

Alonzo and William Townsend Marsh, 1899.

by William S. Mounce

# The Marsh Brothers of Brockton



Alonzo and William Townsend Marsh are names that do not enjoy the instant recognition that Ford, Duryea, Stanley, or Durant have today; yet these brothers from Brockton, Massachusetts were also prominent in automobile pioneering between 1895 and 1922. Like so many of their contemporaries, they were not technically trained, but followed their native mechanical genius and Yankee initiative to create machines for practical "mechanical road locomotion." The Marshes started by exploring the possibilities of steam-powered cars, as did many others at that time, and brought a production model onto the market in 1899. At the

same time they were experimenting with internal combustion engines and had perfected a one-cylinder, air-cooled model with exceptionally good weight-to-power ratio. At first it was marketed as a do-it-yourself kit to convert bicycles.

Almost immediately the Marsh brothers developed motorcycle designs around their engine and shortly became the largest makers of motorcycles in the United States. Some time around 1905 they joined forces with Walter Metz of Waltham, Massachusetts in the development of both motorcycles and automobiles. In 1913 the motorcycle business was sold to Indian Motorcycle Co. of Springfield, Massachu-

setts. Soon the Marshes abandoned steam power and by 1905 had adapted their new gasoline engine to use in automobiles. Motor carriages were produced by their Atlantic Automobile Co. in Brockton between 1905 and 1907, and it appears quite likely that the Marsh engines were used in Metz cars at least until 1913.

During World War I the Marsh brothers converted their Brockton plant to producing ammunition, but when the war was over, they quickly returned to their first love, the automobile. Alonzo Marsh, who was the inventor in the family, designed a completely original automobile along with the tooling and

production lines to build it. In 1919 Townsend Marsh, the businessman of the family, decided to construct a plant from scratch to produce the new car. One hundred thirty-five freight car loads of tools and equipment and the majority of the employees were moved from Brockton to Cleveland, Ohio to a \$1 million plant that the Company built at Ridge Rd. and Flowerdale S.W. By 1921 the plant was completed and the Company was ready to offer "The Marsh Motor Car—A Light, High Quality Automobile. The Car of the Future." It had a 4-cylinder engine and was available in two body sizes and four styles.

Prices ranged from \$1050 to \$1850. The Marsh incorporated many innovations that were well ahead of their time, such as aluminum bodies and cylinder heads to reduce weight and nickel alloy steel gears for great durability. Just when production was ready to start, however, the Company was hit by the severe depression of 1921-23, which devastated so many other automobile companies. Only 12 cars came off the assembly line before the Company was forced to go out of business in June of 1923.

While Alonzo and W.T., as he was called, headed the mechanical and management phases of the

