

The Lanchester 38 & 40 H.P.



NUMBER 5

TWO SHILLINGS

PROFILE PUBLICATIONS

Lanchester



40 h.p. 6-cylinder, 7-seat, enclosed drive, limousine supplied to H.R.H. The Duke of York (King George VI) in 1925.

Radiator level gauge glass—a distinctive Lanchester feature.



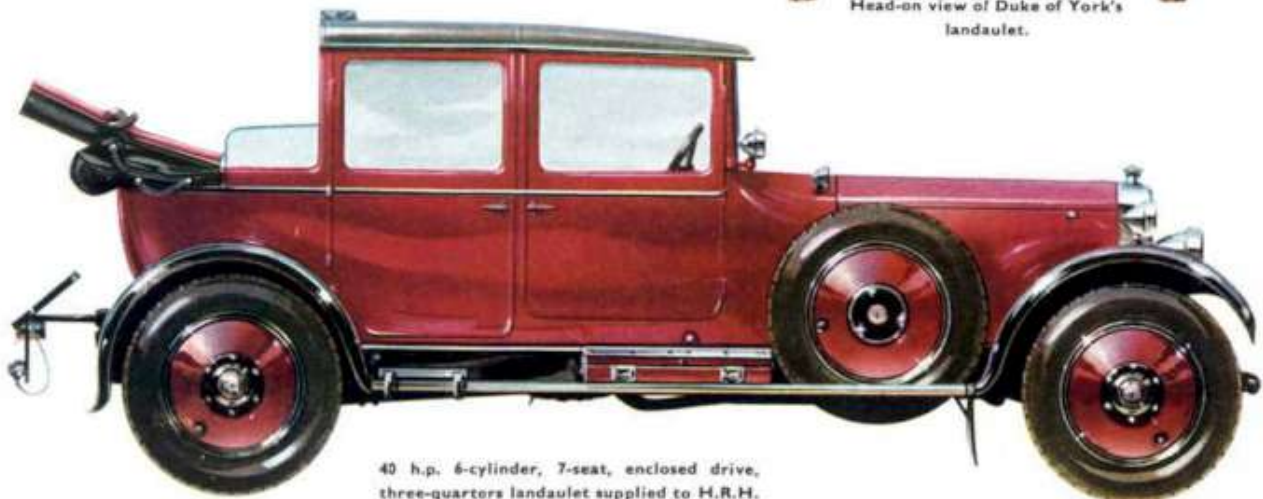
Royal emblem mounted on radiator cap when cars were occupied by members of the Royal Family.



Head-on view of Duke of York's limousine.



Head-on view of Duke of York's landaulet.



40 h.p. 6-cylinder, 7-seat, enclosed drive, three-quarters landaulet supplied to H.R.H. The Duke of York in 1929. Used by him after he became King

The Lanchester 38 & 40 H.P.



by Anthony Bird

All weather: rigid side screens, generally attributed to Standard, c. 1924, on 1922 long chassis Lanchester Forty. (Photo: Daimler Co. Ltd.)

The better to appreciate the Lanchester Forty it is necessary to take a quick look at its immediate predecessors, the Lanchester Thirty-eight of 1910-14 and the 'Sporting Forty' which appeared just before the war stopped production.

From 1895 to 1909 Frederick Lanchester was solely responsible for design, not only of the cars themselves but of the smallest details of bodywork, fittings, components, tool-trays and so forth; his youngest brother, George, was his right-hand man in the execution of his designs. With the coming of the 38 h.p. 6-cylinder car, and its smaller sister the 25 h.p. 4-cylinder model in 1910-11, the roles were reversed with George as chief designer and Frederick as his consultant.

Nobody would claim that 'Dr Fred' could suffer fools gladly, but there is good reason to sympathise with him in seeing much of folly in the directorial interference and penny-pinching mismanagement which hampered the company which bore his name. Frederick once said of his Directors: "Well, they seem to change their minds pretty often—but if I had a mind like theirs I'd change it as soon as I could." The friction became unendurable, and Frederick Lanchester had only a consultative connection with his company from 1909 to 1913 and thereafter ceased to have any connection at all.

As, however, the 38 h.p. and 25 h.p. models were evolved from the 20 h.p. and 28 h.p. 4- and 6-cylinder cars of 1904-6 they may be said to have more of Fred than of George in them. In deference to the needs of 'the standardised chauffeur', as Frederick said, the side lever steering and pre-selector control had already been abolished in favour of wheel-steering in 1910, and the method of controlling the epicyclic gears had been disguised to resemble the conventional foot clutch and 'gate' gear lever; but one of George Lanchester's innovations was the use of pressed steel chassis girders in place of the square section tubes formerly used.

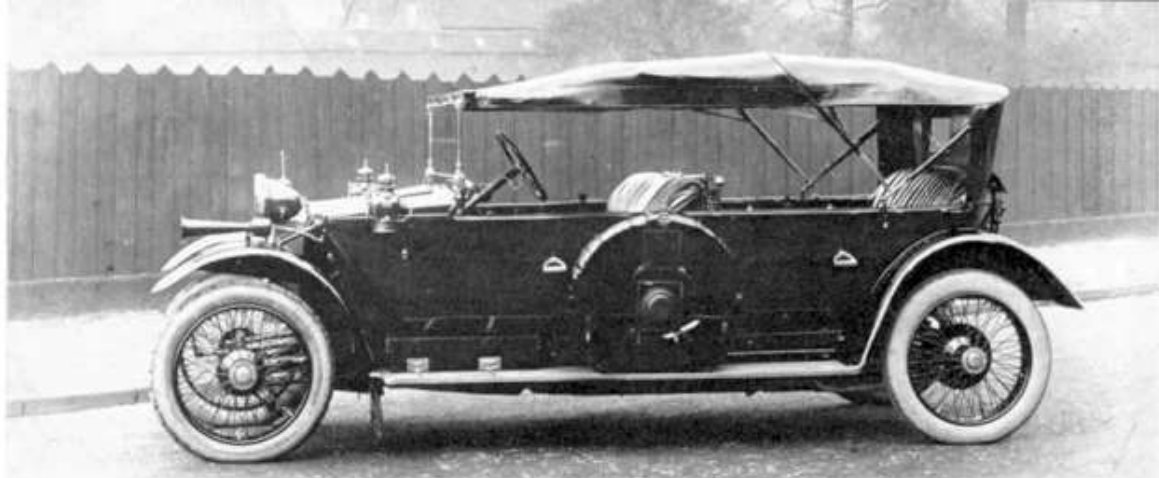
The horizontal overhead valves, ante-chamber

combustion space and the famous wick carburettor were retained, but the flywheels were moved from the front to the back of the engines in order to take advantage of the torsional vibration damper, mounted on the front of the crankshaft, which Dr Fred had devised in 1909 in order to get the Daimler company out of trouble. The use of the damper allowed the stroke to be increased, with no loss of refinement, and the new engines were 'square' at 4 in. x 4 in. against the 4 in. x 3 in. 'over-square' dimensions of their predecessors. The manifolding was re-designed and the exhaust manifold was water-jacketed.

