 secs., 3. Winner's speed 42 miles per hour.

**Junior Short Handicap** (5½ miles).—W. H. Oates (Lagonda), 8 secs., 1; A. W. Brittain (Calthorpe), 2 mins. 18 secs., 2. Winner's speed 75.92 miles per hour.

**Sprint Race** for 1,500 c.c. cars (¼ mile).—G. L. Hawkins (G.N.), 1; D. S. Macaskie (Buckingham), 2. Winner's speed 47.12 miles per hour.

**Junior Long Handicap** (8½ miles).—A. W. Brittain (Calthorpe), 3 mins. 27 secs., 1; W. H. Oates (Lagonda), 12 secs., 2; G. L. Mather (Douglas), 1 min. 3 secs., 3. Winner's speed 51.39 miles per hour.

**Ten-lap Handicap** (for 1,500 c.c. cars).—A. W. Brittain (Calthorpe), 11 mins., 1; W. H. Oates (Lagonda), 20 secs., 2; C. Pressland (Crouch), 6 mins. 50 secs., 3. Brittain had covered three and a half laps before Oates, at virtual scratch, started, and he won by over a lap at 57.18 miles per hour.

**Members' Novice Handicap.**—A. A. Pollard, A.C., won at 54 miles an hour.

### The 200-Mile Race

SOME further details as to the arrangements for the 200-mile light car race at Brooklands on Saturday, October 22, have been announced by Mr. Hugh P. McConnell, who, as organising secretary of the event, seems to have foreseen and provided for every eventuality in his endeavour to make the race a success.

We understand that the cars will be started in four rows and at quarter-minute intervals.

The rows will be distinguished by colours: First row, yellow, will include numbers 1 to 19; second row, red, numbers 20 to 39; third row, green, numbers 40 to 59; and fourth row, white, numbers 60 and above.

There will be a pit area 700 ft. long with two cars to a pit. The numbers of the cars will be on a disc, 18 ins. diameter, behind the driver, and visible fore and aft.

AN official of the Automobile Association recently noticed that certain speed limit signs had been erected covering a greater area than that prescribed by the Ministry of Transport. The Association immediately notified the authority concerned, who at once took the necessary steps to have the signs removed to the correct positions. Motorists observing any signs, the justification for which is doubtful, are requested to send particulars to the Secretary, A.A. and M.U., Fanum House, Whitcomb Street, London, W.C. 2.

A NEW type of motor life-boat has been specially built for experiment at Easbourne to meet the launching conditions on that part of the coast, and has just proceeded to her station from Cowes under her own power. She is the only motor life-boat to be launched from a carriage, instead of down a slipway, and is a self-righting boat, 35 ft. by 8 ft. 6 ins., fitted, for experimental purposes, with a 15 h.p. Miller engine, to be used as an adjunct to her sails.

THE man who left his car in the Bristol street unattended while he went off to make a telephone call was fined ten shillings.

### THE ESSEX M.C. RUN TO BALA

OF the 47 entrants in the annual 24-hour run of the Essex M.C. to Bala on Friday and Saturday last, 21 were of the car variety. The weather was ideal, and the route outwards was Highgate, Dunstable, Daventry, Tamworth, Wellington, Shrewsbury, Welshpool, Llanfair, Dinas-Mawddy, Bwlch-y-Groes to Bala; on the return journey the route from Bala was via Rhosygwalia, Lake Vyrnwy, Cann Office, Llanfair, Welshpool to Shrewsbury, after which the route was the same as on the outward journey, taken in the reverse direction, to the finish at Dunstable.

This made up a distance of approximately 420 miles, and riders, in order to qualify for a premier award, had to make non-stop runs over two of the famous Welsh mountain passes, Bwlch-y-Groes and Rhosygwalia, and to be not more than five minutes early or late at any of the official checks *en route*.

This, in spite of the favourable conditions generally prevailing, proved to be quite a formidable task for the majority of the competitors, and it is not anticipated that the gold medal awards will be more than eight or nine. Among the competitors in the car section those who survived the ordeal, although the awards are not available at the time of going to press, were H. Fuller (Buick), D. Lovell (Buick), W. Cooper (Morris-Cowley), W. H. Wells (Chandler), O'Connor (Rover), Rex Mundy (Dodge), Alan Hill (Rover), Hyams (Orpington), Featherstonhaugh (Rover), Forster (Alpine), Saunders (Alpine), Formilli (Carden), Wright (Carden).

