

AUTOMOBILE BIOGRAPHIES

AN ACCOUNT OF THE LIVES AND THE WORK OF THOSE WHO
HAVE BEEN IDENTIFIED WITH THE INVENTION
AND DEVELOPMENT OF SELF-PROPELLED VEHICLES ON
THE COMMON ROADS

ILLUSTRATED

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FOREWORD

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FOREWORD

In a large sense the history of the rise of the automobile has been a history of some of the foremost inventors, mechanical engineers, manufacturers and active business men of more than a full century. The subject of self-propelled vehicles on the common roads has enlisted the faculties of many men whose minds have been engrossed with the study and the solution of mechanical and engineering problems, purely from an absorbing love of science; it has had the financial support of those whose energies are constantly and forcefully exerted in the industrial and commercial activities of the age; it has received the merited consideration of those who regard as of paramount importance any addition to the sum of successful human endeavor and any influence that contributes to the further advance of modern civilization.

Along these lines of thought this book of Automobile Biographies has been prepared. On its pages are sketches of the lives and the work of those who have been most active in planning, inventing and perfecting the modern horseless highway vehicle, in adapting it to the public needs for pleasure or business and in promoting its usefulness and broadening the field of its utility.

Included herein are accounts of the pioneer inventors, the noted investigators and the contemporaneous workers who have helped to make the automobile in its many forms the most remarkable mechanical success of

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to-day and the most valuable and epoch-making addition to the conveniences of modern social, industrial and commercial life. These sketches have been carefully prepared from the best sources of information, works of reference, personal papers and so on, and are believed to be thoroughly accurate and reliable. Much of the information contained in them has been derived from exceedingly rare old volumes and papers that are not generally accessible, and it

comes with a full flavor of newness. Much also has been acquired from original sources and has never before been given to the public.

The investigator into this subject will find, doubtless, to his very great surprise, that the story of the pioneer inventors, who, in the early part of the nineteenth century, experimented with the problems of the steam road carriage, has been recorded voluminously and with much detail. It was a notable movement, that absorbed the abundant attention of inventors, manufacturers and the public at large at that time.

Writers of that day recorded with a great deal of particularity the experimenting with boilers, engines, machinery and carriages, and the promoting of companies for the transportation of passengers and the hauling of goods. Modern students and historians of this subject find themselves greatly indebted to the writers of that epoch, like Gordon, Herbert and others, who preserved, with such painstaking care, for future generations, as well as for their own time, the account of the lives and labors of such men as Watt, Trevithick, Maceroni, Hancock and others. Every modern work upon this subject draws generously from those sources.

Concerning the later period from the middle of the century that has just

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ended, down to the present time, there is less concrete information, readily available. With the cessation of public interest in the matter and its general relegation into the background, by inventors, engineers and those who had previously been financial backers of the experimenting, writers ceased to give the subject the enthusiastic attention that they had before bestowed upon it. Records of that period are scant, partly because there was so little to record and partly because no one cared to record even that little.

Until comparatively recent times the historian of the self-propelled vehicle, who was so much in evidence seventy-five years ago, had not reappeared. Even now his work is generally of a desultory character, voluminous, but largely ephemeral. It is widely scattered, not easily accessible and already considerably forgotten from day to day. Especially of the men of the last half century, who have made

the present-day automobile possible and are now contributing to its greater future, the following pages present much that has never been brought together in this form. It is both history and the material for history.

It is believed that these sketches will be found peculiarly interesting and permanently valuable. Individually they are clear presentations of the achievements of some of the most distinguished engineers and inventors of the last hundred years. Collectively they present a complete story of the inception and gradual development of the automobile from the first clumsy steam wagons of Cugnot, Trevithick, Evans and others to the perfected carriage of to-day.

The chapter on The Origin and Development of the Automobile is a careful study and review of the conditions that attended the attempts to install the first common road steam carriages, the tentative experimenting with bicycles,

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tricycles and other vehicles in the middle of the last century and the renaissance of the last two decades. Several of the illustrations are from old and rare prints, and others are from photographs.

