EL NASR/*Egypt 1959 to date*
This company, with a factory at Helwan, offered licence-built versions of the Fiat 128 and 125 in 1979.

NATIONAL/*USA 1899–1900*
At least five Nationals, with 2½ hp, 5 hp or 8 hp twins, were built in St Louis in 1899.

NATIONAL/*USA 1900–1924*
'Electrically-propelled pleasure vehicles' occupied this Indianapolis firm until 1904, when they introduced a round-radiatored petrol car, with a 4649cc four-cylinder Rutenber engine, dropping 'Electrobiles' altogether in 1905. A year later came a six-cylinder model, but it was powerful big fours which really established National, who claimed their 7320cc 40 hp as 'the fastest stock car built': the 1912 Speedway Roadster commemorated the marque's victory in the Indianapolis '500' race that year. By 1913, electric starting and lighting were standard, as was an engine-driven tyre pump. The 1914 models had left-hand drive, and in 1915 a new model, with a 4966cc Continental Red Seal six, was launched, joined for 1916 by a 6064cc V-12 of National's own manufacture, listed until 1919. In 1920 came the 30 hp Sextet six which ran until the end of production. A 1922 merger with Jackson and Dixie Flyer led to some cars of these marques appearing as 'Nationals'.

NATIONAL/*England 1902–1906*
A tricar with a 4 hp MMC engine, the Manchester-built National had a coachbuilt body and wheel-steering.

NATIONAL/*England 1904–1912*
Rose Brothers, makers of tobacco wrapping machinery, built these cars of conventional design, with two, three and four cylinders — though a 15/17 hp five-cylinder was reportedly shown in 1904.

NAVARRE/*USA 1921*
A. C. Schulz, builder of the Navarre, had been associated with both Locomobile and Marmon, and plans had been made to build a quality luxury car. Only one car was made, a five-passenger sedan. This featured an own-make engine (a six) and a price tag of $6000.

NAW/*Germany 1908–1919*
Producers of NAW, Colibri and Sperber cars at Hameln/Weser, the works were bought by Selve.

NAZZARO/*Italy 1912–1922*
Felice Nazzaro, closely connected with Vincenzo Florio and Fiat as a very successful racing driver and technician, built these 20/30 hp cars with 4396cc four-cylinder engines. A smaller 12 hp car of 2092cc was made for British agents Newton & Bennett. The Nazzaro cars built for the 1919 French Grand Prix, with ohv four-cylinder 16-valve power units, retired with engine troubles. Nazzaro left the works in 1916 and eventually returned to Fiat. His successors produced a few 3480cc cars.

NB/*Scotland 1909–1912*
Successor to the Drummond, the North British was a 10 hp twin of 1652cc, which sold for £200.

NB/*Italy 1910–1915*
This was a 'semi-Italian' car, as the design and the finances came from the UK car dealers Newton & Bennett. There was reportedly a technical co-operation with Nazzaro, as both works were at Turin and Newton & Bennett imported Nazzaros. The four-cylinder NB cars had 2155cc engines.

NEANDER/*Germany 1937–1939*
Designer Ernst Neumann-Neander produced unorthodox motorcycles in the late 1920s, and afterwards created various small three- and four-wheeled cars, which never went into serious production. Between 1937 and 1939 he built a range of 1000cc sports-racing cars with JAP or Harley-Davidson vee-twin engines.

NEC/*England 1905–1920*
A famous 'bonnetless' car with all seats within the wheelbase, the NEC (built by the New Engine Company of Acton, London) had a horizontal power unit. There was originally a 30 hp four-cylinder, joined in 1906 by a 15 hp twin. The 30 hp, oddly enough, could be had with either two- or four-speed transmissions. For 1908, the 15 hp was bored out to create a 20 hp, and a 40 hp four of similar cylinder dimensions was offered alongside the 30 hp. Both the 30 hp and 40 hp were still theoretically available after the war, but these were almost certainly unsold 1914 models. The Mort brothers, J. G. and G. F., who owned NEC, also produced Roots-supercharged two-stroke aero-engines as early as 1910.

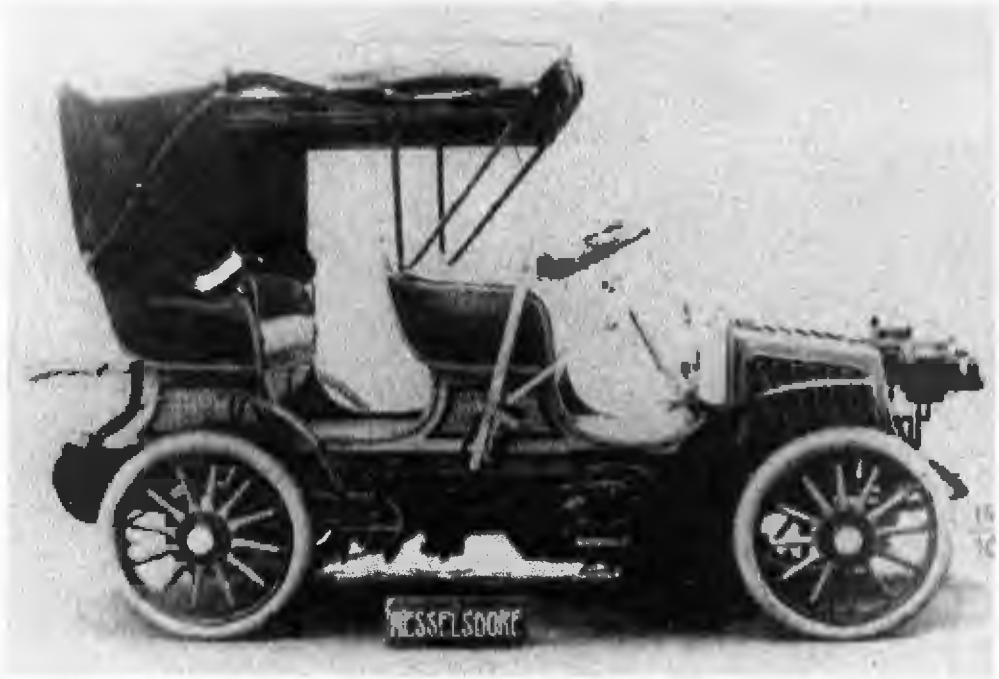
NECKAR/*Germany 1955–1968*
Made by NSU-Fiat at Heilbronn, the Neckar was really a Fiat 103 design with an ohv 1089cc four-cylinder engine. After 1966 the factory became independent from NSU, and concentrated on Fiat products.

LA NEF/*France 1899–1914*
A three-wheeled car built at Agen by Lacroix et de Laville, La Nef had a wooden chassis and tiller steering. According to the model, De Dion engines of 2¾ hp to 8 hp were used. Robust and easily driven, it was known as 'the country doctor's car'. Production was around 200.

NEGRE & RUFFIN
France 1896–1897
'Though the engine may be efficient enough to propel the vehicle', said a press description of the V-4 steam power unit used on this car, 'it is doubtful whether the system is all that is required by buyers'. In 1897, M. Nègre offered a steam car with cylinders in 'X' formation.

NELSON/*USA 1917–1922*
The Nelson was designed along European lines by Emil A. Nelson, who had previously been affiliated with Oldsmobile, Packard and Hupmobile. A relatively small car, the Nelson featured an ohc four-cylinder aircraft-type engine of its own make. Although production was limited, an estimated 350 to 400 cars had been produced by the end of 1920. Any 1921–22 Nelsons were presumably assembled from parts in hand. Most Nelsons were touring models, although some roadsters and sedans were built in earlier days, probably to special order.

NESSELSDORFER
Czechoslovakia 1897–1923
This pioneer factory completed its first 'President' motor car on 21 May 1898. From 1923 onwards, Nesselsdorf (now Kopřivnice) built cars which became known as 'Tatra'. Their most famous designer was Hans Ledwinka, who created some excellent cars, including the ohc 5328cc six-cylinder Type 'U', which was made from 1914 to 1923, when Ledwinka's famous twin-cylinder Tatra came into being.