The output of these new engines was extremely good by the standard of the time. The 6-cylinder 4 in. x 4 in. unit was of 4.8 litres capacity and developed 48 b.h.p. at 1,400 r.p.m., and about 63 b.h.p. at a peak speed of 2,200 r.p.m. This represents approximately 15 b.h.p. per litre and compares very favourably with the contemporary 7.4 litre Rolls-Royce which reached an identical output of 48 h.p. at 1,250 r.p.m. The absolute maximum of the Rolls-Royce engine was also about 65 b.h.p. but was reached at a lower speed—about 1,750 r.p.m.

The Lanchester Thirty-eight would have been capable of considerable development. In the late 1920s Lord Ridley took a standard 1913 torpedo tourer, fitted it with high-lift cams and more powerful valve springs, together with a supercharger, thereby nearly doubling the output with no loss of reliability. The consternation of owners of 4½-litre Bentleys or 38/250 Mercedes, who found themselves being left behind by his ponderous and obsolete touring car, gave Lord Ridley many a pleasant moment.

The parallel-motion cantilever suspension front and back, and the Lanchester worm drive were unaltered except in detail. Also, the unique placing of the engine between the dashboard and the front seat, so that driver and front passenger sat on either side of it, was retained. This layout necessitated an engine much narrower and more compact than most designers of the time would have cared to attempt, but had the advan-



1912 Standard 'torpedo' 38 h.p. tourer with electric lighting and starting equipment—but the side-lights are still 'oil-cum-electric'.
(Photo: Mr F. W. Hutton-Stott)

tage of allowing the greatest possible passenger space, and very wide doors, upon a relatively short and very rigid chassis. It also allowed the back seat to be kept well ahead of the rear axle in the best modern manner. Using a different formula, made possible by new techniques and materials, better tyres and smaller wheels, Mr Issigonis has achieved a similar result with his transverse engined cars; but in general it has taken designers and the public more than sixty years to realise that there is no real merit in giving the machinery a more commanding view, and a better ride, than the cash customers.

The Lanchester Company had been amongst the first to make their own coachwork, and in the new models, particularly the 'torpedo' tourers, George Lanchester achieved a handsome and well-balanced line which was as successful, in its way, as the original twin-cylinder cars had been. Mr George recently told the writer that he always liked to see new designs 'in the round' before putting them in hand, and consequently carved scale models in Cheddar cheese direct from the drawing board. He would not confess to the mouse-power of the models.

In 1909 'Owen John', *The Autocar* columnist, had predicted that within five years the folly of wasting space on an unnecessarily long bonnet would be seen by the public and most leading manufacturers would copy the 'Lanchester engine position'. It was not to be; such Lanchester innovations as high-pressure lubrication, light steel pistons, and the famous worm gear (once so hotly attacked in the technical journals) were widely copied by 1913, but fashion decreed that motor cars must have bonnets, and the public decided that the longer the bonnet the better the car must be.

In 1913, therefore, the Lanchester Directors instructed their chief designer to bring out a car of conventional appearance to supplement, not to supplant, the existing models. It was a wise decision; there was no point in swimming against the tide but *The Automobile Engineer* regretted that:

"a company such as the Lanchester have found it impossible to educate their potential customers to an appreciation of the correctness of Lanchester principles. . . . The new model may be regarded as a concession to the sporting, or owner-driver motorist, who wants a Lanchester car without the Lanchester peculiarities of appearance. . . ."

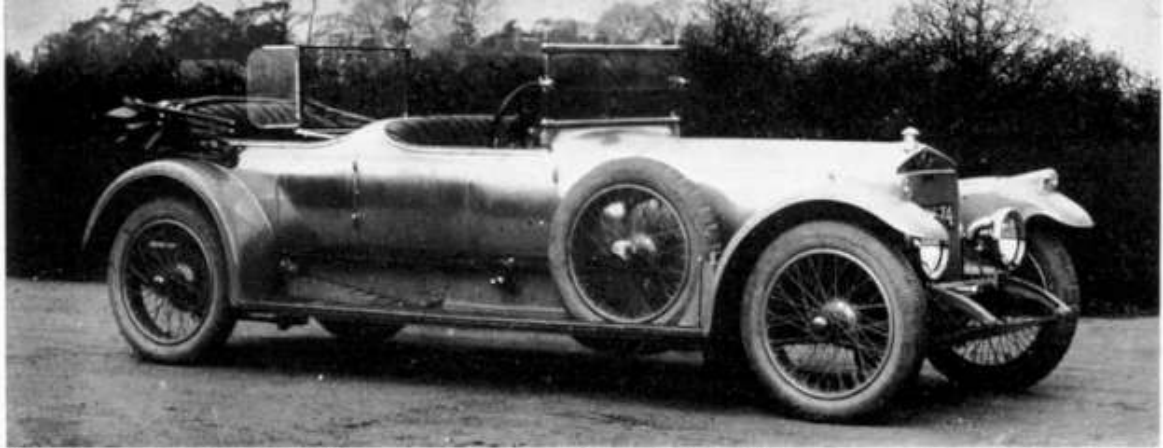
Having decided on a conventional-looking car, and having decided to call it the 'Sporting Forty' in an attempt to woo the owner-driver (a class of customer generally despised by the Company's chairman), the Board then went the whole hog, threw away the baby with the bath water, and instructed their designer to 'go conventional' throughout with a side valve engine, 'Hotchkiss drive', semi-elliptic springs front and back and a bevel geared live axle. George Lanchester was able to put up convincing arguments in favour of keeping the cantilever suspension at the back, and the worm geared axle, but had to give way on the use of conventional semi-elliptics and dumb-



Above: 1912 Lanchester 38 h.p. leaving Stockholm for the Swedish Winter Trial, 1913. Both the Lanchesters which entered finished and won Bronze Medals. (Photo: Autocar)

Francis Hutton-Stott in command of his 1913 38 h.p. At his left hand are starter lever, hand throttle, ignition advance/rear, mixture strength control, oil tell-tales for engine and gearbox and Bosch starter-coil and magneto switch.