It is not possible to set down here all the authorities that have been consulted in the preparation of this work. Special acknowledgment, however, must be made to The Engineering Magazine for permission to use text and photographs, and to J. G. Pangborn for permission to use a great deal of interesting information regarding the early steam inventors contained in his work, The World's Railway, and to reproduce portrait sketches of Trevithick, Murdoch, and Read, from the same valuable volume.

Lyman Horace Weeks.

New York, January, 1905.

ORIGIN AND DEVELOPMENT OF THE AUTOMOBILE

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ORIGIN AND DEVELOPMENT OF THE AUTOMOBILE

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Strange Early Vehicles

He who would fully acquaint himself with the history of the inception and growth of the idea of travel by self-propelled vehicles on the public highways must go further back in the annals of the past than he is likely first to anticipate. Nearly three centuries ago men of mechanical and scientific turns of mind were giving attention to the subject, although their thoughts at that time were mostly confined to the realms of imaginative speculation. Even before that philosophers occasionally dreamed of what might be in some far off time. Roger Bacon, in the thirteenth century, looking into the distant future, made this prediction: "It will be possible to construct chariots so that without animals they may be moved with incalculable speed." It was several hundred years before men were ready to give practical attention to this idea, and about 1740 good Bishop Berkeley could only make this as a prediction and not a realization: "Mark me, ere long we shall see a pan of coals brought to use in place of a feed of oats."

But the ancients, in a way, anticipated even Roger Bacon and Bishop Berkeley, for Heliodorus refers to a triumphal chariot at Athens that was moved by slaves who worked the machinery, and Pancirollus also alludes to such chariots.

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Horseless Wagons in China

Approaching the seventeenth century the investigator finds that definite examples are becoming more numerous, even if as yet not very practical. China, which, like Egypt, seems to have known and buried many ideas centuries before the rest of the world achieved them, had horseless vehicles before 1600. These merit, at least, passing attention even though they were not propelled by an engine, for the present automobile is the outgrowth of that old idea to eliminate the horse as the means of travel.

Matthieu Ricci, 1552-1610, a Jesuit missionary in China, told how in that country a wagon not drawn by horses or other animals was in common use. In an early collection of travels this vehicle was described as follows: "This river is so cloyed with ships because it is not frozen in winter that the way is stopped with multitude; which made Riccius exchange his way by water into another (more strange to us) by waggon, if we may so call it, which had but one wheel, so built that one might sit in the middle as 'twere on horseback, and on each side another, the waggoner putting 't swiftly and safely forwards with levers or barres of wood (those waggons driven by wind and gayle he mentions not.)" It was somewhat later than this that China was indebted to that other famous Jesuit missionary, Verbiest, for his steam carriage, which, however, was not much more than a toy.

Manually Propelled Vehicles

But in the seventeenth century most attention seems to have been given to devising carriages that

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should be moved by the hand or foot power of man. The auto car that was run in the streets of Nuremberg, Germany, by Johann Hautsch, in 1649, was of this description, and that of Elié Richard, the physician, of La Rochelle, France, about the same time, was of the same class.

Not long after this Potter, of England, came along in 1663 with a mechanical cart designed to travel on legs, and in the same year the celebrated Hooke presented to the Royal Society of England a plan for some sort of a machine by which one could "walk upon the land or water with swiftness, after the manner of a crane." It does not quite

appear what that cart and that machine were. One authority thinks that the Hooke patent was for a one-wheel vehicle supposed to be propelled by a person inside the wheel. Then, also, there was Beza, another French physician, with a mechanical vehicle in 1710.