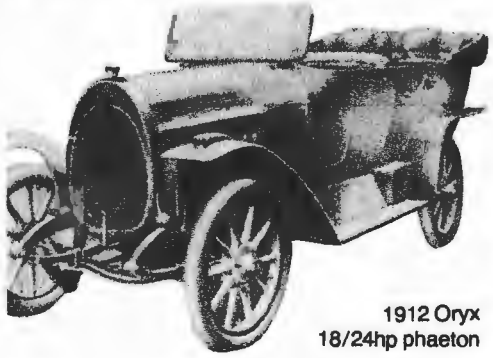


1904 Nesselsdorfer 12hp phaeton

c.1905 OTAV voiturette rebuilt as a cyclecar in 1912

:he general trade'): its showrooms were, appropriately, on Wall Street.

ORYX / *Germany 1907–1922*
Successor to BMF, the Berlin-based Oryx works produced 1555cc four-cylinder cars, was taken over in 1909 by Dürkopp and afterwards built an 1830cc four-cylinder car. Enlarged to 2080cc, the last Oryx was built at the Dürkopp works.



1912 Oryx 18/24hp phaeton

OSCA / *Italy 1947–1967*
The Maserati brothers sold their works to the Orsi family in 1937, but stayed on until 1947, when they left and founded a new factory, OSCA. The first design was a 4472cc V-12 racing engine for existing 1.5-litre Maseratis. OSCA built 1093cc and 1350cc four-cylinder, as well as 1987cc six-cylinder, sports and racing cars with ohc and dohc engines: there was also a 1490cc six-cylinder. In the late 1950s, a fast 749cc 'Four' was added, capable of 115mph. Some of the last 1492cc dohc machines could reach 145mph, the 1987cc version nearly 162mph. In 1966, the Maseratis retired and sold everything to MV-Agusta.

OSMOND / *England 1899–1900*
A Birmingham-built motor quadricycle.

OSTERFIELD / *England 1907–1909*
Despite its Germanic name, the Osterfield — 'for the man of moderate means' — was built by Douglas S. Cox, of South Norwood, London. There were three models, a 2596cc four, a 3893cc six and a straight-eight of 5191cc, at a chassis price of £850.

OTAV / *Italy 1901–1914*
Max Türkheimer was a pioneer of the Italian motor industry. He built motorcycles and cars, and imported British Ariel machines. He had been commercially connected with Ariel since 1897, so his early products used various Ariel-built parts. His cars had single-cylinder and, later, four-cylinder 2786cc engines. A versatile man, Türkheimer was also involved with the Torino-built Junior cars.

OTOMO / *Japan 1924–1927*
Having built two experimental Ales cars in 1921, Junya Toyokawa produced an air-cooled 944cc light car, joined in 1926 by a 24 hp model.

OTRO FORD / *Spain 1922–1924*
As its name cheekily implied — 'Another Ford' — this was a Model T Ford-based marque in the same mould as the English Mayflower.

OTTO / *France 1901–1914*
Starting with a 10 hp horizontal-engined twin and a vertical-engined 20 hp four, Otto of Paris offered, in 1902, two 10 hp models, a twin and a four-cylinder. In 1907 a 30cv model was shown at the Salon de l'Automobile, and in 1910 they took over the FL, built under Serex licence, with a 12 hp four-cylinder 2011cc engine. An 18 hp six appeared two years later.

OTTO / *USA 1910–1912*
'Highest grade at any price', the Philadelphia-built Otto sold for $2000. Fours of 4.2 to 5.1 litres were offered.

OTTO / *Germany 1923–1925*
Designed by Gustav Otto, son of the famous inventor of four-stroke gas engines Nikolaus Otto, the luxurious 4.9-litre Otto car was built in small numbers. The Munich factory produced Flottweg bicycle engines and motorcycles between the wars. It was later bought by BMW.

OURS / *France 1906–1909*
Round-radiatored cars built in Paris; their motto was 'Perfection — Solidity — Economy'. The 1908 range consisted of a 10/12 hp twin-cylinder, a 14/16 hp three-cylinder, a 20/24 hp four-cylinder and a 30/35 hp six-cylinder.

OUZOU / *France 1900–1901*
Soncin-engined 4 hp and 6 hp voiturettes from Paris.

OVERHOLT / *USA 1908–1909*
A four-seater motor buggy with friction drive, built in Galesburg, Illinois.

O-WE-GO / *USA 1914*
A tandem-seat $385 cyclecar from Owego, NY.

OWEN / *England 1895–c1936*
Owen (whose works were said to be in Birmingham), originally mechanical and marine engineers, claimed to have built a 5 hp single-cylinder car with five-speed chain-and-belt transmission as early as 1895: their showroom was at Carrick House, Comeragh Road, London, W.14. Production was, at best, spasmodic; indeed, there is some speculation whether they did in fact build any cars at all! They were (they claimed) principally makers of engines, gearboxes, axles, brakes and wheels for the motor trade. In 1920 they listed the 2994cc 20 hp (with only one forward speed!) and the 40 hp Owen-Dynamic, a 3216cc petrol-electric. Other marques associated with Owen were the Twentieth Century Voiturette (1901), Parisia, Londonia, Twentieth Century and Owen's Gearless (1905–06), as well as Orleans, Atalanta, Italiana and Owen's Petelecta. Owen's cars could well have been re-badged examples of other makes. A 1921 5302cc V-8 seems to have originated in America, and the last Owen was the 60 hp of 1925 (listed until 1936 in some sources) with a 7634cc straight-eight.

OWEN / *USA 1910–1914*
Noted for its high 42-inch pneumatic-tyred wheels, the 50 hp Owen had a 5912cc four-cylinder engine and left-hand drive.

OWEN MAGNETIC (CROWN MAGNETIC) / *USA 1914–c1921*
Ray M. Owen, of Baker Raulang, devised a magnetic transmission based on the Entz system used in oil-engined battleships: it was used in a 38 hp six-cylinder luxury car. Design rights to this 'Car of a Thousand Speeds' were sold to J. L. Crown, who began production at Wilkes-Barre, Pa., in 1920. He brought a Crown Magnetic to England soon after, and the Owen transmission was fitted to a few Minervas, two Ensigns and a few Magnetics. But the Crown Magnetic proved too complex and expensive; steep hills could cause 'magnetic drag' which brought the 2½-ton (5600-lb) car to a standstill, and production ceased.

OWEN-SCHOENECK / *USA 1915–1916*
A 5.2-litre Herschell-Spillman-powered four from Chicago.

OXFORD / *England 1899*
A 2¼ hp light belt-driven three-wheeler sold in Oxford Street, London.

OXFORD / *Canada 1914–1915*
The six Pontbriand brothers — plus two cousins — ran Oxford Car & Foundries Ltd., of Maisonneuve, Montreal, which built four pair-cast sixes to the design of H. M. Potter.

PARRY / *USA 1910–1912*
'In the spring a Parry is as irresistible as gravitation' carolled the Indianapolis makers of this 32/36 hp car. But even a change of name to 'New Parry' in 1912 failed to attract sufficient customers to make the marque viable.

PARTIN-PALMER / *USA 1913–1917*
This Chicago company offered a $975 six-cylinder 38 hp (originally plain 'Partin') and, in 1914, a $495 four-cylinder 20 hp. The marque was succeeded by the Commonwealth in 1917.

PARVILLE / *France 1927–1929*
Small fwd electric cars made in Paris.

PASCAL / *France 1902–1903*
Baron Henri de Rothschild, who worked as a doctor under the pseudonym 'Pascal' in the hospitals of Paris, backed this Mercedes-like 24 hp car: profits went to charity. The engine 'turned without trepidation or noise'.

Dr Rothschild's 1903 Pascal in the Algerian Desert

PASCO / *England 1908*
A 12 hp four-cylinder car with 'patent automatic gears, in which a reverse lever entirely takes the place of the ordinary change speed'.

PASING / *Germany 1902–1904*
Produced Klingenberg-designed cars under licence in small numbers. By 1903 the Pasing was outdated.

PASSAT / *England 1910*
M. B. Passat, of Wimbledon, built the first-ever 'flying car', a machine with two sets of bird-like wings which could be folded back and the machine driven along the road under its own power. Lack of finance killed the project.

PASSY-THELLIER / *France 1903–1907*
The Parisian Passy-Thelliers used De Dion, Buchet and Aster engines of 9, 12, 20 and 24 cv. The company claimed to have built the first voiturette to reach 100 kph. Later cars were known as Mendelssohns, from a director, M. Mendelssohn-Bartholdy, who was related to the famous composer.

PATERSON / *USA 1908–1924*
From the 'carriage capital' of Flint, Michigan, Paterson began production with a 30 hp four-cylinder. By 1919 they were building an undistinguished six-cylinder range with a 25 hp monobloc power unit, at prices ranging from $1265 to $1795.