Production type 'Sporting Forty', 1914: note modern treatment of streamlined wing lights.

(Photo: Mr John Stanford)

irons in front. Nor could he get his Board to budge over the side-valve engine which they appear to have insisted upon for no better reason than that everybody else had one.

Consequently the 'Sporting Forty' was the first and only Lanchester car to have an L-head side-valve engine (4 in. x 4½ in.). The chassis had many points of merit and, in improved form, was used for the post-war Forties, but although *The Automobile Engineer* and other journals praised the car, the designer disliked it and gives thanks to this day that the war intervened to stop production after only six had been made.

The sporting bodywork George Lanchester designed for the car is as handsome as one could wish to see, and its performance was far from despicable. The designer, however, persists in regarding the car as an abortion and on being asked if he was not being unjust he wrote:

"... perhaps the term abortion is too strong. Bastard would be more appropriate. The engine was in my opinion a retrograde step: it was an L-head side-valve arrangement which, after the T-head, was about the worst form of combustion chamber conceivable, but one that was in vogue at that time. Fuel economy was poor, combustion tended to roughness and b.h.p. was poor for the dimensions. Otherwise the chassis was good—a forerunner of my 1919 40 h.p., but the latter was improved...."

"Although I had no illusions about the ... 1914 40 h.p. it was stated by one owner, in a letter, to

have averaged 50 m.p.h. from London to Liverpool."

The 'Sporting Forty' Lanchester would be of no consequence if it did not illustrate so clearly the all-too-common folly of non-technical managers having too much say in technical affairs. It was this failing which ultimately led to the collapse of the Lanchester Motor Company and its disastrous absorption by Daimler in 1931.

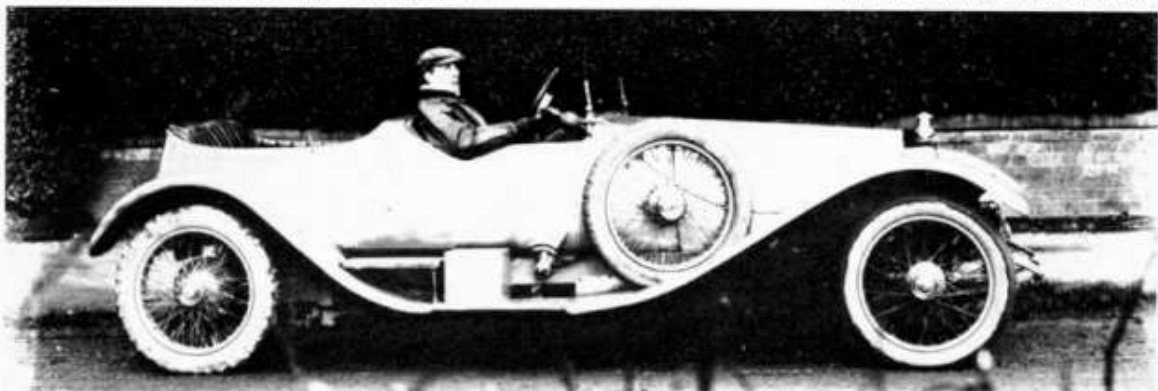
Well-informed motor historians have described the post-Kaiser-War Lanchester Forty as a splendid but old-fashioned motor car: this verdict misses the point that the only really old-fashioned feature of the car was its sheer quality. In *The Thoroughbred Motor Car, 1930-1940** David Scott-Moncrieff, the Purveyor of Horseless Carriages to the Nobility and Gentry, describes it as:

"... that lovable, lordly, ultra-luxurious carriage, utterly Edwardian in conception, the Lanchester 40 h.p. 6-cylinder. It was priced at £1,800 for the chassis alone and was jewelled in every hole... this glorious anachronism... was majestic progress in *excelsis*, but really rather deceptive, because, although at over 65 m.p.h. the 6½-litre o.h.c. engine tended to lose interest, the speed and ease with which one did long... journeys was surprising...."

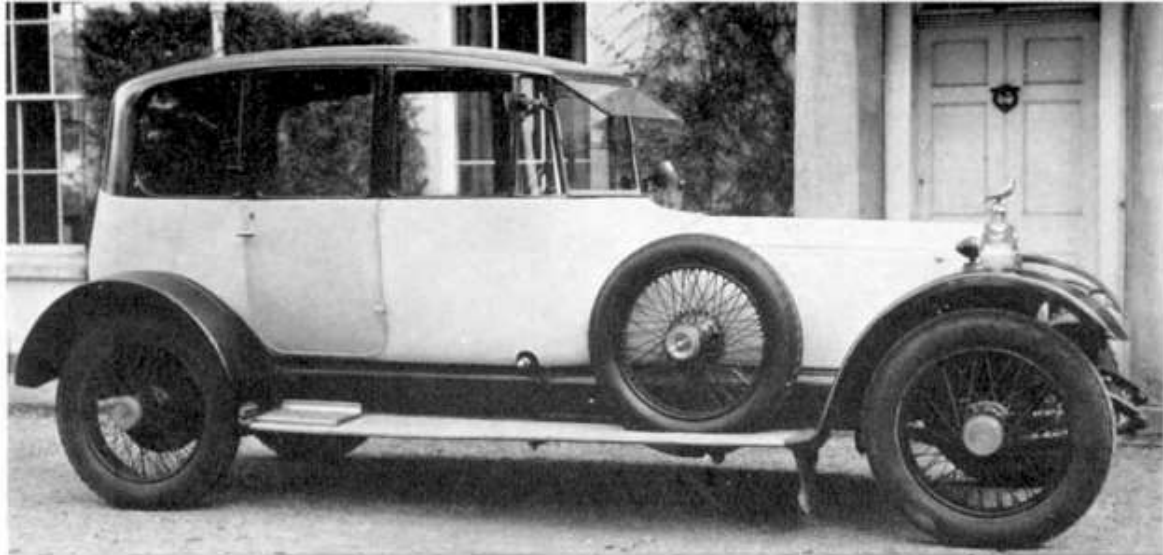
This, though complimentary, is misleading. The 'glorious anachronism' was far from anachronistic; indeed, there can have been few Edwardian engines of only 6½ litres capacity capable of propelling two and half tons of lordly motor carriage at the

George Lanchester and the prototype 'Sporting Forty'.