Other French and English Experiments

In fact, the interest in carriages worked by man power extended from the seventeenth well into the nineteenth century. Soon after the time of Beza, mechanical chariots, modeled after the Richard coach, were advertised to be run in London, but it does not appear that they met with public favor. Scientists and others gave much thought to the subject, both in England and in France. John Vevers, master of the boarding-school at Ryegate, Surrey, came out with a carriage that was evidently copied from that of Richard. Other forms of carriages worked by hand or foot power of man were described in the periodicals of the time. George Black, of

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Berwick-on-the-Tweed, built a wagon to be run by hand power in 1768. In England, John Ladd, of Trowbridge, Wilts, in 1757; John Beaumont, of Ayrshire, in 1788, and in France, Thomas in 1703, Gerard in 1711, Ferry in 1770, and Maillard, Blanchard and Meurice, in 1779, and others, were most active during this period.

It was well into the nineteenth century before this idea was wholly abandoned. Edmund Cartwright, inventor of the hand loom, contributed to the experimenting, and the 1831 patent to Sir James C. Anderson was for a very imposing vehicle rowed by twenty-four men.

Compressed Air Power

At the same time that the steam engineers in England were bringing out their vehicles, 1800-35, others were at work on the problem of compressed air carriages. Among these was W. Mann, of Brixton, who, in 1830, published in London a pamphlet, entitled A Description of a New Method of Propelling Locomotive Machines, and of Communicating Power and Motion to All Other Kinds of Machinery,

and it contained a lithograph of the proposed carriage. Sir George Medhurst, of England, about 1800, with his proposed regular line of coaches run by compressed air was, perhaps, the most conspicuous experimenter into this method of propulsion.

Sailing Carriages on Land

Many men long speculated upon the possibility of wind propulsion on land as well as upon the sea. The most ambitious attempt in that line was the

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sailing chariot of Simon Stevin, of The Hague, in 1600. Vehicles of this kind were built by others, and in 1695 Sir Humphrey Mackworth applied sails to wagons on the tramways at his colliery at Neath, South Wales. The Frenchman, Du Quet, in 1714, and the Swiss clergyman, Genevois, proposed to get power from windmills mounted on their wagons. More curious even than these was the carriage drawn by kites, the invention of George Pocock, in 1826.

The Steam Carriage Predicted

But all these and other fantastic devices never got beyond the experimental stage, and nothing of a substantial, practical character was ever evolved from them. It remained for the latter part of the eighteenth century to see the subject taken up seriously and considered in a way that promised definite results. And it was steam that then brought the matter strongly to the front.

It is true that Sir Isaac Newton tentatively suggested the possibility of carriage propulsion by steam about 1680, but his suggestion lay dormant for nearly a century. Then the growing knowledge of the power of steam and the possibilities in the new element turned men's thoughts again very forcibly to this theme. The stationary engine had shown its usefulness, and the consideration of making this stationary machine movable, and therefore available for transportation, naturally followed.

Dr. Erasmus Darwin is said to have urged James Watt and Matthew

Boulton to build a fiery chariot as early as 1765. In his poem, The Botanic Garden, famous in that day, Dr. Darwin, like a prophet crying

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in the wilderness, sang of the future of steam in these lines:

“Soon shall thy arm, unconquered steam, afar Drag the slow barge, or drive the rapid car; On, on wide waving wings, expanded bear The flying chariot through the field of air; Fair crews triumphant, leaning from above, Shall wave their fluttering ’kerchiefs as they move, Or warrior bands alarm the gaping crowds, And armies shrink beneath the shadowy clouds.”

These lines may indeed be fairly interpreted as anticipating in prophetic prediction the modern motor airship, as well as the motor car.

The First Steam Vehicles

It was considerably later than this that the dream of Dr. Darwin approached to realization at the hands of the steam engine inventors and builders. Aside from Nicholas Joseph Cugnot, the French army officer who, about 1769, constructed an artillery wagon propelled by a high-pressure engine, those who first built successful self-propelled vehicles for highway travel were the famous engineers of England and Scotland, who harnessed steam and developed the high-pressure engine in the last half of the eighteenth century and the first half of the nineteenth. James Watt patented, in 1782, a double-acting engine, which he planned might be “applied to give motion to wheel carriages,” the engine to be portable; but he never put the patent to trial. He was followed by George Stephenson, Richard Trevithick, Walter Hancock, Goldsworthy Gurney, David Gordon, William Brunton and others in England, and Oliver

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Evans, Nathan Read and Thomas Blanchard in the United States, with two score or more contemporaries. For more than half a century steam vehicles of various types were invented by these engineers and many of them were brought into practical use.