### A Chester-Bala Trial

A ONE-DAY Reliability Trial was held recently by the Northern Branch of the Junior Car Club. Eight cars started. The route lay from Altrincham to Ruthin *via* Chester and Mold, with an observed hill-climb at Loggerheads. A lunch interval at Ruthin was followed by a second observed hill-climb at Llanfihangel and an open check at Cerrig. Thence the run was through Bala, Corwen and Llangollen. After tea the Horseshoe Pass was climbed successfully by the majority of the cars.

All checked in at Chester. Six cars qualified with 91 marks or over; they included one B.A.C., T.B., A.B.C., Enfield-Allday and two Charron-Laycocks. The bronze medal for 81 marks or over was gained by a Calthorpe, and the special prize for the best performance of the day was won on an A.B.C.

SEVERAL years ago the population of the Grisons decided by referendum that no motor-car should be allowed to run on the roads of the Canton, but we understand that recently the Federal Council decided that it had the right, notwithstanding the decision of the Canton, to permit motor-cars during certain hours to use any road in Switzerland, and authorised the passage of motor-cars on the Maloja route from 6 to 9 morning and evening. The other day the first motor-car entered St. Moritz, arousing the curiosity as well as the astonishment of the inhabitants.

WHEN a motorist was charged at Stonehaven with having driven a car without having a licence for the car, the Sheriff remarked that this was the first case of its kind in Kincardineshire, and his opinion was that the offence was due to inadvertence. He therefore imposed a modified penalty of £3 15s.

AT Bridlington, the secretary of a transport company was summoned for not having the registered weight of a motor-car placed on a car. The defendant company was fined £1, including costs.



also shown in chassis form. This was the car exhibited at the Paris Salon and commented on in our report of that Exhibition.

H.P.	Cyls.	Bore	Stroke	Speeds	Wheel-base	Price
					ft. in.	£
10	4	65	100	3	9 6	395
11.4	4	68	100	3	9 6	450
5	4	—	—	3	—	—

**Crouch (174).** Tower Gate Works, (England) Cook Street, Coventry. THE Crouch car has a twin-cylinder horizontal engine, with the cylinders opposed and detachable heads. The lubrication is by pump and splash, and entirely automatic. Thermo-syphon cooling is adopted, and the carburation is by a Cox-Atmos carburettor. The M.L. magneto provides the ignition, and the lighting is by Lucas dynamo, Whittle belt-driven. The valves are at the heads of the cylinders and operated by push rods. Aluminium pistons are fitted.

**Crown Magnetic (46).** J. L. Crown Motor Co., Ltd., 104, High Holborn, W.C. 1.

THE Crown Magnetic car has a 30.1 h.p. six-cylindered "Silent Knight" motor. This is fitted with the Zenith carburettor, S.E.V. magneto, cooling by pump. It has no clutch, but transmission on the Entz magnetic principle with infinitely variable speed regulation. The engine and the electrical transmission plant are constructed as one unit. An enclosed propeller-shaft carries the power to the rear live axle. The brakes consist of two magnetic and two rear wheel internal-expanding brakes. The springing is semi-elliptic in front and cantilever at the rear.

30.1 6 90 140 — 12 0 —

**Diatto (47).** Automotive Industries, (Italy) Ltd., Bagshot, Surrey. The range here includes three models,

10 h.p., 15 h.p. and 20 h.p. All of them have monobloc four-cylindered engines; the 15 h.p. engine has a detachable head with overhead valves operated by rockers. All cars have Westinghouse starting and lighting sets, the dynamo being driven by belt on the 10 h.p. and by gears on the others. The smallest model is fitted with disc wheels, while on the others the Dunlop wire pattern is standard. The equipment in each case includes five wheels and four tyres.