(Photo: Montagu Motor Museum)



*B. T. Buttsford Ltd., 1963.



1919 London Show car on short chassis o.h.c. Lanchester Forty.

(Photo: Mr F. W. Hutton-Stott)

78 m.p.h. of which the Lanchester was capable, and many features of the design represented new departures in automobile engineering practice.

The chassis structure was, admittedly, based upon the pre-war 'Sporting Forty', but as all Lanchester chassis since the first production model had been of exceptional torsional and beam strength by comparison with their contemporaries, it cannot be thought particularly old-fashioned. Improvements on the 1914 pattern included making the centre section of box-girder form and an increase in the already generous dimensions of the side members. As the old Lanchester dodge of putting the petrol tank amidships (with the wick carburettor recessed into it) and using it as a torsional member had had to be abandoned on the 1914 car, because of the change of engine position, the Forty chassis were cross-braced with tubular members varying from 2½ in. to 6 in. in diameter.

The engine was a totally new concept. The Lanchester Motor Company during the war, in addition to making shell-cases, paravanes and armoured cars on the Thirty-eight chassis, had been given contracts to build a number of the old Renault-designed R.A.F. L.A. aero engines, and these were followed by the more modern Sunbeam Arabs. When the war ended George Lanchester and his brother Frank, the sales manager, wanted to continue the aero engine work with the object, ultimately, of developing their own designs. Almost inevitably, the Directors could see no market for the flying machine in time of peace and the aero engine department was

disbanded as quickly as possible. George was, however, able to persuade the Board to forget the side-valve engine and to give him a free hand. Consequently the overhead camshaft unit designed for the new Forty was clearly influenced by aero engine practice; it was an advanced design by 1919 standards and still far from an anachronism ten years later.

The new engine had its six cylinders cast in two blocks of three which were mounted upon a sturdy and handsomely 'snail'd' aluminium crankcase. The bore remained unaltered at 4 in., and the R.A.C. rating, in consequence, was still 38.6 h.p., but the stroke was increased to 5 in. and in standard form the engine delivered some 100 h.p. As always with a Lanchester design, great care and many experiments had gone into the design of induction and exhaust manifolds, and very little modification was needed on the racing Lanchesters to increase output by nearly one-half.

The inclined, overhead, hollow stem tulip valves (two per cylinder) were commanded by a single overhead camshaft centrally placed between them; this was driven by worm gearing from a vertical shaft at the front of the engine. From the vertical shaft a skew-gear cross shaft gave motion to the distributor for the coil ignition and to the water pump and magneto, and a short layshaft, parallel with the

Interior of 1919 Show car, showing marquetry work in burr walnut. (Photo: Autocar)



Duke and Duchess of York leaving for New Zealand in 40 h.p. Lanchester PE2226 (see page 2). In this car the present Queen Elizabeth II made her first public appearance at the age of six weeks. (Photo: Radio Times Hulton Picture Library)





Archie Millership, chief demonstrator, testing a Forty in Charlecote Park, June 1920. (Photo: Mr F. W. Hutton-Stott)



Lanchester body frame of cast aluminium and ash, 1922. Later examples had aluminium centre pillars and rear quarter-framing. (Photo: Mr George H. Lanchester)

crankshaft, was driven by helical gearing from it. This short shaft carried two more worm wheels, one of which gave motion to the dynamo whilst the other received motion, via a free-wheel *escargot* clutch, from the starting motor. Both of these components, in consequence, stood vertically side by side on the near-side rear quarter of the engine.

This expensive arrangement of auxiliary drives could be condemned as unduly complex, but it made all the components completely accessible for routine servicing.

The cylinder heads were non-detachable—a desirable attribute in an engine where cost is of no consequence as better water passages round the vital areas may be provided without risk of leakage and failure. The objection of increased cost of servicing was largely met in the Lanchester, as the inlet valves were in detachable cages whilst the exhausts seated directly upon the cylinder head metal (thereby getting the best use of the cooling water), but could be dropped down upon the piston crowns and removed through the inlet ports. It was therefore possible to decarbonise and grind-in valves without completely dismantling the engine. This was in marked contrast to the Bentley and some other famous contemporaries.

One of the Lanchester features which had to be thrown away on the Sporting and post-war Forties was the famous, and highly satisfactory, wick carburettor. Not only was it sneered at as old-fashioned by all those who failed to appreciate how completely trouble-free it was, but its bulk was too great to accommodate inside a conventional bonnet. Now that the petrol tank was banished to the back of the car,

the old expedient of recessing the carburettor into the tank itself could no longer be used. A Smith 4-jet instrument, modified to Lanchester requirements, was used on the Forties, and one detects a wistful note in the first descriptive catalogue which said that this carburettor would be found to be *almost* as economical as the old wick vapouriser.