Soon after the end of the first quarter of the nineteenth century the interest in steam carriages had assumed large proportions in England. In 1833 there were no less than twenty such vehicles, either completed or in hand, around London, and a dozen corporations had been organized to build and run them over stated routes.

Alexander Gordon, the eminent engineer, wrote a book, entitled *Treatise Upon Elemental Locomotion*, that went into three editions inside of four years. He also brought out two special journals covering this field of mechanics. The *Mechanic's Magazine*, and other publications, also gave much attention to the subject, and the steam-carriage literature of the period became very voluminous.

Popular Prejudice Aroused

For a time it looked as though the new vehicle was destined to a permanency and to accomplish a revolution in the methods of travel on the high-roads. But several things arose to determine otherwise. There sprang up an unreasoning senseless hostility to any substitute for the horse as the agent of vehicular traffic. The stage-coach drivers were afraid that they would be thrown out of work. Breeders of horses foresaw the destruction of their business, when horses should no longer be in demand. Farmers were sure that with horses superseded by steam, they

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would never be able to sell any more oats. This public animosity manifested itself wherever the steam carriages went. The coaches were hooted at and stoned amid cries of "down with machinery." Stones and other obstacles were placed in the roads, trenches were dug to trap the unsuspecting driver and stretches of roadway were dug up and made into quagmires to stall the machines. Parliament was called upon and enacted excessive highway tolls, especially directed at steam carriages. Another law that stood on the statute books of Great Britain until within comparatively recent times compelled every self-propelled vehicle moving on the highway to be preceded by a man walking and carrying a red flag.

The Beginning of Railroads

All this was undoubtedly due, in a large measure, if not wholly, to what was then known as the Turn Pike Trusts, which, in conjunction with the stage-line companies, in many cases, were owners of a thousand and more horses. The latter, quite naturally, objected to the introduction of the mechanical vehicle, while the former had such relations to them that both their interests were identical.

But above all things, the great art of railroading had already grown from infant existence to a condition of great possibilities, which were now to be finally determined by a success, not alone mechanical and in the eyes of the inventor, but measured by the balance sheets of the companies of individuals who had made possible the construction of the various experimental locomotives or experimental lines then being operated in England and elsewhere. Just at

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this time, in the thirties of the nineteenth century, seems to have been the crucial point. The arguments of the engineers on the question of sufficient traction of the iron-shod wheels on iron or other hard railways, while given due consideration, were not wholly convincing, at least to the people investing their money in the enterprises; the profits were to tell in the final conclusion, and it would seem that the great era of railroading might be considered to have had its actual birth at this time, because:

The first dividend was paid on one of the great railroad enterprises.

Influence of the First Dividend

For the time being that seemed to sound the death knell of the common road steam-propelled vehicle. The engineers so strongly advocating the railroad had proven their various propositions in the eyes of those who had the financial powers to engage in the extensive introduction and development of the new means of transportation. Further demonstration, extensively exploited, was also made to the satisfaction of those investors, that vehicles could be pulled with less power on a hard roadbed such as a railway, than on an uneven and sometimes soft path such as common roads. It seems

clear that these and various other arguments, heartily urged at that time, and, in some cases, unquestionable from a technical standpoint, were really decided by that first dividend. And the common road vehicle with the support and enthusiasm of its backers largely withdrawn from it dropped to a position greatly subordinate to the other branch of transportation.

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The Steam Road Vehicle Again

On the other hand, the development which came in the next few decades in the railroad department brought also a renewed demand for common road vehicles for certain classes of work or for certain localities. The steam vehicle for stationary purposes, and also for the locomotive, were being rapidly developed and refined. The railroad settled down to the idea of a power unit drawing numerous wagons. That has been consistently adhered to to the present day, and only in the past decade have we gone back to the old and first principles of embodying the mechanical propelling means in the same vehicle that transports the passengers or goods. So, while Hancock and his worthy contemporaries passed into history, other common road steam advocates continued their isolated attempts up to and past the middle of the nineteenth century, although without any such general enthusiasm as prevailed in the twenties and early thirties.