PATHFINDER / *USA 1911–1918*
In 1914, the Indianapolis-built Pathfinder Six was available in two models, the 'Leather Stocking' and the 'Daniel Boone': a 'La Salle' was added in 1915.

PATIN / *France 1898–1900*
This electric dog-cart had a complex friction drive giving two speed ranges in addition to the normal controller mechanism.

PATRIA / *Germany 1900–1901*
This cycle manufacturer produced De Dion-engined cars for a short period.

PATRIA / *Spain c1919*
A Barcelona-built cyclecar with a motorcycle power unit.

PAUL MENARD / *France 1923*
A Humber agent in Clamart, Paris, Paul Menard assembled some cars from Humber parts and sold them under his own name.

PAUL SPIEDEL / *Switzerland 1915–1922*
Starting with a tandem-seated cyclecar with a four-cylinder Chapuis-Dornier engine, Paul Spiedel of Geneva subsequently built sporting 8 hp voiturettes with Müller-Vogel engines of two and four cylinders. Lack of finance restricted total output to 15 cars.

PAWI / *Germany 1921*
Paul Wilke's car had a 1598cc four-cylinder engine, but enjoyed no commercial success.

1913 Pearson-Cox steam car

PAWTUCKET / *USA 1900–1902*
A twin-cylinder steam car built in three models by the Pawtucket Steamboat Company, RI.

*c.*1899 Patin dogcart

PAX / *France 1907–1909*
Another minor manufacturer from Suresnes, Paris, who built 10/14 hp and 18/24 hp four-cylinder light cars.

PAYDELL / *England 1924–1925*
A 13·9 hp Meadows four powered this little-seen car from Hendon.

PAYNE-MODERN / *USA 1907–1909*
Designed by Gilbert J. Loomis, the Payne-Modern — whose front springs were tilted up at the front by 15 degrees for easier riding — was backed by an oil millionaire; air-cooled vee-formation single ohc engines of four (3707cc), six (5500cc) and eight (7413cc) cylinders and a constant mesh gearbox controlled by a steering-column lever were used. Prototypes were built from 1904.

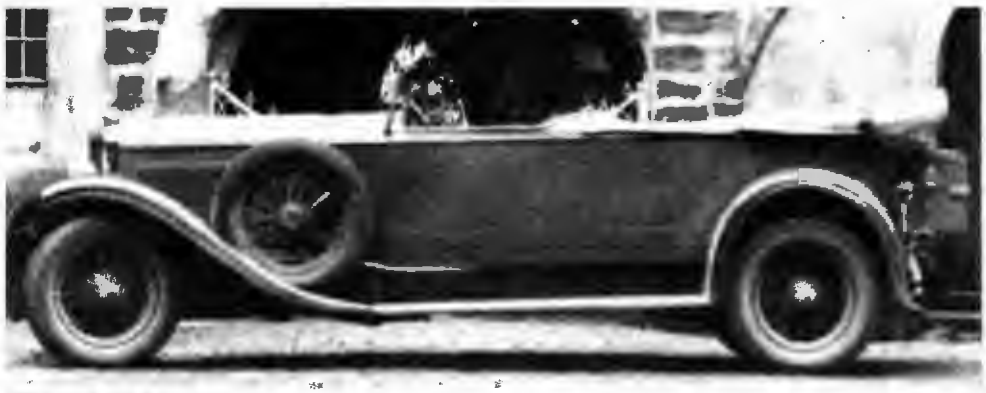
PAYZE / *England 1920–1921*
Built at Cookham, Berkshire, the Payze used a 10 hp Coventry-Simplex engine. The price in 1920 was £450.

PDA / *England 1913*
Built by Pickering, Darby and Allday, of Birmingham, this ephemeral 8 hp cyclecar had a choice of air- or water-cooled JAP engines.

PEARSON-COX / *England 1908–1916*
Pearson and Cox, of Shortlands, Bromley, Kent, were among the more successful British steam car (and motorcycle!) makers. Their cars were three-cylinder models with shaft drive, which sold for £380.

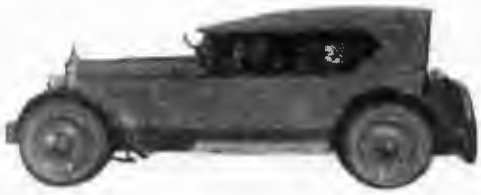
PECK / *Canada 1912–1913*
An expensive ($4000) electric brougham from Toronto.

PEEL / *Isle of Man 1962–c1968*
A 49cc DKW moped engine powered this tiny single-seater, which had a handle at the back so that it could be lifted into the narrowest parking places.



930 Ballot RH-3 3-litre tourer

BALBOA / *USA 1924–1925*
The Balboa was a California-built car with a factory in Fullerton which never went into actual production. Three prototype models were made: the 1924 pilot model featured a Kessler eight-cylinder engine, this being supplanted by another power plant, probably of Balboa design, a year later. The cars were disc-wheeled and had 127–131-inch wheelbases. Balboas had distinctive lines and were ahead of their time in general appearance.



925 Balboa five-passenger phaeton

BALDWIN / *USA 1896–1899*
Based in Providence, Rhode Island, Baldwin built chain-drive steamers, with either surrey or *vis-à-vis* coachwork. Unlike other light American steamers, the Baldwin had a condenser so that the exhaust steam could be recycled.

BALDWIN / *USA 1900–1901*
Baldwin, of Connellsville, Pa., claimed to have materials on hand for the manufacture of 180 steam cars, but went bankrupt amid accusations of fraud.

BALLOT / *France 1919–1932*
Ballot really started as far back as 1905, when the brothers Edouard and Maurice Ballot started manufacturing marine engines and proprietary power units. After the war, they entered motor racing when ex-Peugeot engineer Henry Idesigned a straight-eight 4·9-litre car for the 1921 French Grand Prix. They later evolved a 2-litre racing car from which was developed a touring version, the 2 LS. This was a dohc 1944cc four which stayed in production until 1924. In 1923, Ballot presented the ohc 2 LT with three-bearing crankshaft; a sport version, the 2 LTS, was soon evolved with bigger valves. In 1926 a six-cylinder was presented at the Paris Show but never went into production: it was replaced the following year by the ohc 2·8-litre type RH straight-eight. The engine was then enlarged to 3 litres, but the car was too heavy to enjoy success. In 1931 the Ballot factory was taken over by Hispano-Suiza. The Ballot HS 26, which had been launched at the Paris Show in 1930, was renamed Hispano 'Junior'. The six-cylinder engine of 4580cc was designed by Birkigt and made at the Hispano Works: Ballot provided only the chassis. Nevertheless, the Ballot factory closed its doors in 1932.

BALZER / *USA 1894–1901*
Steven Balzer of New York was a pioneer builder of motor carriages. In 1899 he received an order for ten cars from 'Paris, France'. His 1901 8 hp had a three-cylinder 2500cc rotary.

BAMBER & LEWIS / *England 1898*
A two-seater 'oil motor car' from Meopham, Kent, said to be of the company's own manufacture. May also have been known as the 'Vesta'.

BANDINI / *Italy 1948–1956*
Four-cylinder 746cc sports-cars with Fiat-based engines, built in limited numbers. The highly tuned engines had ohv and also ohc cylinder-heads and proved fast in many races, but failed as far as consistent reliability was concerned.

BARAUF / *USA 1920*
Probably only one Barauf car was built. This was exhibited in February 1920. The car was a five-passenger touring model featuring a 108-inch wheelbase and a four-cylinder Leroi engine. It could be converted into a utility.

BARBARINO / *America 1924–1925*
Salvatore Barbarino was an automobile engineer and designer who took over the assets of the defunct Richelieu automobile and announced a new Barbarino car late in 1924. Only ten were completed. The cars featured a Leroi four-cylinder engine, disc wheels and a high rounded radiator reminiscent of Fiat or Kissel. All bodies for this 110-inch wheelbase car were supplied by Chupurdy & Co. of New York City.