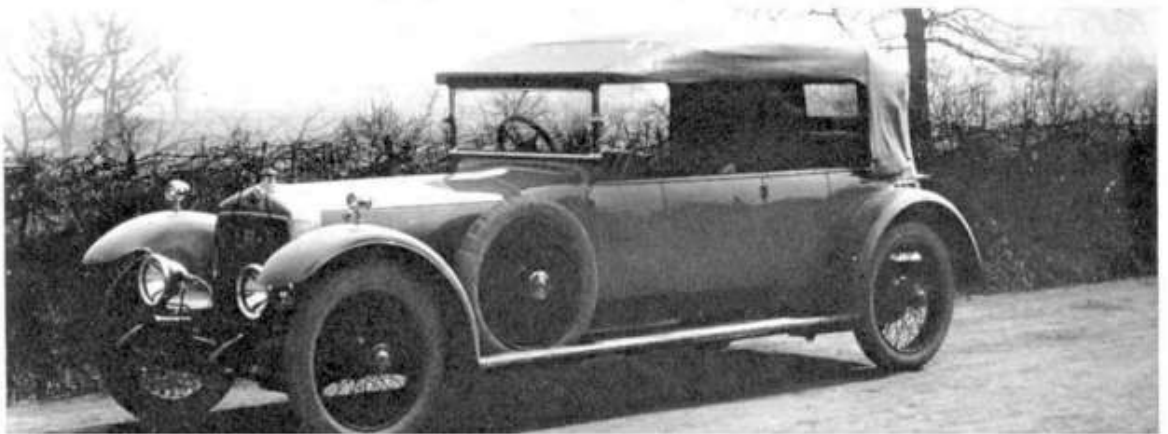
Another Lanchester feature which had to go was the cantilever and parallel-motion front suspension; this had gone in the interest of modernity on the 'Sporting Forty' and on the post-war cars, although the cantilever springs were retained at the back, the parallel-motion linkwork had to be abolished there also as it was too difficult to accommodate now that a conventional bonnet made it necessary to push the bodywork further back in relation to the wheelbase.

A torque tube and ball joint took over the functions of the linkwork; this was a slightly retrograde step as the back axle now rose and fell on its springs in the arc of a circle, whereas formerly the links had constrained it to a truly vertical path to the benefit of tyre life and road holding. In order to keep the circular movement as small as possible (it was, in any event, a trifling defect which many would have been content to ignore) George Lanchester made the torque tube as long as possible, by re-designing the gear, main clutch and transmission brake components in order to reduce their combined length by more than half.

The compounded, roller bearing, epicyclic gear trains remained little altered, but the long multi-disc clutch for the direct drive was moved from its place at the rear of the gear trains and replaced by a single-disc clutch conventionally placed in a recess in the

How odd that even Lanchester had not thought of a mechanical windscreen wiper by 1923.

(Photo: Daimler Co. Ltd.)





J. G. Parry Thomas in the 'Rapson Lanchester'.
(Photo: Radio Times Hulton Picture Library)

flywheel. Similarly the equally long, oil-cooled, multi-disc footbrake, which had been an extension of the direct-drive clutch on the pre-war models, was replaced by a normal expanding shoe brake acting on a ribbed drum outside the gearbox.

In the earlier arrangement the multi-disc clutch had only been concerned with the direct-drive top gear; the starting load had been taken on the contracting crab-brake clutches of the low, compound or reverse epicyclic trains. Now, the single-disc clutch not only looked after direct drive but took the starting load as on a conventional car, and the individual clutches of the epicyclic trains were relieved of this duty. There was some slight merit in this, but it was counterbalanced by the disadvantage that a characteristic 'epicyclic whine' was audible when a car was standing with the engine running.

The other distinctive Lanchester feature of a separate oil pump and high pressure lubricating system for the gear mechanism was retained. Although one may regret that the need to conform had obliged the Lanchester brothers to give up the fool-proof pre-selector control of their earliest models, the epicyclic box on the Forties gave the driver a swift and silent 'crash-proof' gear change equal to that of the best synchromesh system.

The Directors had long since given up worrying about the 'hour-glass' worm gearing and this item remained virtually unaltered, but in general the fully floating back axle was a new design as far as the shafts, casing and bearings were concerned. All the parts of the chassis and mechanism were superbly finished and, where a choice had to be made between reducing cost or providing for accessibility, durability or some other facet of quality, cost had to go by the board. The I-beam front axle, for example, was machined all over in order that any forging defects might be readily discovered in course of inspection.

Also for the new models, and probably for the first and only time in the history of motor manufacture, George Lanchester designed and set up his own plant for making road springs. He and his brother had never been really satisfied with the products of

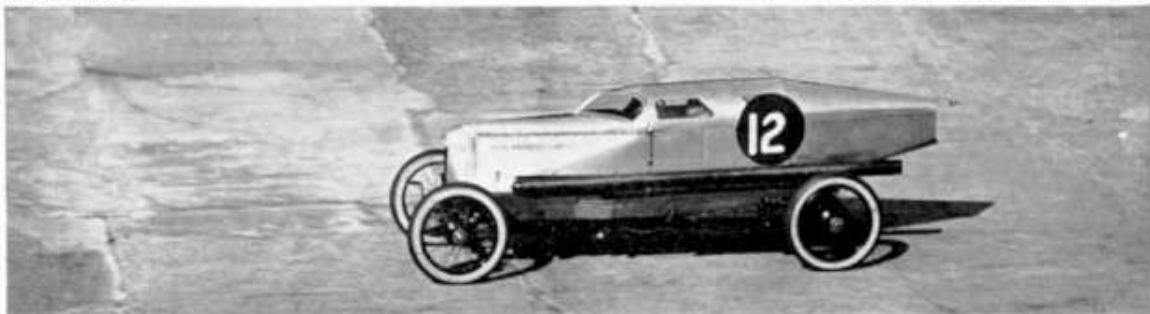
the established spring-smithing firms, finding in them too many departures from specification, and the better control over quality made possible by their own

plant enabled the Lanchester Company to be sure that contact between the spring leaves was of the order of 85 per cent of the surface against the 15-20 per cent of the best 'professionally'—made leaf springs. New methods were also introduced into the body building department; these included the use of cast light-alloy framing (with ash 'fillers' to provide anchorage for trimming), and duraluminium panelling with welded joints. These joints were not in general use for some ten years; they were better than the traditional coachbuilders' butt joints tacked to an ash frame and concealed by beading pinned through to the timber. Detachable plates allowed the cast framing to serve as a conduit for electric wiring, and the Lanchester bodies were erected upon light steel sub-frames which were then attached to the chassis with rubber mountings. When a customer specified bodywork by an 'outside' coachmaker (a practice the Lanchester Motor Company tried to discourage) a sub-frame would be sent to the chosen coachbuilder so that the Lanchester Company could be sure the completed body would drop into place on their chassis without any of the usual cutting, drilling, filing or other desperate expedients then so commonly needed. Bodywork provided by specialist firms was generally found to be considerably heavier than the Company's own, and necessitated stiffening the rear springs and spoiling the suspension characteristics.