New Generation of Inventors

Many attempts in America, such as those of Fisher, Dudgeon, and others, and the work in England by numerous inventors and machine manufacturers, such as Tangye, Hilditch, Snowden, F. Hill, Jr., aided by the engineers, Macadam, Telford and M'Neil, who were improving the common roads so that they might approach the advantageous conditions of the railroad, assume prominence in connection with that period of the history. Rickett's carriage, in 1858; Carrett's, in 1862; Boulton's, in 1867; Catley's, in 1869, and others, were among the

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finger-posts of that time, pointing to more notable achievements of the future.

But in England the Act of Parliament, passed in 1836 and in force almost to to-day, known as the Locomotive Act, was the deterrent to progress in common road steam locomotion. This condition even continued after the select committee of Parliament, in 1873, endeavored to remove some of the restrictions, but succeeded only in producing the Act of 1878, which in no way improved the position of the common road vehicle.

In France and on the Continent political conditions doubtless mitigated against any general advance, and though this period included the great development of machinery and construction which paved the way for the future, it is not of prominence in this history.

A Period of Experimenting

A new era may be said to have commenced in the early part of the seventies when we find Amédée Bollée exhibiting a steam machine at the Vienna Exposition. In the seventies were also experiments on modified forms of power on vehicle propelling motors other than steam, but it still seemed to be the steam vehicle that characterized the new period of activity which blossomed out in the early eighties with many ardent advocates, and exhibited a type of light vehicle with efficient strong boiler and light engine. America should not be overlooked, however, when we consider the one small vehicle of Austin, which was constructed in Massachusetts, and attracted great attention at the shows of the Ocean Circus, in the early seventies, or thereabout. Bouton,

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of France, came to the fore in the early eighties, and the light steam vehicle seemed on the high road to a great development and a monopoly of the common roads vehicle industry, until its competitor appeared in what is now popularly known as the gasoline vehicle in the middle eighties.

The Selden Patent

From this time on the great industry of to-day advanced in strides and jumps, but while the future had been anticipated in some suggestions and experiments in Europe, at last one great mind had delved into the problem and anticipated the great future of the new type of vehicle in America. Selden, after a decade or more of study and work, and well-directed experiments, had made his own deductions, and with clear discerning had concluded what, to his mind, would be *the* vehicle in the future. The result of his labors and the subsequent filing, in 1879, of a patent application, when considered in connection with his persistent work from that time on, even to the present day, would seem to justly mark him as the pioneer in this type of vehicle; in fact, he was so called by the Commissioner of Patents of the United States when publishing his annual report, immediately after the issue of Selden's patent.

Advent of the Hydro-Carbon Engine

Then followed the work on carbureters and ignition devices and details of construction adapting the liquid hydro-carbons of uncertain quality to more satisfactory use. Details became and still are numerous, and optional to a great extent, but the liquid hydro-carbon engine of the compression type

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distinguished the new epoch. The development of the stationary engine operated with gas from receivers also proceeded rapidly in those days, though it was well into the eighties before the gas engine of the compression type involved a commercially successful industry to any extent; not for several years did the principal manufacturers take up commercially the proposition of the liquid hydrocarbon application. The development of the small engine using liquid hydro-carbons received attention from Marcus, in Austria, and the persistent attention of Benz and of Daimler, in Germany. The two latter, furthermore, adapted their engines to vehicles, and enthusiasm was great when Benz ran his three-wheeler, with explosive engine, through the streets of his native town.