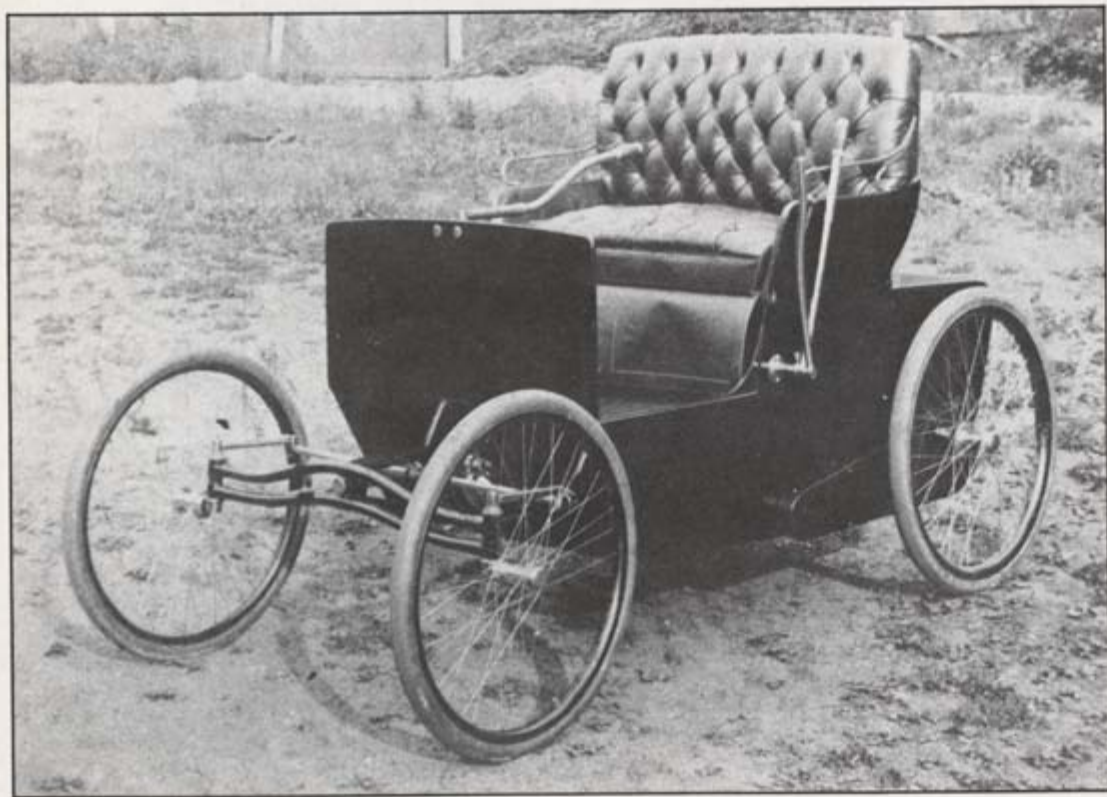
businesses, other family members filled key spots. Bennet (George) and David Marsh were test drivers, demonstrators, and raced the Company motorcycles in meets throughout the United States. Fannie Marsh, a sister, managed office operations. Her husband, James H. Gibson, Jr., designed and built the 150,000-square foot manufacturing plant in Cleveland, and his brother, Josiah Gibson, was treasurer and director of Marsh Motor Car Co.

### **The Marsh Motor Carriage: 1895-1899**

How exciting New England must have been in 1895 for the young self-taught Yankee tinkers who were convinced that automobiles offered the chance for practical road locomotion for everyone, and who were equally fascinated by the mechanical problems to be solved. They were taking as their models European designs that had evolved over the previous 10 years and were seeking by their own ingenuity to gain better performance and a low cost of construction that would open mass markets, rather than to continue the automobile as a toy for the well-to-do. Because the gasoline internal combustion engine was in its earliest stages, most of the New England mechanics started with steam engine technology, with which they were familiar from its well-established stationary and rail locomotive uses.

Both Alonzo and William Townsend Marsh had worked as steam plant operators in the shoe factories of Brockton. In 1895 Alonzo started to study all the information on automobiles he could lay his hands on and decided that a very light weight, high-performance steam engine could be developed and used to drive a "horseless buggy." His experiments began in 1897, and by 1899 the Marsh motor appeared on the streets of Brockton. A production model had completed 5 months of road testing by October 1899 and was offered for delivery in the spring of 1900 at the rate of six carriages per week.

The brochure describing the "motor carriage" was obviously written by a dedicated mechanic and a confirmed enthusiast. The technical description of the engine below shows that Alonzo indeed produced a small powerful engine through his inventive



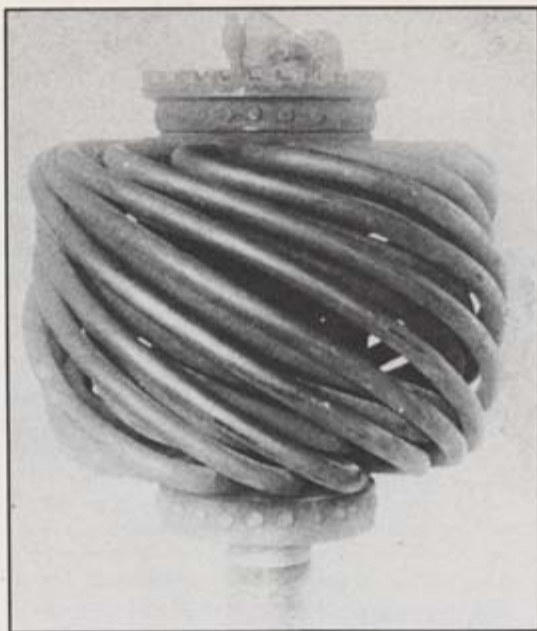
*Marsh steam car, 1899. Two-cylinder compound engine, 10 hp at 1077 rpm. Manufactured by The Atlantic Automobile Mfg. Co.*