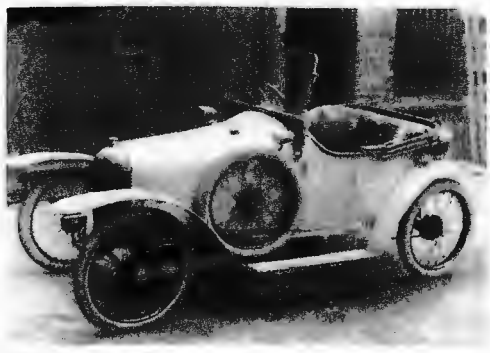
BARCLAY / *England 1933*
The Birmingham-built Barclay was an assembled family saloon, having a 10 hp Coventry-Climax engine, Moss gearbox and ENV rear-axle.

BARD / *England 1899–1900*
Forerunner of Calthorpe, George Hands's Bard Cycle Company showed Grappler-tyred motor tricycles and quadricycles at the 1899 Stanley Show.

BARDON / *France 1898–1906*
Like the Gobron-Brillié, the Bardon used an opposed-piston engine, but in this case there were two pistons and four flywheels. Engines of 5 hp to 12 hp were offered.

1903 Bardon 12hp

BARIMAR / *France 1913*
Barimar of London were welding engineers who could carry out spectacular repairs on broken or cracked castings: the 8 hp Barimar car seemed out of character for this company, as it was a spindly single-cylinder model imported from France.



1913 Barimar 8hp cyclecar

BARLEY / *USA 1922–1925*
The Barley was named after Albert Barley and built by the Barley Motor Car Co. of Kalamazoo, Michigan, as a companion car to the Roamer which had been made by Barley since 1916. Strictly an assembled car, Barleys featured both Continental and Herschell-Spillman engines, a wheelbase of 118 inches and prices starting at $1395. In 1925, the name was dropped and the Barley became the Roamer 6-50—with the exception of the taxicab line, which was continued under its old name of Pennant.

BARLOW STEAM CAR / *USA 1923*
This 130-inch wheelbase $3000 touring car appeared in a single pilot model only. The company's plan to manufacture buses also failed to materialize.

BARNARD / *England 1921–1922*
An American Henderson four-cylinder motorcycle engine powered this chain-driven device, which was built in East London.

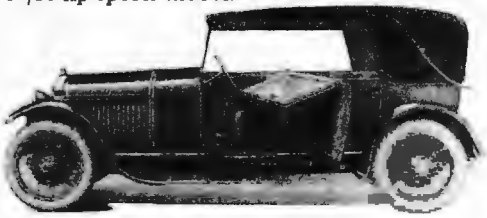
BENZ SOHNE / *Germany 1905–1926*
After Karl Benz left Mannheim, he headed, with his sons Eugen and — later — Richard, this new Ladenburg-based car factory. Karl Benz retired in 1912. They built some excellent cars with engines from 2608cc to 3565cc and also sleeve-valve models under Henriod-Licence. Production after the war was on a small scale. The range included sv 1638cc and 3560cc fours.

BERG / *USA 1902–1905*
Panhard-like four-cylinder chain-drive cars of 15/20 and 24 hp from New York: in 1905 Berg merged with the Worthington Automobile Company, who modified Leon Bollées for the US market and also sold an 18 hp five-seater called the Meteor.

BERGANTIN / *Argentina 1960–1962*
A forerunner of IKA-Renault, with a Willys-Jeep engine in an Alfa Romeo 1900 bodyshell.

BERGDOLL / *USA 1908–1913*
Louis J. Bergdoll, from a well-known Philadelphia society family, boasted that the Bergdoll 30 was 'backed by millions'. It was assembled from proprietary components, including a Westinghouse engine and Driggs-Seabury chassis, and sold at prices ranging from $1500 to $2500.

BERGE / *France 1922–1923*
R. Caillat of Le Pré-St-Gervais offered 7 and 10 hp voiturettes, a 10/14 hp light car and an 11/35 hp sports model.



1922 Berge 10/14hp cabriolet

BERG ELECTRIC / *USA 1921–1922*
Few Berg Electric cars were ever completed, those units known to have been made being sold as town cars and limousines for private use as well as for hire. Artillery-wheeled, the 126-inch wheelbase Bergs had a General Motors 60 volt, 28 amp motor. The limousine cost $2650.

BERGEON / *France 1897–c1898*
Using 5 hp Landry & Beyroux engines, this Bordelais manufacturer constructed four-seated victorias with the advanced feature of a vee-windscreen.

BERGMANN / *Germany 1909–1922*
This electricity company built a 50 hp car and soon afterwards took over the licence for Belgian Métallurgique cars. On the payroll was Ernst Lehmann, one of Germany's leading car designers, also connected with Métallurgique. Among his designs were 1560cc and 1728cc twin-cylinder and 2800cc to 6320cc four-cylinder Bergmann-Métallurgique cars. Other four-cylinder models included 9880cc, 7320cc, 3365cc and 1560cc sv-engined versions. The last Bergmann designs had 55 hp four-cylinder and 45 hp six-cylinder side-valve engines.

BENZ
Germany 1885–1926
Karl Benz of Mannheim built his first motor car in 1885–86. Three-wheelers of similar design followed, but proved more popular in France than Germany. The 1893 'Viktoria' had a 2000cc water-cooled single-cylinder engine, but there were also 1730cc and even 2900cc versions. Another model, built until 1902, was the 3 hp 'Comfortable' with a 1045cc single-cylinder engine: 1902 saw the introduction of the 'Parsifal' with 10, 12 and 14 hp two-cylinder and 20 and 30 hp four-cylinder engines. It was this design which created much trouble in the factory, because both Benz and Marius Barbarou claimed responsibility: Benz resigned in a huff. Barbarou became chief designer, followed in this capacity by Fritz Erle and Hans Nibel. Many superb cars, from 1950cc to a big 10,080cc developing 105 bhp (at 1400 rpm!), left the Mannheim factory, which after the war built a sporting ohc 1570cc car, the popular 6/18. Less sporting was the sv 2080cc 8/20 hp. In 1923 a sv 2860cc six-cylinder appeared and also a sporting 4130cc six-cylinder, built until 1926, when Benz merged with Daimler (Mercedes). There was also a 7025cc six-cylinder. Benz also built many racing cars, including in 1909 the 200 hp 'Blitzen'-Benz and in 1922–24 the rear-engined, Edmund Rumpler-designed, 1980cc Benz 'Teardrop' racing car.

1887–88 Benz three-wheeler

A modified Benz Viktoria, c.1898

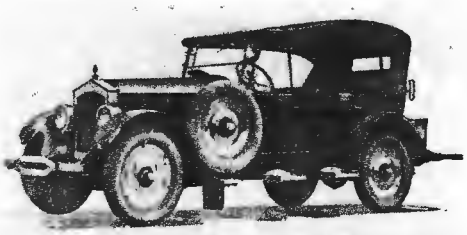
1902 front-engined 10hp Benz

1921 Benz Sportwagen

IARRINGTON / *England 1901–1902*
, four-seater 7 hp single-cylinder 'Panhard sys-:m' car offered by the London coachbuilders)fford.

IARRISON / *USA 1904–1907*
'he 1906 Harrison, from Grand Rapids, Michi-an, had a four-cylinder engine which could run ı either direction, thanks to two sets of exhaust ams controlled by the driver. Inlet valves, erhaps mercifully, were automatic. The cylin-ers could also be made to fire in pairs 'for reater power on hills'. An acetylene-powered elf-starting system and four-speed constant-iesh transmission were also featured.

IARRIS SIX / *USA 1923*
ın ambitious local project: no cars were ac-ıally produced at the Menasha, Wisconsin, lant of the Harris Six until a bankruptcy court rdered as many cars as possible be manufac-ıred and sold from existing parts. Probably less ıan ten were made, disc-wheeled sport phae-ons powered by Waukesha or Continental ngines. Wheelbase was 120 inches and price /as $1485.

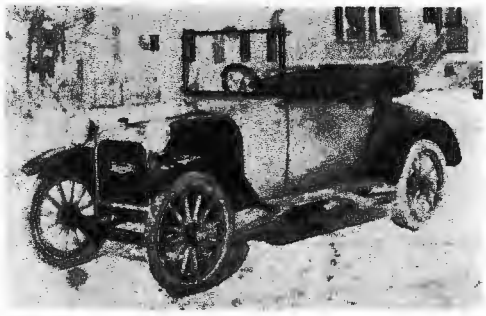


923 Harris Six 4078cc sport phaeton

IARROUN / *USA 1917–1922*
The Harroun, built in Wayne, Michigan, hon-oured the name of Ray Harroun, who won the irst Indianapolis '500' in 1911 at the wheel of a Marmon Wasp. This was a low-priced auto-nobile with its own make of four-cylinder :ngine, selling in the $1200 price bracket.