10	4	60	90	3	8 2	475
15	4	80	100	4	9 10	—
20	4	85	130	4	9 10	650

**Dixie Flyer (51).** North-Western Motors, Ltd., Norton Street, Liverpool.

Two models of this make will be exhibited, and although they are little different as regards power, each has characteristic features of its own. The smaller one, of 17 h.p., has a four-cylindered Herman Spilman engine, 3 1/2 in. bore by 5 in. stroke, and the equipment includes Dyneto battery ignition, artillery wood wheels, spare rim, lamps and clock. The H.S. model is of 19.6 h.p., and has a four-cylindered Herman-Spilman engine, but the bore is 3 1/2 in. and the stroke 5 in. In this case the Dyneto starting and lighting set is fitted, but the ignition is by an Eiseman magneto. Wire wheels are standard, and the equipment includes spare wheel, three lamps and clock.

17	4	3 1/2	5	—	—	425
19.6	4	3 1/2	5	3	9 4	455

**Dodge (68).** British Automotive Co. (U.S.A.) Ltd., 19-21, Great Portland Street, W. 1.

In view of the hill-climbing exploits by this car, as recently recorded in the AUTO, it will no doubt come in for a good deal of attention. There will be one bare chassis on view and three others fitted respectively with a three-quarter English-built landaulet, a standard black four-seater body and a four-seater *de luxe*,

while on Messrs. W. and F. Thorn's stand there will be the all-weather Dodge car

17.24	4	98	114	3	9 6	—
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**Essex (43).** C. A. Glentworth, 29, High Street, Barnes, S.W. 13.

It is claimed for the engine of the new Essex car that although it is only rated at 18.2 h.p. it actually delivers 56 b.h.p., while the petrol consumption averages 22-26 miles per gall. The specification of the car follows the well-known lines, and includes the radiator shutters which give the radiator its characteristic appearance, the Boyce motormeter, shock absorbers, electric lighting and starting sets, five lamps, speedometer, cow-ventilator. The upholstery is in real leather, and the hood has curtains opening with the doors, making the car an all-weather model.

18.2	4	85.7	128	3	9 0 1/2	498
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**G.N. (64).** G.N. Motors, Ltd., East Hill, Wandsworth, London, S.W. 18.

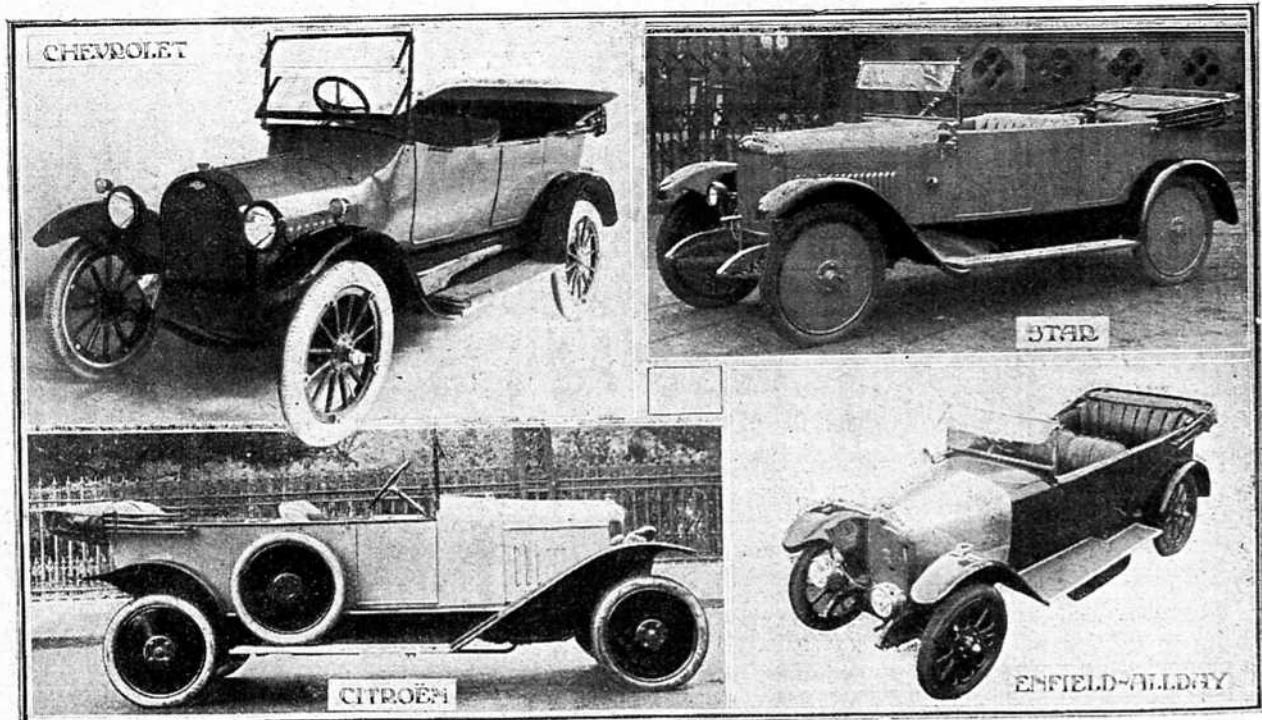
THE 10 h.p. two-cylindered G.N. has a two-cylindered engine, air cooled, with detachable heads, automatic lubrication, Sthenos carburettor, M.L. magneto and Miller electric lighting. The gear gives three forward speeds with a right-hand change, plate clutch and a final chain drive. Wire detachable wheels and 650 by 65 mm. tyres are standard. A standard chassis and a standard touring model two-seater with dickey-seat will be shown, also an all-weather two-seater and a Leg're model with aluminium pistons and body and special gear ratios. The winning of the 200-mile race for 1,100 cc. cars and the records recently set up by this car will make this exhibit particularly interesting.