skills, but one can't resist quoting some of the prose in the brochure as well. "Two thousand miles, given every kind of hill and rough road . . . has shown itself superior to any motor ever built." "One mile on the Whitman State Road in one minute thirty three and three fifths second . . . is the fastest time ever made by a four wheeled machine of its size and weight." "It was run up Cory Hill at fifteen miles per hour arriving at the top with a full head of steam." The boiler "is tested at 1000 pounds pressure and has a bursting point of 2500 pounds. We challenge any other . . . manufacturer to a public test with their boilers up to two and a half times the weight of ours . . . and will prove that our boiler will stand more than any other form of boiler on earth . . . which goes to show that it is absolutely safe in the hands of a novice."

Improvements of a more technical nature cited for the engine were:

1. A 2-cylinder compound engine weighing 40 pounds with a maximum output of 10 hp at 1077 rpm
2. A patented all-steel superheated water-tube boiler operating at 250 pounds pressure
3. Roller bearings of our own design
4. Automatic control of the burner tied into throttle demand
5. Automatic water pump control
6. A brazed carriage frame "with no bolts or nuts to drop off and let you down miles from home"

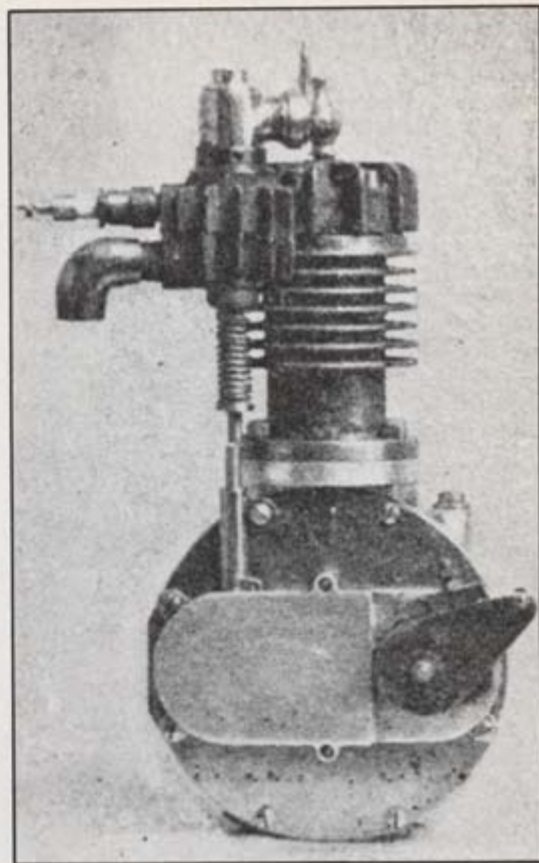
It is uncertain how many steam autos were actually sold by the Atlantic Automobile Manufacturing Co. before the company shifted to internal combustion engines, but an old newspaper photograph showed what appeared to be a steam model in use in 1901. The Marsh steam engine suffered from the same basic technical deficiency as all designs of the time: there was no practical means of recondensing the steam exhausted from the cylinders, so the range of steam cars was limited to the amount of water that could be carried. No practical solution to this problem has been found to this day. Readers will recall that as recently as the OPEC oil crisis the U.S.



*Boiler of Marsh steam engine, 1899. All steel superheated water tube construction with 250 lb operating pressure. Right: First Marsh gasoline engine, 1898-1899, 1.75 hp, 4 cycle. Developed by Alonzo Marsh, Brockton, Massachusetts.*

Government sponsored an unsuccessful steam car development contract with Edward Lear.