IART / *England 1900–1903*
Ernest W. Hart, of Luton and London, was a notor agent who also marketed electric car-iages. Their 1900 *La Toujours Contente*, with a 2½ hp Löhner-Porsche electric motor in each ıub, was the first four-wheel-drive motor car. In 1903 Hart offered a 40 hp petrol-electric.

IARTNETT / *Australia 1949–1955*
Designed by French engineer Jean Grégoire and similar to the British Kendall), the Hart-ıett was a front-wheel-drive design which made extensive use of aluminium. It had four-wheel ndependent suspension, rack-and-pinion steer-ng and an air-cooled horizontally-opposed engine. Plans were made to sell 10,000 a year, ut serious difficulties arose when an outside contractor failed to deliver body panels. Some 120 rolling chassis had been completed when Hartnett took the contractor to court. These chassis were fitted with hand-built timber sta-ion wagon bodies. Hartnett won a protracted aw suit, but the project died.


1915 Harvard two-seater

HARVARD / *USA 1915–1920*
This was a two-passenger roadster, marketed for export only and manufactured first in Troy, New York, then in Hudson Falls, New York, and eventually in Hyattsville, Maryland. Harvards were all built with right-hand drive: most, if not all, were produced for the New Zealand market. A hidden compartment for the spare wheel in the rear deck was an innovation. A four-cylinder Model motor was used throughout the car's six-year production.

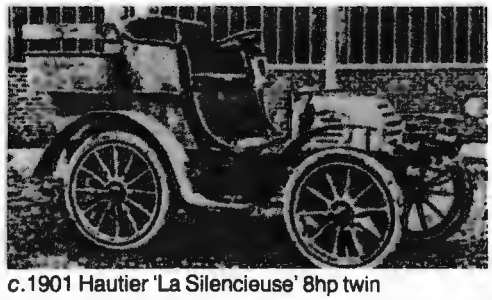
HASBROUCK / *USA 1899–1901*
Stephen Augustus Hasbrouck designed a very complex 'convertible compound explosive engine' in 1899. His Hasbrouck Motor Company of New York were builders of launches and yachts with 'gasoline motive power', who also fitted their power units to carriages which could be 'operated by any intelligent person . . . its speed is gauged from one mile per hour to as fast as one may care to go'.

HATAZ / *Germany 1921–1925*
One of the better small German cars, the 972cc Hataz had a Steudel-made four-cylinder sv engine. Sports versions were available with a similar ohv unit and two-seater bodywork.

HATFIELD / *USA 1917–1924*
An assembled car, the Hatfield's only probable claim to fame was its 1917 suburban car, forerunner of today's station wagon. The earlier models used a four-cylinder G. B. & S. engine, later models using both four- and six-cylinder engines by Herschell-Spillman.

HAUTIER / *France 1899–1905*
'Young engineer' Hautier designed this marque's 'Espérance' engines which followed an 1899 electric car. The 1902 models had not only electric lighting, but also an underslung circular radiator beneath a conventional bonnet. Catalogues that year included a cut-out model of the 1903 four-cylinder: first prize for the best finished model was a new Fr 9000 twin-cylinder Hautier! Hautier's ultimate range consisted of 20 hp and 30 hp models with frames pressed from a single sheet of steel and constant-mesh gearboxes.


1921 Haynes roadster


c.1901 Hautier 'La Silencieuse' 8hp twin

HAVERS / *USA 1908–1914*
Powerful six-cylinders from Port Huron, Michigan: 1914 models had a 55 hp engine of 6178cc.

HAWK / *USA 1920*
Only one pilot model was built by the Hawk Motor Co. of Detroit. This featured disc wheels and a five-passenger touring body.

HAY / *USA 1899–1900*
Walter Hay, of New Haven, Connecticut, claimed this 6 hp four-cylinder 4212cc Stanhope phaeton would run 'without oil or water'. It operated on an 'eight-stroke' cycle, with two out of four revolutions occupied in 'cooling and purifying' the cylinders.

HAY-BERG / *USA 1906–1908*
Assembled cars from Milwaukee, using an ohv air-cooled 20 hp Carrico four-cylinder engine of 3925cc.

HAYES / *England 1904*
A 'newly invented Balanced Engine and new Ratio Velocity Gear' were this car's main features.

HAYNES, HAYNES-APPERSON
USA 1898–1925
Elwood Haynes, of Kokomo, Indiana, the inventor of stainless steel, made his first car in 1894, and for many years claimed it as America's first motor vehicle. However, production did not begin until 1898, when Haynes teamed up with the Apperson brothers, building boxy cars with tiller steering and a rear-mounted flat-twin engine. The Appersons broke away in 1902 to set up on their own, though the cars were still called 'Haynes-Appersons' two years later. Wheel steering appeared in 1903: these were among the first left-hand-drive American cars. Haynes cars adopted a front-engine position in 1904, though still using a 12 hp flat-twin: a five-seater aluminium-bodied Roi-des-Belges cost $2550. A vertical-four engine of 35/40 hp appeared in 1905, last year of the flat-twins; only big pair-cast fours were available between 1906–14, in which year the company's first six appeared. This was the Model 27, with electric gear-shift and a pair-cast engine of 7763cc. A 60 degree V-12 appeared two years later, with two monobloc cylinders giving a swept volume of 5909cc. The 'Light

HOTCHKISS / *England 1920*
A British offshoot of the famous French company, the Coventry firm is usually remembered as building engines for William Morris's famous 'Bullnose' model. However, they did experiment with a car of their own, with a 1080cc vee-twin ohv engine, but it never went into production.

HOUK / *USA 1917*
A short-lived beetle-backed phaeton from a famous maker of wire wheels.

HOULBERG / *Denmark 1919–1920*
The maximum weight allowed on smaller Danish minor roads was 450 kg and that law bred a special type of car. One was the Houlberg, first produced in Odense in 1913. The car had a four-cylinder 5/12 hp Ballot engine, shaft drive and hand- and footbrake on the rear wheels. It is possible that an even smaller model with a Dutch Eysinck engine was built. Altogether 25–30 cars were made.

HOUPT / *USA 1909–1912*
Racing drivers Harry S. Houpt and Montague Roberts were behind this high-speed marque from Bristol, Connecticut. A 40 hp four of 9344cc and a 60 hp six (14,016cc) were available, and the cars were entered for many sporting events.

HOWARD / *USA 1903–1905*
The Howard started operations in Troy, New York, but operations were moved to Yonkers, New York, shortly thereafter. An expensive automobile, the 25/30 hp touring-car was listed at $5000 and closed models (listed as 'available') at a considerably higher figure.

HOWETT / *England 1912–1913*
A vee-twin cyclecar with 'eccentric steering'.

HP / *England 1926–1929*
This 500cc motorcycle-engined three-wheeled cyclecar, built by Hilton-Peacey Motors of Woking, Surrey, sold for only £65.

HPS / *England 1903–1904*
A 6 hp De Dion-engined light car on Panhard lines, said to be capable of 35 mph, was the Hyde Park Motor Stores' first offering. Two- and four-cylinder models were listed in 1904.

1949 HRG 1500

HRG / *England 1936–1956*
So called because of the involvement of E. A. Halford, G. H. Robins and H. R. Godfrey (of GN fame), the HRG was a spiritual successor to the Frazer Nash, though with a shaft-driven rear axle instead of chains. Initially, the 4ED 1496cc Meadows ohv engine was used and in 1939 an 1100cc single overhead camshaft Singer engine was fitted, to be followed shortly by a 1½-litre power unit from the same manufacturers when supplies of the Meadows engine dried up. After the war, the 1496cc Aerodynamic model made a brief appearance, though this was soon dropped in favour of the traditional chunky 1930s style bodywork. A final fling came in 1955 when an all-independent-suspension disc-braked model with twin overhead camshaft was announced but never proceeded with.

HUASCAR / *France 1930–1932*
Made in Courbevoie in close relationship with Deguingand and Galba, these cars were Violet-designed, with a water-cooled twin-cylinder two-stroke engine of 627cc.

HUBBARD / *England 1904–1905*
A 4½ hp coachbuilt tricar with front-wheel brakes, built in Coventry.