8.7	2	84	89	3	8 6	240
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**G.W.K. (62).** G.W.K. (1919), Ltd., (England) Cordwalles Works, Maidenhead.

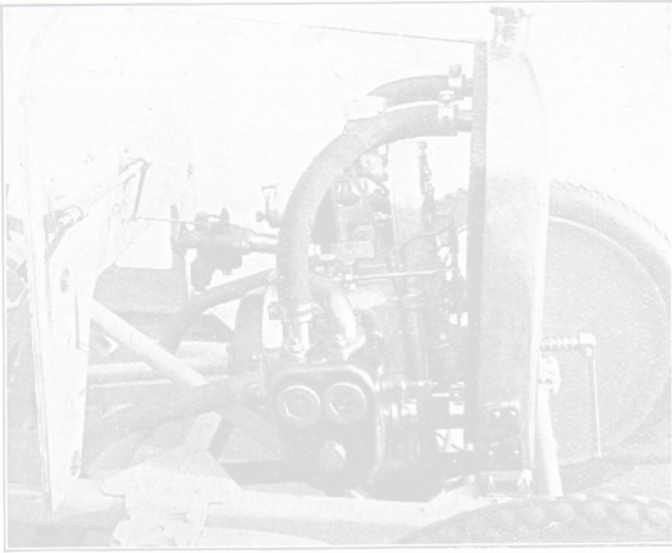
THE firm will show examples of three models. Model H is the standard

The number after each car's name is the White City Stand No. The country in brackets is the country of origin. \* Chassis only.



SHOWING VARIETY OF TREATMENT OF THE OPEN TOURING CAR: Top, left, the Chevrolet five-seater; right, the new 11.9 h.p. Star. Below, left, the 10 h.p. Citroën, with standard body, and, right, the Enfield-Alldays.





A side view of the twin-cylindered 8 h.p. engine of the Corona, showing the accessibility of the valves and the magneto and carburettor.

expanding type. The other set of brakes is controlled by the pedal. At the rear of the gear-box is a big fabric joint which anchors the end of the propeller shaft running in the long propeller tube. This conveys the power to the under-geared worm drive on the rear axle.

The back axle has substantial tubular members and a welded steel centre which encloses the worm drive and differential. It carries the lugs which form bearings for the shafts operating the brakes in the wide rear wheel drums.

The springing is by quarter-elliptic springs, the ends being rigidly bolted to the chassis frame and the ends rigidly attached to oscillating plates on the axle. The axle is stayed by a tie-rod.

The front axle is tubular. The wheels are detachable disc fitted with 28 by 3 in. Dunlop Magnum tyres. A Tredelect dynamo electric lighting set is fitted as standard. The wheelbase is 7 ft. 6 ins. and the track 3 ft. 9 ins., and the weight is 7 cwt. The car is fitted with a specially made two-seater body designed to give the maximum comfort. It is constructed of sheet metal with fibre panels. The upholstery is in leather, and ample luggage room is provided.