Other well-known automobiles in the early 1900s were also initially designed around steam power but soon shifted to internal combustion engines. The longest lived was the Stanley Steamer, built in Newton, Massachusetts, in 1896, contemporary with the Marsh, remaining in production until 1925. The Grout steam car was manufactured in Orange, Massachusetts, from 1898 until 1905 and did have a condenser, but the company changed to gasoline engines in 1905. The Locomobile Co. of Bridgeport, Connecticut, also built steam cars after purchasing the original Stanley design in 1899 but switched to gasoline engines in 1903.



### **The Marsh Internal Combustion Engine**

As mentioned, Alonzo Marsh started experimenting with internal combustion engines even while developing the steam car. The first U.S. company established specifically to produce gasoline engine autos was that of the Duryea Brothers in 1895. Their first car used a two-stroke, one-cylinder horizontal engine. In Europe, Daimler had invented a four-stroke, vertical engine in 1886 that proved to be the prototype from which modern engines have evolved.

(The centennial anniversary of this evolution of the gasoline automobile is being celebrated this year.) Sometime around 1898 Charles H. Metz of Waltham, Massachusetts, brought an engine back from Europe, probably a Daimler type, and he and Alonzo Marsh started to study the design. Their hope was to decrease the size and weight and increase the power and reliability so as to achieve an engine suitable for propelling bicycles and improving the performance of horseless carriages.

All four Marsh brothers had been ardent bicycle racers and knew Walter Metz, who was a noted racer himself and whose company produced the famous Orient bicycles. By 1899 Alonzo Marsh had achieved his objectives, producing a one-cylinder, air-cooled engine with 2 horsepower output. It was small and light enough to be hung in the frame of an Orient bicycle, yet powerful enough to drive a bicycle and rider up to 30 miles per hour. In contrast, Daimler's 1885 engine produced 1.5 hp, but was 30 inches high and weighed 110 pounds. In order to finance their operations the Marshes first sold the engine either assembled or in components from which the customer could convert his own bicycle. For the

really dedicated tinkerer, the Company would even sell blueprints and rough castings.

### **The Marsh Motorcycles: 1899-1913**

Most references credit the 1901 Indian as being the first commercial motorcycle produced in the United States. However the Marsh brothers clearly preceded the Indian Co., for in 1899 they were advertising a complete motorcycle priced at \$200. Again the catalog mixes mechanical information in great detail with amusing salesmanship:

In its latest form the Marsh Motor Cycle is a wonderful improvement over anything that has ever been offered to the public. It weighs complete only 70 pounds and will carry a man of ordinary weight up any grade, without pedal assistance, that a horse can ascend with an empty wagon. This machine is fitted with a 1 3/4 horse power motor, will go 100 miles on less than one gallon of gasoline, and will run faster than any other motorcycle of the same power on the market. It is practically odorless and noiseless; its appearance is so near the same as ordinary bicycles that it will not scare any horse that is used to the latter.

Would that present day Mopeds and motorcycles were so unobtrusive!

As was always to be their custom, the Marshes were not satisfied to merely assemble standard parts, but invented and produced practically every key component themselves. They were particularly proud of their "carburetor," stating: "Experience has taught us that the majority of the so-called mixing valves and vaporizers that have been sold on the American market have been a delusion snare, being worth only what they would fetch for scrap brass." They made their own ignition systems because "it has been impossible to buy anything that was anywhere near reliable unless it weighed nearly as much as the motor itself." Ignition plugs were made with imported procelain and pure platinum sparking points and sold with a money-back guarantee.