1916 Hudson Six-40 Town Car, 'in fashionable Grosse Pointe, Michigan'

HUDLASS / *England 1897–1902*
In 1896 Felix Hudlass, aged 21, spent an inheritance (intended for his training as a doctor) on equipping a motor works, even though he had never seen a car. His first car, with a vertical-twin monobloc engine at the front and two-speed belt drive, appeared the following year, but after a few months was dismantled, and parts incorporated in a second car, which followed Benz lines, with a horizontal single-cylinder engine of 2813cc mounted at the rear. About 20 of this type were built between 1897 and 1899. By 1902 Hudlass was building 6 hp and 10 hp single-cylinder cars, and 12 hp and 20 hp twins with front engines, but a fire at his coachbuilders destroyed much of his stock. As he was not insured, he sold out, and joined Weller Brothers of Norwood, who went into liquidation in 1903. Hudlass was chief engineer of the Royal Automobile Club (formerly the ACGBI) from then on until he retired in 1947.

HUDSON / *USA 1901–1902*
A light tiller-steered steamer from Hudson, Michigan.

1956 Hudson Hornet V-8 hardtop

HUDSON / *USA 1909–1957*
Detroit store magnate J. L. Hudson gave his name to this marque, whose first offering, a 2534cc four of unremarkable design (by Howard Coffin), proved an instant success, pushing Hudson to seventeenth place in the US sales league by the end of 1910. The first Hudson six, the 6-litre Model 6–54, arrived in 1912; two years later Hudson were claiming to be the biggest manufacturer of sixes in the world. The four, by now of 4324cc, was dropped in 1916, and a one-model policy adopted with the 4730cc Super-Six, available in a wide range of body styles, and classy enough for President Hoover to order a landaulette. From 1927–30, the Super-Six engine had inlet over exhaust valves, but after that nothing except side valves were used on any Hudson. Hudson-Essex group sales were third biggest in the USA in 1929, but tailed off after that, despite the introduction of a new straight-eight in 1930. The six was phased out the next year, but the eight was to remain in production until 1954. In 1932, six eight-wheeled tourers were built for the Japanese Government. From 1934–38, after the demise of Essex, Hudson and Terraplane had much in common, and in 1935 the 'Electric Hand' electric gear shift became optional; 1936 saw the 'safety engineered chassis' with hydraulic

Twelve' remained in production until 1921. The last Haynes was the Model 60, a 5219cc six, available with roadster, tourer or sedan bodywork.

HB/*USA 1908–1909*
A 10 hp high-wheeler built by H. Brothers of Chicago.

HCE/*England 1912–1913*
An underslung cyclecar with 6 hp Buckingham engine.

HCS/*USA 1920–1925*
Harry C. Stutz left his Stutz Motor Car Co. in Indianapolis in 1919 to head a new concern in the same city, the first HCS automobiles being introduced for 1920. A relatively expensive machine, the HCS resembled the Hispano-Suiza and was highly regarded by sporting car aficionados. The cars were powered by a four-cylinder Weidely engine; in 1924, this was augmented by a Midwest six. The Weidely four was dropped for 1925 which was the last year of HCS passenger-car production. The company remained in business as a taxicab manufacturer into 1927.

HE/*England 1920–1931*
Financed by Herbert Merton and designed by R. J. Sully, the HE was built in Reading, Berkshire, by the Herbert Engineering Company. The first model was a sv 1795cc four, though it was soon succeeded by the 14/20 of 1920; two years later a sporting model, the 14/40, appeared. A six-cylinder model, a 15·7 hp of 2·3 litres, was added in the 1927 season. The four was dropped in 1928 and a 1½-litre six appeared in 1930, a few being sold in supercharged form, though it featured quarter-elliptic springs all round, a sign of the times!

1927 HE Six at Brooklands

HEADLAND/*England 1898–c1900*
Front-wheel-drive electric broughams and phaetons 'of not unpleasing appearance'.

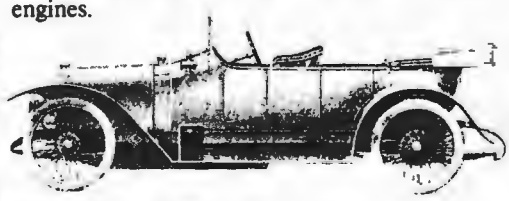
HEALEY/*England 1946–1953*
A highly accomplished driver and experienced engineer, Donald Healey formed plans for the production of a car bearing his name whilst in


1948 Healey Westland two-seater

the employ of Humber; he had already left his stamp at Triumph, being responsible for the birth of both the Gloria and Dolomite. Production of both the Elliot (closed) and Westland (open) grand touring Healeys began in October 1946. Later, yet more sporting models were produced, the Nash-Healeys finishing with distinction at Le Mans and the Healey Silverstones finding great favour with the club racers at home. The Nash was the most widely produced of the Warwick-built Healeys, 253 being made altogether, as against 105 Silverstones.

HEBE/*Spain 1920*
A 6/8 cv cyclecar built in Barcelona: unusually for this type of vehicle, saloon bodies were offered.

HEDEA/*France 1912–1924*
Made in Paris by M. Accary (and sometimes sold under his own name) these were medium-sized cars with 1795cc Chapuis-Dornier engines.


1919 10/12hp Hédéa tourer

HEIFNER/*USA 1920–1922*
Located first in Chester, Penn., and later in Geneva, Ohio, the Heifner was developed into a few pilot models at best and just drawing-board plans at least. Announced were six-cylinder models featuring a Continental engine in 1920 and 1921 and a Wisconsin four for 1922. The six-cylinder models, in touring car form, were listed at $3595.

HEILMANN/*France 1897–1900*
Monstrously complex, the Heilman (from Le Havre) had a twin-cylinder opposed-piston engine driving a dynamo which powered hub motors. In 1899, this maker of electric locomotives offered a four-wheeled electric *avant-train* to convert horse carriages.

HEIM/*Germany 1921–1926*
Made by former Benz engineer and racing-driver Franz Heim, these 20 hp, 30 hp and 40 hp touring cars had own-make four-cylinder en gines of 1569cc, 2009cc and 2100cc with sid valves; 1924 saw the introduction of an oh 2385cc six-cylinder. Production of Heim car was limited, especially of an ohc 1960cc sport six-cylinder, which was built in 1925–26.

HEINE-VELOX/*USA 1906–1909, 1921–192*
The initial phase of the car carrying this nam was a conventional four-cylinder type built b the Heine-Velox Motor Co, of San Francisc California. The second line of automobiles– enormous and highly expensive machines– was produced by the Heine-Velox Engineerin Co, of the same city. These later cars rode on wheelbase of 148 inches and used a modifie Weidley V-12 engine with 6383cc displacemen Hydraulic four-wheel brakes were included an both open and closed models were built. Price the five-passenger touring model was $17,00 making it America's most expensive motor c at the time.

HEINIS/*France 1925–1930*
Made in Neuilly by M. Heinis, these cars we offered with various engines, from an ohc 799 four designed by Heinis, through various pr prietary 1100cc, 1170cc, 1690cc and 1947 units to a 5000cc Lycoming eight.

HEINKEL/*Germany 1955–1958*
Formerly famous for their military aircra Heinkel built three-wheeled 174cc 'bubble car from 1957 a four-wheeled minicar with o 198cc and 204cc single-cylinder engines was al available. In 1958 Heinkel sold the design a production equipment to Ireland and Engla respectively.

HELBE/*France 1905–1907*
The Helbé ('LB', for Levêcque and Bode reider, its constructors) was an assembled lig car using De Dion engines of 4½ hp, 6 hp a 8 hp and Delage components.

HELIOS (NORDEN)/*Sweden 1901–1906*
Södertälje Verstäder built railway rolling sto but started importing Kuhlstein, NAG, Pro and Ducommun cars from Germany. Any these cars could probably have been sold un the Helios name in 1901–02. From 1902 American Northern car was assembled a marketed as Norden. The venture was profitable and production ceased in 1906.

brakes backed up by an emergency mechanical system. Hudson emerged from the war with a continuation of its 1942 models, but broke new ground with the unit-construction Step-Down design of 1948, offered in five series, from the low-priced Pacemaker to the high-priced Commodore Eight. Engines were a 4293cc six and a 4162cc V-8. The Hornet series used the old L-head six of 5047cc, and from 1951–54, this model was virtually invincible in stock car racing. Sales had peaked in 1950, however, and Hudson lacked the finance to re-tool. The 1953 compact Jet was abandoned when Hudson merged with Nash to form American Motors in 1954. After that, Hudson shared Nash's body-shell; top of the line was the Hornet Custom Hollywood, with Packard V-8 power (replaced in 1956 by the new 180 bhp AMC V-8). The smaller Wasp used Hudson's old 3310cc six.