The price, with two-seater body, and hood and screen and electric lighting outfit, including lamps, is £250. The makers are the Meteor Manufacturing Co., Ltd., who have their headquarters at 98, Tollington Park, London, N. 4.

## THE NEW DIATTO MODELS

### Some Particulars of Three Interesting Continental Cars

THREE interesting vehicles which are introduced by Messrs. Automotive Industries, Ltd., of Bagshot, Surrey, are the three models of the Diatto car, some particulars of which we are able to publish here, as well as some views of these very well-designed cars.

The three models comprise a 10 h.p., a 15 h.p. and a 20 h.p. In all cases the cylinders are *en bloc*, and in the case of the 15 h.p. model the cylinder head is detachable, this being the model which incorporates overhead valve gear.

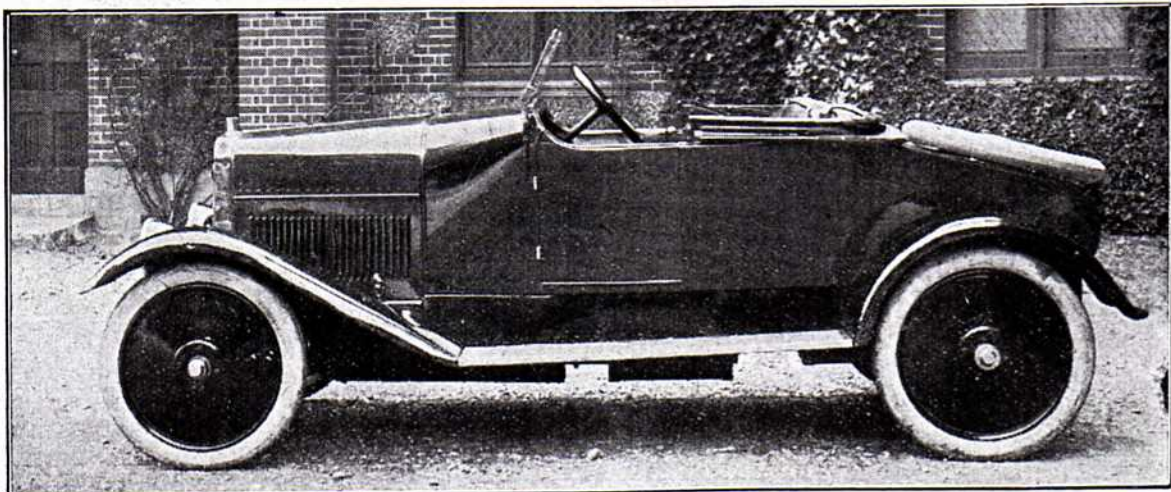
Of the 10 h.p. the bore and stroke is 60 by 90, of the 15 h.p. 81 by 100, and of the 20 h.p. 85 by 130. The cooling is by thermo-syphonic action through a big honeycomb radiator in the case of the 10 h.p. model, and the big water pipes will be seen in our illustration of the engine, where it will be noticed how the cold water comes in around the hot exhaust valve jacketing. In the case of the 15 and 20 h.p. models the conventional circulating pump is used in conjunction with the fan to ensure proper circulation and cooling of the water. The fan in the case of the 10 h.p. is in a cowl and belt driven. The 15 h.p. model has a gear driven fan, and the 20 h.p. model a flat belt driven fan.

In all cases lubrication of the engine is forced by a pump,

engine driven, which forces oil to the main bearings of the engine crankshaft, and has special provision for filtering the oil from the sump and for ascertaining that the circulation is being properly carried on.

In all three models the Zenith carburettor is fitted and controlled by an accelerator pedal and a throttle lever at the driver's hand. Westinghouse lighting and starting sets are provided on all three models, and in our illustration is shown how the Westinghouse dynamo is disposed in the chassis frame in front of the engine and belt driven from a belt pulley on the end of the crankshaft, the hand starting shaft being permanently carried in a bracket bolted, as shown, to the front of the engine crankcase. In this view is also shown the belt drive to the fan, these being the arrangements in the case of the 10 h.p. model. A similar arrangement is carried out in the case of the 20 h.p. model, but the 15 h.p. type has the Westinghouse lighting set gear driven. In all cases a Westinghouse electric starter is fitted, operating by an automatic engaging pinion on the toothed rim of the flywheel.