When the Marshes combined forces with Charles H. Metz about 1905 to produce the Marsh-Metz motorcycle, they were manufacturing around 2000 motorcycles a year and had sales outlets all over North America and in Europe. Machines were sold under the names Orient, Arrow, Peerless, and Haverford, as well as Marsh and Marsh-Metz. The engines



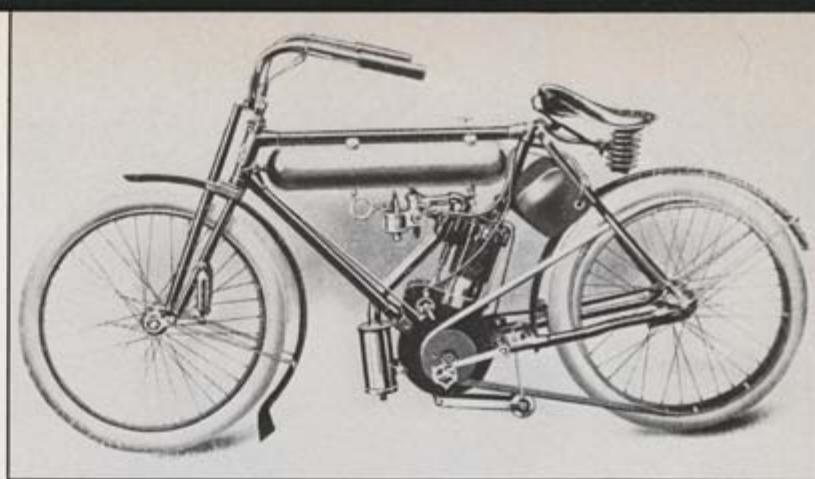
First Marsh "motorcycle" put on market in 1899 by W. T. and Alonzo Marsh. Manufactured by The Atlantic Motor Co., Brockton, Massachusetts.



1901 tandem racers.



1903 Marsh motorcycle. Motor integrated into frame. High ratio belt drive.



First series of Marsh-Metz motorcycles, 1906-1913. Racing model, 2.5 hp, 50 mph, 4.5 power ratio through belt drive.

had been improved to develop 3.0 to 3.5 hp, and a twin cylinder model had been developed. The M&M models were advertised as cruising from 5 to 50 mph and came in road and racing models, tandems, tricar, and delivery body configurations. The basic road model sold for \$175 and the racer for \$225. The motor was no longer hung in the frame but was integrated into it. The Marshes continued to favor belt over chain drives to get a gear ratio of 4.5 to 1 between the engine and rear wheel. Pedals had disappeared, and an improved float feed carburetor was featured. Engineering remained meticulous, and prose exuberant.

"Our Special M.M. Flyer refuses to take anyone's dust. If a rider has been aggravated by being compelled to trail behind another motorcycle, he should take a run on our new Flyer and head the bunch." Does this remind the reader of themes popular in 1986 automotive advertising? Another quote illustrates the striving for quality and engineering perfection that was always the hallmark of Marsh designs: "The motor is our new M&M and in its construction is embodied the latest and best features that conditions to be met with by a motorcycle motor demands. We have spared no expense to make the best motorcycle motor ever constructed, and that we have achieved our aim is very apparent

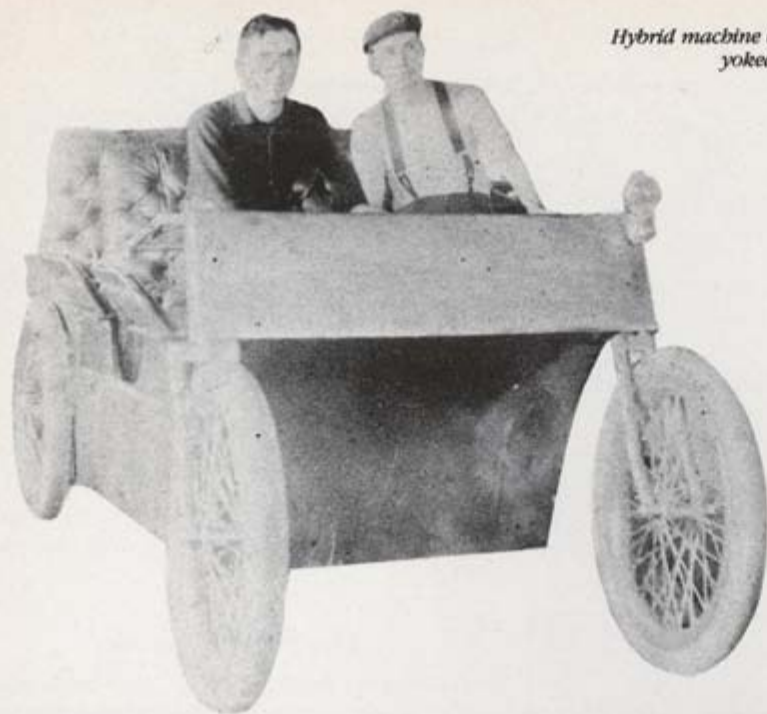
from the results of the 300 mile test we made on two of these machines in the N. A. M. Endurance Run."