HUDSON / *England 1975*
A one-off electric town car built by John Hudson of Doncaster, the Hudson was capable of 40 mph and had a range of 28 miles. Its power came from 3 cwt (336 lb) of lead-acid batteries.

HUFFIT / *France 1914*
An 'absolute cyclecar', powered by a 1206cc Clement-Bayard twin, with 'sporting Alfonso XIII' body.

HUFFMAN / *USA 1920–1925*
The Huffman was an assembled car built in Elkhart, Indiana, offered as line of models all featuring a Continental six-cylinder engine throughout its solid, but rather dull history. A 120-inch wheelbase was featured. The 'K' series, introduced in 1923, was built until 1925, the last Huffmans being equipped with disc wheels and four-wheel brakes.

HUGOT / *France 1897–1905*
A voiturette driven by rear-mounted 2¼ hp De Dion or Aster single-cylinder engines. A few 697cc single-cylinder voiturettes appeared in 1905.

HUMBER

HUMBER / *England 1898–1976*
Thomas Humber's bicycle business was established in Coventry in 1868. It was therefore no surprise that the company's first vehicles to be powered by an internal-combustion engine were tricycles and quadricycles. These led to the Humberette of 1903, with a tubular frame and a single-cylinder 5 hp engine. By 1905 the range of Humbers included two- and four-cylinder cars ranging from the 5 hp to a 10/12 hp four. A three-cylinder 9 hp put in a brief appearance in 1903–04. But from 1905 the-


1913 8hp vee-twin Humberette cyclecar


1904 Humber 5hp Olympia Tricar


A 1915 11hp Humber two-seater


c1921 15.9hp Humber Tourer

continued from previous page

two-cylinder cars were dropped, the range consisting of 10/12 and 16/20 models, with a 15 hp appearing in 1907. It was back to twins in 1908, and 1913 saw the Humberette name revived for an air-cooled vee-twin 8 hp (later examples were water-cooled). Mention should be made of the team of cars F. T. Burgess designed for the 1914 Tourist Trophy race. These used four-cylinder 3·3-litre twin overhead camshaft engines, but suffered teething troubles in the race and failed to show their mettle. The post-war years saw the company establish a reputation for themselves by producing solid, well-mannered cars. Side-valve engines were favoured up until 1922, but after this date overhead inlet/side exhaust engines appeared, the 8/18 of 1923 being a typical example. Other excellent fours, a 9/20 and 14/40 hp, consolidated the company's position by 1927, that year also seeing the appearance of a fashionable six: the 20/55 hp model. However, 1930 saw the take-over of the company by the Rootes brothers and the appearance of two more sixes, the 2·1-litre 16/50 and 3·5-litre Snipe. The final departure of the overhead inlet/side exhaust engine came in 1932, Humber settling down to their traditional role of providing cars for the upper middle classes. The following year came the 1·7-litre four-cylinder 12 hp, though by the end of the decade the company was only producing six-cylinder models, the 4·1-litre Super Snipe and its variants being made during the Second World War. After the war, production of these side-valve sixes continued, the Snipe and 4·1-litre Pullman range being augmented by a 2-litre four-cylinder engine of Hillman origins in the Hawk. Overhead valves did not appear on the Super Snipe and Pullman until the 1953 season, while the Hawk did not acquire them for another year: 1959 saw the re-emergence of the Super Snipe (it having been dropped for a short time) with a 2·7-litre engine, though this was later upped to 3 litres. The ailing Rootes Group was taken over by the Chrysler Corporation in 1964, the Sceptre of that year being a more luxurious version of the Hillman Minx, this having a four-cylinder engine of 1·7-litre capacity. This was the only upholder of the Humber name, the re-styled Sceptre being phased out in 1976.

1936 Humber Snipe


1953 six-cylinder Humber Super Snipe

HUMPHRIS / *England 1908–1909*
The Humphris Patent Gear was a final drive using a disc with four concentric rings of holes; pegs on the drive shaft gave the different ratios, with direct drive in every gear: 'guaranteed saving of 20 per cent in power'. Four-cylinder engines of 10/12 hp and 12/16 hp were used.

HUNGERFORD / *USA 1929*
The Hungerford, or Hungerford Rocket, was America's first successful rocket automobile and the first to be licensed for operation on public highways. Built by two eccentric clairvoyant brothers in Elmira, New York, the Hungerford was based on a 1921 Chevrolet chassis with a special rocket hookup and pumps built by the Gould Pump Co. of Seneca Falls, New York. The car never materialized beyond the prototype stage, but the one pilot model is extant to this day. The Hungerford had to be brought to a halt before being converted to rocket propulsion or *vice versa*. Teardrop styling was used not unlike the Dymaxion.

HUNTER / *USA 1920–1921*
Little is known of the Hunter car of Harrisburg, Pa. At least one car is known to have been completed, a six-cylinder touring car with 121-inch wheelbase and an announced price of $2250.


1915 Hupmobile 15/18hp four

HUPMOBILE / *USA 1908–1940*
Bobby Hupp and E. A. Nelson designed th original Hupmobile, a 2·8-litre Detroit-buil runabout with two-speed transmission. Sellin at $750, it was an instant success, and by 191 production was up to 12,000: a development o


1925 Hupmobile 16.9hp four-cylinder touring

consisted of five models with four engines—two monobloc fours (4882cc and 5212cc) and two bi-block sixes (5701cc and 6898cc).

IMPERIAL / *USA 1955–1971*
Though it still used Chrysler bodyshells, the Imperial was classed as a separate make from 1955: the range consisted of Custom, Crown and Newport and the lwb Crown Limousine. Power was by a Chrysler hemi-head V-8 of 5801cc. The 1957 Imperials had unique Virgil Exner styling, with skyscraper fins, and came with TorqueFlite transmission as standard; Imperial, Crown and LeBaron series were offered. The prestige Crown limousine was custom-built by Ghia of Italy; only 132 of these hand-crafted machines were made in the 1957–65 period. Sales peaked at 33,027 in 1957. The second best year (aided by all-new styling) was 1964, with 21,257 cars sold. There was a new chassis and new sheet metal in 1967, and in 1969 Imperial adopted Chrysler's 'tumblehome' styling. Though sharing the same sheet metal, Imperial continued to use a separate chassis up to 1971, when the marque returned to the Chrysler fold.

IMPETUS / *France 1900*
A C-sprung voiturette powered by a front-mounted De Dion engine, built at Pornichet-Plage (Loire-Inférieure) by Max Hertel (the same man who built the USA Hertel).


1928 Indian two-seater

INDIAN / *USA 1928–1929*
Only three or four experimental cars were built by the Indian Motorcycle Co. of Springfield, Mass. Two of these 85-inch wheelbase cars were equipped with twin-cylinder Indian engines, a four-cylinder Continental or a four-cylinder Chevrolet motor being used in the other car or cars. Wire wheels were standard. A roadster, coupé and one other body style were made.

INDUCO / *France 1922–1924*
Made in Puteaux, Seine, by M. Van der Heyden, this was a light car with a 1094cc Chapuis Dornier engine.

INNES / *USA 1922*
Successor to the earlier Simms car, less than 10 Innes cars were built by the American Export Co. of Jacksonville, Florida. The cars used both Supreme and Herschell-Spillman four-cylinder engines. The 'line' included a roadster, touring car and light truck.

INNES LEE / *England 1972–1973*
The Tom Killeen-designed Scorpion was a clever little monocoque two-seater sports car with a rear-mounted Hillman Imp engine. However, the company, based in Telford (Shropshire), never got the Scorpion into production, despite an encouraging reception at the London Show in 1973.

INNOCENTI (LEYLAND) / *Italy 1961–1976*
Famous for many years for Lambretta scooters, Innocenti built the BMC (later British Leyland) Mini with 998cc and 1275cc engines under licence, following with other models, including the Regent (Allegro), with engines up to 1485cc.

INNOCENTI / *Italy 1976 to date*
Successor to Leyland Innocenti, the 'Nuova Innocenti', made at Milan by the De Tomaso Group, is still similar to the British Mini. It has Bertone-designed five-seater bodywork and is available with 998cc and 1275cc engines.