By making a great effort the Lanchester Company had a Forty ready for the 1919 Motor Show. This car survives (see page 6), and the unusual, but not unattractive, two-door saloon body was designed to give the utmost comfort to four persons only, rather on the lines of the Rover 2,000, with each passenger, in effect, accommodated in a separate armchair. The inlaid marquetry roof and interior door panels, the silk blinds, the silver fittings and the luxurious black leather upholstery provoked King George V, who opened the Show, to remark: "Very fine, Mr Lanchester, but more suited to a prostitute than a prince, don't you think?"

With the Forty the Lanchester Motor Company

Tommy Hann's 1911 racing Lanchester saloon 'Hoieh-Wayereh-Gointoo': later altered to an open single-seater and re-named 'Softly-Catch-Monkey'.
(Photo: Radio Times Hulton Picture Library)



Archie Millership and Lanchester Forty at Shelsley Walsh, 1923.

(Photo: Mr F. W. Hutton-Stott)



started a period of rivalry with Rolls-Royce for the cream of the 'carriage trade', and one of their first moves was to reduce the chassis price from £2,200 to £1,800 in 1921 in order to be £50 cheaper than the Silver Ghost. All press reports were extremely encouraging and many implied that the Best Car in the World was now made in Birmingham. Indeed, the Silver Ghost, superb though it was, was outstripped for fuel economy (by a small margin), performance and passenger comfort, whilst remaining superior only in mechanical silence. In outright speed, given bodies of equal weight and windage, there was little in it—3 m.p.h. to 5 m.p.h. perhaps. On 3rd March, 1920, *The Motor* reported the Lanchester as being able to accelerate smoothly in top gear from 3 m.p.h. to 85 m.p.h. George Lanchester regards this as an exaggeration, but says that 3 m.p.h. to 78 m.p.h. was well within the car's top-gear compass.

The modern critic might well think it odd that the Forty had no front wheel brakes at first. As the car's smaller stable mate, the 21 h.p. 'pup', had excellent 4-wheel brakes from 1923 onwards it seems odd that the Forty still relied on 2-wheel braking. The reason lies not in any lack of nous on the part of the design staff, but in that curious directorial attitude which so frustrated the Company's development. A valued customer, confirmed Lanchester owner for many years, tackled the Chairman and pointed out that with traffic growing denser, and speeds faster, it was illogical that the heavier, faster and more expensive model should have less effective brakes than its cheaper and lighter sister. Mr Hamilton Barnsley's memorable reply was to the effect that the Twenty-one was an owner-driver's car and owner-drivers often lacked skill—but the Forty was a gentleman's car and gentleman had chauffeurs who knew better than to go dashing about relying on their brakes to get them out of trouble.

In 1924, however, word got around the trade that Rolls-Royce were about to fit front brakes to the Silver Ghost. The prohibition was consequently lifted and for the 1925 season the Lanchester appeared with admirable 4-wheel brakes: the better to deal with torque reaction the beam front axle was replaced by a tubular axle such as the pre-war models had had. The new brake system was often described as hyd-

raulic; in the sense that the brake shoes were not expanded by hydraulic rams, one to each wheel, this is incorrect. It was a mechanical system with servo assistance given by a hydraulic ram, served by a hydraulic accumulator, in which pressure was maintained by the lubricating pump in the gear box.

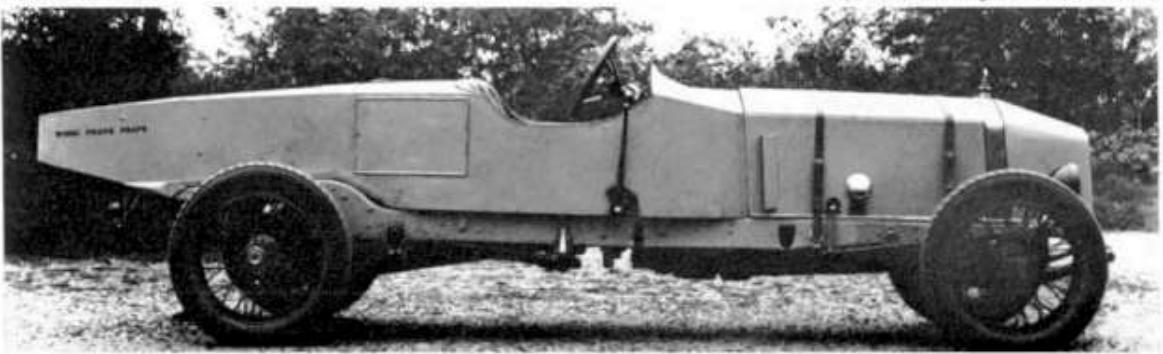
After this ingenious, but costly, device had been in use for a short while a representative of the Belgian Dewandre concern called to demonstrate their new vacuum servo mechanism. Mr George Lanchester liked this for its simplicity but disliked it for its lack of 'feel'. The salesman undertook to have the defect eradicated and Lanchester undertook to place an order once he was satisfied. The Dewandre mechanism was duly modified, and Lanchester duly fitted the Forty with vacuum servo in the interest of economy.

With the same object of reducing production costs the engines were slightly modified in 1925. The costly layshaft arrangement was superseded by a cheaper, but less attractive, layout with the dynamo driven from the magneto cross shaft, and a normal starter and Bendix drive in place of the silent free-wheel clutch. The dynamo now took the place of the coil-ignition distributor, and the latter was moved to the top of the rocker cover and driven by worm gearing from the camshaft. These were the only major modifications made to the Forty during its production life.

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The Forty may have been a 'gentleman's car', and as such worthy of its place in the affections of such customers as Sir John Ellerman (alleged to be the richest man in England), The Jam Sahib of Nawanagar ('Ranji' the cricketer), the Duke of York (King George VI) and the Maharajah of Alwar, whose splendid folly of a state landau on a special long-chassis Forty is shown on page 11, but to many enthusiasts of the time the Lanchesters were better known for their Brooklands exploits. The name was not unknown there by 1921 because of the successes, and consistent *endurance*, of Tommy Hann's famous streamlined 'Softly-Catch-Monkey' which started life as a 25 h.p. landaulet in 1911.