### The Marsh Roadster

Evidently the Marshes switched from steam engines to their gasoline engine for the Marsh motor carriages built in Brockton shortly after 1901. A family story states that Alonzo Marsh and Ernie Jones, the factory superintendent, developed a 2-cylinder, upright, air-cooled engine in 1904 to exceed the performance of a 1902 Packard, which had been driven nonstop from New York City to Brockton in the phenomenal time of 16 hours. The resulting Marsh roadster was rated at 10 hp and was fitted with a planetary drive. It weighed 785 pounds, had right-hand steering, and a single cyclops headlight. We don't know how many Marsh roadsters were manufactured in Brockton, but a 1905 car with the serial number 251 is still in existence in Halifax, Massachusetts. It has been featured in two newspaper articles, in one of which James Hawkins of Laconia, New Hampshire, grandson of W. T. Marsh, is shown seated at the wheel. Perhaps the oddest photo in the collection shows what apparently was their first attempt to move from steam to gasoline power for an automobile. The



Marsh gasoline motor car, 1905-1906, Brockton, Massachusetts. Two-cylinder, 10-hp, air-cooled engine, planetary transmission, 80" wheelbase, right-hand drive, 755 lb weight. Alonzo Marsh in passenger seat.



*Hybrid machine believed to be two motorcycles yoked together in parallel. Undated.*

Marshes evidently coupled two motorcycles in parallel like a two-horse hitch and bridged them with a chassis structure. Unfortunately there is no date on the picture.

There is evidence that the Marshes were associated with Walter Metz in automobile developments as well as in the motorcycle business. Apparently they sold their automobile interests to Metz in late 1905. In 1908 and 1909 Metz displayed the Metz roadster, a small car with a two-cylinder, air-cooled motor, which very likely was an offspring of the Marsh-Metz motorcycle engine.

#### **Other Automobile Ventures: 1910-1914**

Even though the Marshes sold their first automobile business to Walter Metz in 1905 to concentrate on manufacturing motorcycles, they remained interested in automobiles. In 1910 Alonzo an-

nounced that he had developed a 4-cylinder car to be manufactured in Brockton. It had a 105-inch wheelbase, the engine developed 24 horsepower, and it was to sell for \$1250. There are few records of the numbers of the "Eastern" that may have been built.

The "Vulcan" was another venture by Alonzo in 1913-15, but this time in Brockton and with a different group of associates. The car was designed in Painsville, Ohio, and a number were built by Driggs and Seabury in Sharon, Pennsylvania. By that time, Alonzo had invented a three-speed transmission, which was coupled with a 4-cylinder Buda engine of 27 hp. The Vulcan was advertised in roadster and touring models for \$850 to \$975.

In 1914-1915 Alonzo was back in Brockton, again associated with his brother W. T., and offering a car to be produced by the Sterling Motor Co., which was a follow-on of Marsh's original American Motors.

With the Sterling the Marshes sought again to provide a low cost vehicle for the mass market. The car had a 102-inch wheelbase and sold for \$550 as a roadster and \$650 as a touring model. It had a 4-cylinder engine developing 13 hp.

#### **Time Out for World War I**

In May 1916, the Brockton plant was renamed the Consolidated Ordnance Co. and was converted to producing 37-mm ammunition for the Russian Government. Later on, when the United States entered the war, the Marsh plant became a highly successful producer of one pound shells for the U.S. Army. According to newspaper articles, the bid price and delivery promises made by the Marsh brothers were so much better than larger companies contending for the business that the Army didn't believe them. Later, when the Marshes more than fulfilled their promises, General Sharpe attributed their success to the unique tooling and production methods invented by Yankee ingenuity.