Progress in France and America

England was still shackled; but in France many were inspired to change from steam to the hydro-carbon engine. About 1890 we find several French manufacturers procuring engines, or the right to manufacture the small explosive engines developed by the Germans, and promptly adapting them to their vehicle construction, already well developed for steam propulsion. Panhard & Levassor; Bouton, with his backer, DeDion; Bollée, now Leon, the nephew; Delahaye and Peugeot, were among the earliest Frenchmen to appreciate the commercial possibilities of the new type. Then the large manufacturers, already experienced in other lines, and particularly in cycle manufacture, entered the field in 1893, 1894 and 1895; among them such old concerns as DeDietrich, manufacturers for one hundred and

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more years, grasped the opportunity. America was not idle, and while road conditions in this country militated largely against the early attempts in the industry, the efforts of the Duryeas and of Haynes, and various other experimenters, who have since retired, were heard from. It was difficult, however, with the obstacles then existing in America, for these early workers to secure encouragement, and progress was slow, just as the endeavors of Selden and some of the early steam vehicle people had received nothing but discouragement at the hands of those whom they endeavored to lead to the success of large manufacturing undertakings.

However, the Times-Herald race, in Chicago, near the close of 1895, brought forth a large number of inventors and several starters, including electric, steam and gasoline vehicles, and the showing was such as to practically satisfy the doubting that these were the beginning of the industry in this country.

The English Revival

Abroad, the leaders in the automobile movement organized the now historic races from Paris in different directions. With the runs of 1894, 1895 and 1896, and in each successive year thereafter, and with the road and other conditions improved, the industry rapidly developed.

England also was at last reached. The restraints that had existed there for more than half a century could no more be endured. The burden was finally thrown off, for which great credit is due to Sir David Salomon, and the offensive Locomotive Act was at last repealed in August, 1896. The subsequent Locomotive Act

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which came into effect November 14, 1896, marked a red-letter day in motoring history for England, and was justly celebrated by a procession of vehicles from London to Brighton. Salomon had previously organized an exhibition in England, and had imported a French car, and as a prominent member of scientific and technical societies, in which he presented many papers on the subject, had done, possibly, more than any other individual to influence public sentiment and to secure this new enactment. English manufacturers were not entirely unprepared for the change, and a great wave of interest and activity swept the country. Naturally this was followed by a reaction, but since then a counter-reaction has set in, resulting in the present grand development of that class of manufacturing in the British Isles.

The small steam vehicle of Whitney, and his contemporaries, the Stanleys in the United States, then came to the fore. Under energetic promotion thousands of small vehicles of that type were manufactured and put into use. These, in no small measure, became to the public at large the convincing object lesson of the practicability and possibilities of the small automobile for every-day use.

Modern Conditions

The Paris show of 1900 revealed a great forward step in the development of constructions, and the offer immediately thereafter of the James Gordon Bennett trophy of international racing gave to the automobile industry such an impetus as has seldom been the good fortune of any other art to receive. To-day the automobile has reached that stage

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of perfection where the question is no longer whether or not the

vehicle will carry you to a certain place and back. Now it is only a question of the speed, absence of vibration, and sweetness of running the engine, absence of all noise, and other details of refinement. Vehicles are now of the Pullman type, luxurious to the extent of prices ranging into the thirties of thousands of dollars, while on the other hand, thousands of small vehicles, costing between five hundred and one thousand dollars, are annually made and sold.

The steam machine, after being practically succeeded by the gasoline, was again improved by the flash boiler. The main development of this new power was carried on by Serpollet, of France, and later, by Rollin T. White, in the United States, both whom have become most able competitors of manufacturers of machines of other classes.

The Industry To-Day

The beginning of 1905 finds us with the annual shows, which have been consecutive for many years, while the census of vehicles now in use, or made in the last ten years, will aggregate several hundred thousand. The annual production is estimated as probably approximating one hundred thousand in a few of the principal countries. The value of the electrical vehicle, particularly as the town vehicle for anything except speeding, is now well established, and reports from Paris as well as New York indicate the lack of facilities of factories in this line for producing these carriages as rapidly as demanded. Heavy 'buses and individual vehicles alike are also popular.

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PIONEER INVENTORS

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