1921 2-seater 'Brooklands' Lanchester Forty. The name 'Winnl Praps Praps' was onomatopoeic and derived from the car's exhaust note on over-run. (Photo: Montagu Motor Museum)



In 1921 George Lanchester and Arthur Bird (Works Manager) fitted a narrow staggered-seat racing shell to a Forty and took it to Brooklands to investigate the phenomenon of high speed wheel wobble which plagued so many manufacturers at that time. The car attracted the attention of S. F. Edge who drove it and reported:

"... I worked the speed up to over 100 m.p.h. without the least discomfort. This is a very remarkable tribute to the Lanchester design of suspension... the biggest bump on Brooklands was swallowed up by a gentle motion... It seems difficult to believe that a firm who specialises in luxurious private cars should be able to produce practically their normal car capable of such a wonderful performance..."

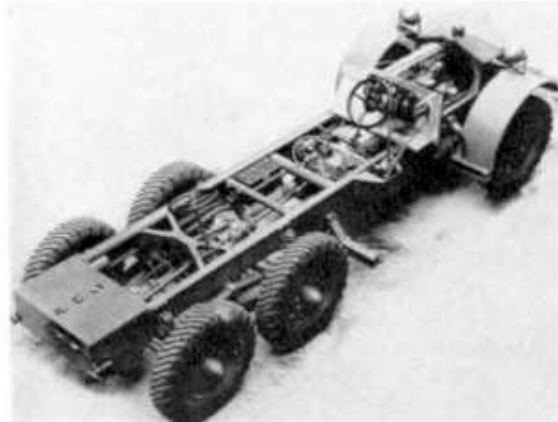
Though Edge's attempt in 1922 to break his own 12-Hour Record in the Lanchester was frustrated by the reappearance of slight wheel wobble, which he did not notice but which caused George Lanchester to order the car in; he did succeed in beating several of the Class G Records which he had captured a few weeks earlier in his Spyker (see Table A). As the Lanchester showed so remarkably little daylight between its wheels and the notoriously bumpy track Lionel Rapson transferred his allegiance from Rolls-Royce to Lanchester Forty as a trial horse for the 'unpuncturable' double tread tyres he was then trying to promote. In the intervals of running tyres to destruction at high speed during the next four years a special single-seat Lanchester together, occasionally, with the car Edge had driven and 'Softly-Catch-Monkey', took part in those races for which they were eligible. They invariably performed creditably and often successfully.

Amongst the few alterations made to the Rapson car were special rebound dampers, a new exhaust system and Brooklands silencer on the standard manifold, alteration of the final drive ratio from 9:35 to 10:33 and compression raised from 5.8:1 to 6.2:1. A new induction pipe with twin carburettors was also fitted.

As a racing car the Lanchester Forty was essentially ugly and purposeful, with great stamina. The Brooklands 'regulars' liked 'Old Softly' and the racing Forty, and J. G. Parry Thomas, who often drove for Rapson, found it admirable. In August 1924 Parry Thomas, with George Duller and Rapson as co-drivers, set off

Armoured car chassis for the 11th Hussars. The Lanchester armoured Forties had six speeds forward and reverse and an emergency steering gear at the back.

(Photo: Mr George H. Lanchester)



Off side of 'Forty' engine showing advanced design of induction manifold.
(Photo: Montagu Motor Museum)

in the Forty in an attempt on the World's Long Distance Records.

For the first one and a half hours Rapson's insistence on trying a new type of cover led to so many stops for wheel changing that average speed could not be raised above 80-85 m.p.h. Well-proven tyres were then fitted and the first record fell at 97.95 m.p.h. after five hours. Then the great car just went on and on for fifteen hours, breaking thirty records and

SPECIFICATION: LANCHESTER THIRTY-EIGHT
1910 (for 1911 season) to 1914

ENGINE: 6-cyl., 4 in. x 4 in., 1910-12, cast singly, 1913-14 in pairs. 4,800 c.c.

VALVES: Overhead, horizontal, two per cylinder, operated by rocking levers and flat plate springs.

CAMSHAFTS: Two, in upper half of crankcase.

IGNITION: H.T. magneto and Bosch trembler coil for starting.

CARBURETTOR: Lanchester patent wick vapouriser.

ELECTRICAL SYSTEM (after 1912 only): Delco/Lanchester, 8/32 volt dynamotor-starter with series/parallel switchgear and automatic charging control.

COOLING: Honeycomb radiator, thermo-syphon, two fans.

CLUTCH: For direct drive, Lanchester multi-disc.

CLUTCHES: For indirect gears, contracting 'crab' brakes on epicyclic gear drums.

GEARBOX: Lanchester patent compound epicyclic, 3-speed and reverse with separate high pressure lubricating system.

TRANSMISSION: Open propeller shaft.

FINAL DRIVE: Lanchester patent enveloping worm gear.

BRAKES: Foot. Lanchester multi-disc (oil-cooled) on transmission.

Hand. Expanding shoes in drums on rear wheels.

SUSPENSION: Lanchester patent; cantilevered plate springs with parallel-motion radius and torque links at front and back.

CHASSIS DETAILS

WHEELS: Wire, centre lock. Tyres 895 x 135.

WHEELBASE: Short 10 ft. 7 in.
Long 11 ft. 7 in.

TRACK: 4 ft. 10 in.

WEIGHT: Long chassis with standard touring body, 35 cwt.

MAX. SPEED: Approximately 65 m.p.h.

Chassis price: Short £800, Long £825

LANCHESTER

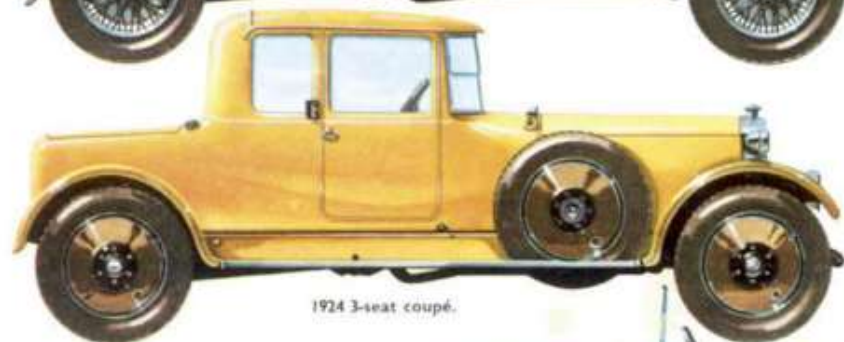
Many Lanchester owners preferred not to display the radiator badge and considered the unique gauge glass (see page 2) sufficiently distinctive.