The ignition of all three models of the Diatto is by means of a direct gear-driven high-tension magneto. Autovac petrol feed to the carburettor is adopted in the case of the

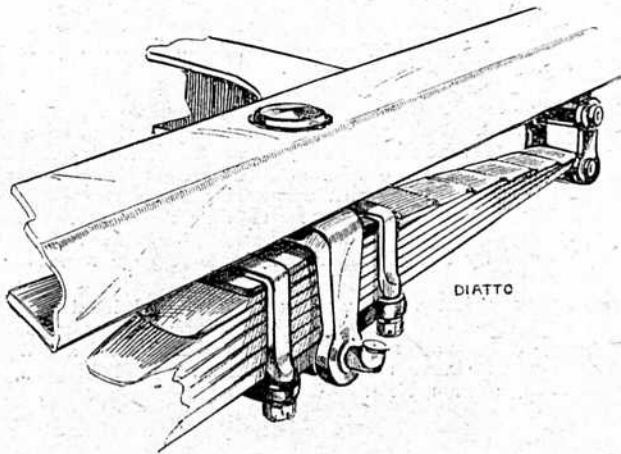


The 10 h.p. two-seater Diatto with dickey-seat.



15 and 20 h.p. models, but in the case of the 10 h.p. type the petrol is fed by gravity from a tank in the scuttle dash.

Reverting to the engine, it is well to say that the crankshaft in the case of the 10 h.p. model runs on two very large, long white metal bearings, and in the case of the 15 h.p. and the 20 h.p. models on three long bearings. Pistons are of cast iron, with three rings at the top. The power is transmitted from the engine to the gear by means of a single-plate clutch in the case of the 10 and 15 h.p. models, and a multiple-plate clutch in the case of the 20 h.p. model.



The arrangement of the cantilever springs on the Diatto car.

In all cases the clutches run dry, and in the case of the 15 h.p. model the clutch is in a compartment between the engine and the gear-box, the whole—engine, clutch and gear—forming a one-unit power and transmission plant.

In the 10 and 20 h.p. types the gear is a separate unit mounted on cross-members of the frame. Three speeds and reverse are provided in the case of the 10 h.p. model, and four speeds in the case of the 15 and 20 h.p. models. A square shaft with box couplings transmits the power from

the clutch to the gear, and allows for any wringing of the frame putting the engine clutch and gearshaft slightly out of line with each other.

A tubular propeller-shaft transmits the power from the gear to the rear live axle, and a straight bevel wheel drive transmits the power to the differential crown wheel in the case of the 10 and 20 h.p. models. The 15 h.p. model has a helical bevel drive in place of the straight tooth bevel. The rear live axle is of the full floating type in all three models of the Diatto car.

As regards the frames, these are of pressed steel of U-section in the case of the two more powerful models, and L-section in the case of the 10 h.p. model. The frames are deep and well stayed by three cross-members in the case of the 10 and 15 h.p. models, and four members in the case of the 20 h.p. car. A sub-frame carries engine and gear in the case of the 10 and 15 h.p. models, and in the case of the 20 h.p. car the engine is carried by the main frame and the separate gear-box on cross-members.

Springing is by long semi-elliptic springs on the H-section front axles, and at the rear the chassis frame is supported on full cantilever springs, as seen in our illustration.

The wheels are Michelin detachable disc 710 by 90 mm. in the case of the 10 h.p. car. The 15 h.p. model is shod with Dunlop detachable wire wheels with tyres 820 by 120, and this is also the case with the 20 h.p. model.

Braking in the case of the 10 h.p. model is by foot and hand brakes on the rear wheel hubs. In the 15 h.p. and 20 h.p. models there are internal expanding brakes on the rear wheels and a brake at the end of the gear-shaft. In the 15 h.p. model the foot brake operates on the rear wheels. In the 20 h.p. model the foot brake operates the gear-shaft brake.