#### **The Marsh Car: 1921**

When the armistice was signed, Alonzo and W. T. Marsh turned their energies once again to their ideas for bringing better automobiles to more people. Alonzo started from scratch to design a new vehicle that would move well beyond the then-current state of the art to create a fine small car with high performance and low cost of production. W. T. invested \$1.4 million to build and equip a completely new 150,000 square foot factory in Cleveland, Ohio, and to move machinery, tooling, and personnel from Brockton. In all respects they continued to be pioneers: in engineering, production, and marketing. They foresaw that the automobile industry would eventually reach the highest rank in U.S. business. Their belief that automobiles must become lighter, more powerful, and cheaper to produce was also borne out by history. Their insistence on following their tradition of Yankee craftsmanship to manufacture 85% of the car in their own plant lost out to the concepts of subcontracting and mass production

assembly being introduced by Henry Ford. Their hopes to radically change the financing and marketing concepts of the industry proved to be the most unfortunate and ultimately fatal of their pioneering ideas.

In essence, "The Marsh Plan" proposed that the Company deal directly with the car buyer, eliminating all middle men in the financing, production, sale, and distribution of their automobiles. A buyer would purchase a package of preferred and common stocks. The preferred stock was to be surrendered as a credit of \$625 against the purchase price of \$1250 when a car was ordered. Moreover, the Company proposed to offer an installment payment plan for the balance due at delivery. To bypass dealers' commissions and other distribution costs, automobiles were to be delivered directly from the factory to the purchaser's home. Finally the Company would

operate a chain of service and repair stations throughout the country.

By October 1921 the factory had been built and tooled, inventories of supplies acquired, stocks of parts manufactured, and several cars built. The costs of all of this had been paid entirely out of Company funds without outside financing. At just this time the country entered the severe depression of 1921-1923 and the Marsh Motor Company could not carry the heavy burden of their visionary financing and distribution plan. Only 12 automobiles were produced before the Company went into receivership in June of 1923.

The technical innovations achieved by Alonzo Marsh in the design of the Marsh car are of historical interest, despite the financial failure of the venture. The car came in touring and suburban models. It had a wheelbase of 106 inches and weighed 1960

pounds. Eighty-five percent of the car was original design and manufactured in the Marsh plant, including bodies. The engine had 4 cylinders, with an L head, and was water cooled. We have not found a record of the horsepower, but it had 3.5" bore and 4.5" stroke with an aluminum cylinder head. Bodies were made almost exclusively of aluminum so that the whole automobile was exceptionally light and delivered power and speed to "go any place that any other car travels." The car could carry four people in comfort and get 26 miles to a gallon of gasoline. The transmission was of Marsh design, with gears made of 3.5% nickel alloy steel for maximum durability. Gear ratios were: low—18.2/1; intermediate—13.8/1; high—5/1; and reverse—23.7/1.

### Epilogue

According to the editors of the *Automobile Quarterly* more than 4900 makes of American automobiles have been introduced by their hopeful inventors. Many never got beyond the prototype stage, and the vast majority were gone from the scene by World War I. Such an explosion of creativity, however, propelled the American automobile industry to its world leadership in mechanical and manufacturing technology. Alonzo and W. T. Marsh deserve a spot in this history since few pioneers were as creative in so many phases of the evolution of automotive power. Between 1895 and 1922 they contributed significantly to the advancement of steam engines and automobiles, gasoline internal combustion engines, motorcycles, and the modern automobile.

### Acknowledgment

*Most of the material for this history comes from Marsh family records that were kept by Fannie Marsh Gibson and are now in the possession of Bette Gibson Mounce and Virginia Gibson Crouch. Muriel Hawkins, daughter of W. T. Marsh, has generously shared material from her father's files. All of us involved have the added advantage of hearing wonderful stories from Alonzo, W. T., Bennet, Martha, Dave, and Fanny Marsh, and Jim Gibson when they were among us.*



1921 Marsh touring car with unit top. Only 12 cars of this model were built.