1923 7-seat, enclosed drive, three-quarters landaulet.



1926 short chassis, standard 5-seat tourer body (note front wheel brakes).



1924 3-seat coupé.

1920 long chassis, 7-seat tourer (New York Show model).



1927 7-seat, open front, limousine.



State Landau built for H.R.H. The Maharajah of Alwar in 1924.

averaging 104 m.p.h. for the last 100 miles (Table B).

In effect the Forty was replaced by the Straight-eight, the last 'real' Lanchester, in 1929, but it remained available to order until 1931, in which year the Lanchester Motor Company succumbed to the financial panic. Their bank overdraft was called in and the B.S.A./Daimler Group (whose overdraft was too big to disturb) bought the assets of their old rivals and used the honoured name of Lanchester as a brand label for their second grade models.

TABLE A

August 1922 Class G. World Records over 4,998 c.c. and up to 7,784 c.c.

Distance	Time	Speed	Driver
200 miles		77.77 m.p.h.	S. F. Edge
300 "		81.33 "	"
400 "		80.37 "	"
2 hours	191 miles, 1,610 yards	75.48 "	"
3 "	273 " 1,213 "	75.72 "	"
4 "	361 " 1,422 "	80.28 "	"
5 "	442 " 1,415 "	80.40 "	"

and corresponding kilometre records

TABLE B

August 1924

Distance	Time	Speed	Driver
300 miles (standing start)		97.95 m.p.h.	Parry Thomas
400 "		98.32 "	"
500 "		96.18 "	"
600 "		95.87 "	Thomas/Duller
700 "		94.54 "	"
800 "		94.66 "	Thomas/Duller/Rapson
900 "		94.82 "	"
1,000 "		95.27 "	"
1,100 "		95.72 "	"
400 kilometres		157.00 k.p.h.	Parry Thomas

and all kilometre records up to 900 and 1,000, 1,100 and 1,200 kilometre records

Distance	Time	Speed	Driver
3 hours	293 miles, 1,272 yards	97.91 m.p.h.	Parry Thomas
4 "	393 " 651 "	98.34 "	"
5 "	480 " 560 "	96.06 "	Thomas/Duller/Rapson

and all records up to 15 hours

15 hours 1,148 miles, 843 yards 76.56 m.p.h. Thomas/Duller/Rapson

SPECIFICATION: LANCHESTER 'SPORTING FORTY'

Designed late 1913, six produced 1914-15

ENGINE: Six cylinders (two blocks of three), 4 in. x 4½ in. 5,561 c.c.

VALVES: Side valves (two per cylinder) in L-head.

CAMSHAFT: Single, in crankcase upper half.

IGNITION: As 38 h.p. model.

CARBURETTOR: Smith 5-jet.

ELECTRICAL SYSTEM: C.A.V., 12 volt.

COOLING: Honeycomb radiator, pump and fan.

CLUTCHES, gears, transmission, final drive and brakes: As on 38 h.p.

SUSPENSION: Rear, as on 38 h.p. Front, semi-elliptic springs; not shackled at rear ends but sliding between trunnion rollers.

CHASSIS DETAILS

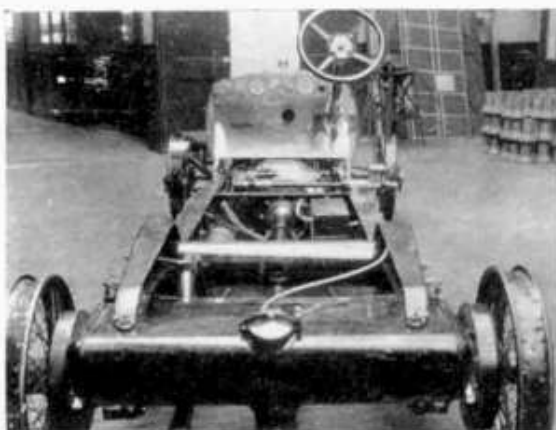
WHEELBASE: 11 ft. 8 in.

TRACK: 4 ft. 10 in.

WEIGHT: Not recorded.

MAX. SPEED: Approximately 70 m.p.h.

Chassis price £885, complete sports tourer £1,035.



Rear view of chassis: Lanchester Forty no. 1679. (Photo: Montagu Motor Museum.)

© Anthony Bird, 1966.

SPECIFICATION: LANCHESTER FORTY
Model produced, 1919-29 and nominally available to order 1929-31

ENGINE: Six cylinders (two blocks of three), 4 in. x 5 in. 6,178 c.c.

VALVES: Overhead inclined, tulip shaped (two per cylinder).

CAMSHAFT: Single overhead.

IGNITION: H.T. magneto; and coil, battery and distributor.

CARBURETTOR: Smith 4-jet.

ELECTRICAL SYSTEM: C.A.V., 12 volt.

COOLING: Honeycomb radiator, pump and fan.

CLUTCH (main): Single dry plate.

CLUTCHES, for individual gear trains, by contracting 'crab' brakes on epicyclic gear drums.

GEARBOX: Lanchester patent compound epicyclic, 3-speed and reverse with separate high pressure lubricating system.

TRANSMISSION: Propeller shaft enclosed in torque tube.

FINAL DRIVE: Lanchester patent enveloping worm gear.

BRAKES, 1919-24: Foot. Expanding shoes in drum on transmission.

Hand. Expanding shoes in drums on rear wheels, 1924 onwards. Foot brake operating on all four wheels with servo assistance firstly by Lanchester hydraulic system, secondly by Dewandre vacuum.

SUSPENSION: Rear. Cantilevered plate springs—torque tube.

Front. Semi-elliptic.

CHASSIS DETAILS

WHEELS: Wire centre-lock, or bolt-on steel disc.

TYRES: 895 x 135 B.E. Later models 33" x 6½" well-base.

WHEELBASE: Short, 11 ft. 9 in.

Long, 12 ft. 6 in.

TRACK: 4 ft. 10 in.

WEIGHT: 40 cwt.

MAX. SPEED:

Standard 7-seat tourer, approximately 78 m.p.h.

Single seat racing car, approximately 110 m.p.h.

Chassis Price: 1919 £2,200 reduced to £1,800 in 1921.