INTER / *France 1954*
A tandem-seat cyclecar with 175cc Ydral engine and rubber suspension.

INTERMECCANICA / *Italy 1971–1976*
This specialist producer first used 5766cc Ford Mustang V-8 engines followed by a 5354cc version. Another of these sporting luxury cars had a 2784cc six-cylinder Opel power unit. Production was mainly for export to the USA.

INTERNATIONAL / *England 1898–1904*
Until 1901, Oscar E. Seyd's company, based in Great Portland Street, London, modified Benz cars for the British market. From 1900, the Allard-built International Charette, a single-cylinder belt-drive model, was their mainstay, a twin-cylinder model built by Payne & Bates having proved unsuccessful. Imported models offered by International included the Armstrong (1902), Portland (1903) and Diamant (1904).

INTERNATIONAL / *USA 1914–1915*
A tandem-seated cyclecar selling at $380, built in Harvey, Illinois.

INTERNATIONAL BABY CARRIAGE
England 1904
A miniature motor car, belt driven and with a ⅛ hp electric motor, designed for children.

INTERNATIONAL HARVESTER
USA 1947 to date
In 1950 International, better known for trucks and farm vehicles, launched the Travelall wagon which was suitable for rough country and farming chores. The new model of 1957 gave more attention to styling. By 1961 the Travelall was available with two- or four-wheel-drive and six-cylinder or V-8 engines. A new four-wheel-drive cross-country vehicle, the Scout, was offered with a wide range of open or closed bodywork. When off-road vehicles became a fashionable pastime in the 1970s, International built an extensive range of Scout models. The Traveler, a new model for 1977, featured six-cylinder in-line diesel engines built by Nissan of Japan.


1973 International (IHC) 4wd Travellall

INTERNATIONAL MOTOR WHEEL
USA 1899
This was a 'power pack' with a single driving wheel which replaced the front wheels of a horse-carriage to convert it into a motor vehicle. Various types of engine, from a single-cylinder two-stroke to a four-cylinder vee-twin with two crankshafts, were used.

INTER-STATE / *USA 1909–1918*
The Inter-State, from Muncie, Indiana, started life as a 4654cc four, but by 1913 the six-cylinder Model 45 of 6251cc was available. A cheaper model, the Touring-T, with a 3191cc Beaver four, was introduced in 1914, following a company reorganization, but in 1918 General Motors bought the Inter-State plant to produce the Sheridan.


1927 3-litre round-the-world Invicta

INVICTA / *England 1925–1938, 1946–1950*
Noel Macklin had already produced the Eric-Campbell and the Silver Hawk by the time the Invicta put in an appearance in 1925. The intention was to offer a sports car with American flexibility allied to traditional British quality. The Invicta's appeal was undeniable: low lines, handsome square radiator and bonnet with rivets clearly visible. Though the prototypes were fitted with 2·5-litre Coventry-Climax six-cylinder engines, production cars used the Meadows ohv 2·6-litre six which produced the right performance. The project was financed by Oliver Lyle (of Tate and Lyle fame) and Earl Fitzwilliam, previously of Sheffield-Simplex. Engine capacity was increased to 3 litres in 1926 and to 4½ litres in 1928, by which time the Meadows engine had been coaxed to deliver 100 bhp. Later, in 1930, the 4½-litre became available in two types: the high chassis and the graceful low chassis '100 mph' car with underslung chassis. Unfortunately, a win by Donald Healey in the 1931 Monte Carlo Rally and success in the Alpine Trial came at the height of the Depression and production tailed off, almost ceasing in 1935. This was not before efforts had been made to offer a more popular confection: the 1932 12/45 with an ohc Blackburne 1½-litre engine. A supercharged version, the 12/90, was announced the following year, though it achieved little success. Meanwhile

1948 Invicta Black Prince

Macklin had become involved with the Railton project and sold out to Earl Fitzwilliam: three new Invictas were announced for 1938, but these cars were nothing more than re-bodied Darracqs and the project was still-born. The Invicta name was revived after World War Two, the Black Prince model being designed by W. G. Watson, who had been responsible for the original Invicta of the 1920s. The new car was a vehicle of some complexity. The engine, based on a Meadows industrial unit, was a dohc camshaft 3-litre. Power was transmitted by a Brockhouse hydraulic torque converter (there being no gearbox). All-independent suspension by torsion bars was featured. The whole package was offered at £3000, though by the time production ceased in 1949 the price had spiralled to nearly £4000. The remaining spares were purchased by AFN Ltd. on the collapse of the enterprise.

IPE/*Germany 1919–1922*
A 12 hp small car with a sv 1017cc four-cylinder engine, made only in small quantities.

IPSI/*France 1920–1921*
Made in Asnières, Seine, these were 1100cc Ballot-engined cyclecars with friction drive.

IRIS/*England 1905–1915*
Named after the Greek goddess Iris, 'Speedy messenger of the gods', this Willesden marque later adopted the mnemonic 'It Runs in Silence'. From late 1905 a diamond-shaped radiator identified the Iris, built by Legros & Knowles: Ivon de Havilland, brother of the aviation pioneer, was associated with the marque until his premature death. Initially fours of 25/30 hp (4882cc) and 35/40 hp (6757cc) were offered, supplemented for 1907 by a 7310cc six. During the war they moved to Aylesbury, but produced no more cars.

1913 Iris 15hp Torpedo Phaeton

ISIS/*Czechoslovakia 1922–1924*
The Beutelschmidt-Ruzicka designed car had a German 769cc Baer two-stroke double-piston engine and was quite heavy. Other models had French Chapuis-Dornier 1100cc and 1500cc engines. Only 20 Isis cars were built.

ISO (ISETTA)/*Italy 1953–1976*
Iso's first motor vehicles were scooters and two-stroke motorcycles. Next, they built the Isetta 'bubble-car' with double-piston two-stroke engines of 236cc; it was also licence-built by BMW in Germany, VELAM in France and Isetta in Great Britain. Manufacture of big luxury cars commenced in 1961. Most had Ghia and Bertone-built bodywork and big Chevrolet V-8 engines. The range included the 5359cc Rivolta coupés and limousines. There was also the very sporting Grifo Lusso, a two-seater coupé. Others included the Lele, a Bertone-coupé with a 5768cc Ford V-8 engine, the Fidia and the Grifo. There was also the Grifo IR 9 Can-Am with a 7443cc Chevrolet V-8 and a top speed of 182 mph.

ISPANO-FRANCIA/*France 1920–1921*
Made in Biarritz by M. Pelladoux, the Ispano-Francia was a 16/20 hp car of very little interest.

ISUZU/*Japan 1953 to date*
Primarily truck manufacturers, Isuzu of Tokyo assembled Hillman Minxes during the 1950s. In 1969 General Motors, looking for a foothold in Japan, bought 34·2 per cent of Isuzu; the mid-1970s saw a three-car range—the 1·6/1·8-litre Gemini, the Florian (ohv 1·6/ohc 1·8-litre) and the Ghia-styled Coupé, available with a twin-cam, twin-carb 1800cc engine.

ISOTTA-FRASCHINI/*Italy 1901–1949*
Founded by Cesare Isotta and Oreste Fraschini, Isotta-Fraschini built a wide range of models in pre-Great War days, mainly four-cylinder cars up to 11,304cc. A six-cylinder, built in 1908, had 11,939cc. An Isotta-Fraschini, driven by Trucco, won the 1908 Targa Florio, and 1911 saw a small model with a 1·3-litre ohc engine, supposedly designed by Ettore Bugatti . . . a statement strongly denied by Isotta-Fraschini chief designer Cattaneo, who designed between the two World Wars the most famous model ever built by this car manufacturer: the straight-eight Isotta-Fraschini, the world's first series production straight-eights. Among them was the ohv 5623cc Tipo 8 of 1919, which was followed in 1924 by a bigger 7372cc version, Tipo 8A. Another eight-cylinder was the 1926 'Super Spinto' Tipo 8ASS, with a 135 bhp engine. Heavy steering spoiled these big Isottas. The last version, the Tipo 8B, was a big improvement, but only 30 were built from 1931 to 1939. After 1945, the factory tried to return to car manufacture, when Aurelio Lampredi designed in 1948–49 the rear-engined 3400cc Monterosa, which had a 120 bhp V-8 engine, an up-to-date design which never went into production.

1908 Targa Florio Isotta-Fraschini