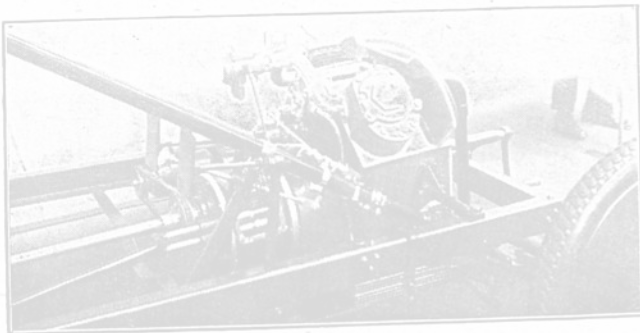
The wheelbase of the 10 h.p. model is 8 ft. 2 ins. with a track of 3 ft. 7 ins. The 15 and 20 h.p. chassis have wheelbase 9 ft. 10 ins. and a track of 4 ft. 8 ins. The weights of the three different powered chassis are respectively 9 cwt., 16½ cwt. and 17 cwt. for the 10, 15 and 20 h.p. models.

The price of the 10 h.p. chassis is £375, and of the 20 h.p. model £650.

A two-seater car complete of 10 h.p. is listed at £475, and the four-seater 20 h.p. sells at £795. In all cases these prices include hood, screen, tools, spare wheel, etc., and a full set of lamps, head and tail. The price of the 15 h.p. model has not yet been fixed.

## BELSIZE MOTORS

The Belsize 15 h.p. car follows the lines of the 1920 model with such improvements and innovations as bring it right up to date, and establish it as a car of high quality both as regards design and mechanical construction. This year the firm have supplemented it by introducing the 9 h.p. Bradshaw model, so called because the power plant is the twin-cylinder air and oil cooled engine designed by Mr. Granville Bradshaw.



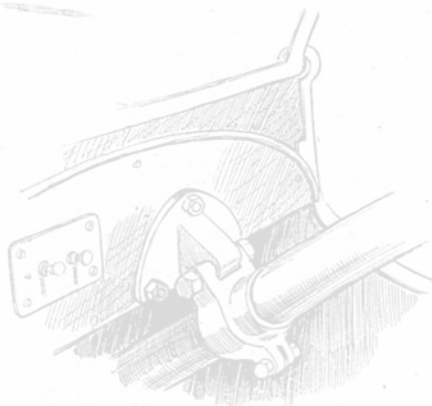
One of the novelties of the Show: The Bradshaw air-cum-oil cooled engine on the new little Belsize.

The fifteen model has a four-cylinder engine 90 by 110, with cylinders *en bloc* and integral clutch and gear. Pressure lubrication is used. The valves are all one side, silent chain driven. The carburettor is the Zenith, and the magneto the Watford or other H.T. type, and Rotax or C.A.V. lighting and starting equipment is built into the engine design, the starter being geared to the flywheel. The clutch is a Ferodolined cone, and the gear provides four speeds. A solid propeller-shaft with two leather disc joints takes the power to the helical bevel driven full floating live axle. Quarter-elliptic springing is used front and rear, and detachable steel wheels

with Dunlop 815 by 105 tyres are fitted. The price of the fully-equipped four-seater, with five wheels and tyres, hood, screen, etc., is £685: the chassis price £545.

The new 9 h.p. model—the Bradshaw—has a two-cylindered engine with cylinders at 90°, 85-mm. bore by 114-mm. stroke. It has the Bradshaw novel system of oil cooling, the cylinder heads being ribbed and air-cooled. A fan is incorporated in

The steering column mounting on the 9 h.p. Belsize chassis.



the flywheel, and the plate clutch and three-speed gear-box are neatly incorporated as one complete unit. The transmission from the gear is by leather disc universally jointed solid shaft, driving by helical bevel gears the semi-floating rear axle. All brakes are in the rear-wheel drums, and the wheels are detachable disc with 700 by 80 Dunlop tyres. Springing is quarter-elliptic. The equipment includes Zenith carburettor, M.L. magneto and Rotax lighting and starting. The price of the 3-seater model with hood and screen is £275, the electric starter being £20 extra.

The makers are Belsize Motors, Ltd., of Clayton, Manchester.