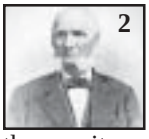
"It looks like a peppersauce bottle."

by Cecil Munsey

Introduction

Sylvester Marsh (Figure 2) was born just under 200 years ago on September 30, 1803 in Campton, New Hampshire in the foothills of the White Mountains fifteen miles south of Franconia Notch home of the granite profile of the Old Man of the Mountain, a state symbol (Figure 3). [Sadly the 10,000-year-old red granite formation fell off the mountain on May 3, 2003.] Marsh was the ninth of eleven children. During the winter when he wasn't needed to help on his father's farm, he attended a one-room school. There Marsh said he learned, "arithmetic, geography and the first rudiments of grammar; reading, writing, spelling, and oratorical speaking."



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At age nineteen Marsh left home and walked the 117 miles to Boston, Massachusetts, the commercial capitol of New England. Within a few years he had worked his way up in the provision-and-meat trade, and by 1827, he owned his own stall at the Boston Quincy Market.

In 1828 he moved West on the newly completed Erie Canal. He settled in Ashtabula, Ohio where he continued as a provision dealer and a meat packer. In 1833 he moved on to Chicago, a frontier town of 300 inhabitants that was smaller, at the time, than his hometown of Campton in New Hampshire. He continued in the provision and packing trades and became one of the founders of the Chicago meatpacking industry. He invented many of the steam appliances and processes in the packing industry and was considered a founder of Chicago – one of America's great cities. Although he did not patent it, he invented the coffee percolator in his time.

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Marsh lost his entire fortune in the Business Panic of 1850, but soon regained his wealth in the grain business. A problem that hindered shipping grain was its tendency to sour or spoil while in storage.

An article in an 1860 issue of the Chicago Press and Tribune reported: "A perfect safeguard against the heating of corn has been discovered by our fellow citizen, Sylvester Marsh.

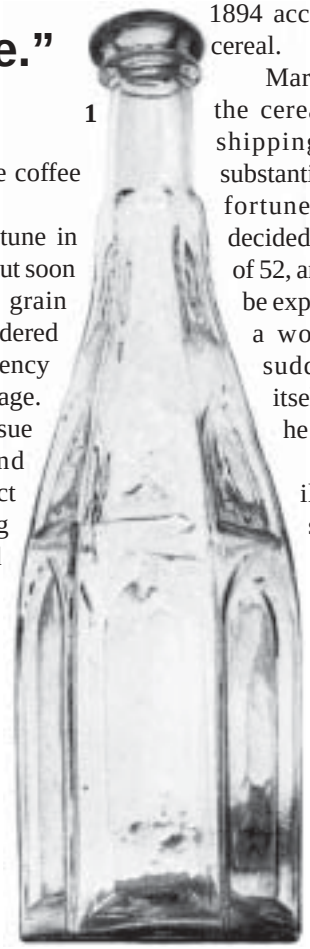
"Having secured a handsome fortune, he ceased packing beef and pork in 1853. For the last several years he has devoted a large share of his time, and not a little of his income, to experiments upon drying corn. Using his new sixty-foot-tall grain kiln he dried corn and shipped the meal to California around Cape Horn and stored it there a year, and when it came back it was just as good as when first ground.

"Mr. Marsh is now supplying Corn Meal for whaling ships, for long voyages, confident that it will remain sweet for any length of time, and in any climate.

"The effect of his discovery upon the demand for our great staple in Europe can scarcely be over-estimated.

"We regard this as one of the most important discoveries of the age, and its enterprising, ingenious inventor will live in history as one of the benefactors of his species."

Of eleven U. S. patents Marsh would receive, six were for grain dryers. He erected large dryers in Chicago, Illinois and Buffalo (Figure 4) and Brooklyn, New York. During the time he was rebuilding his fortune by drying grain, Marsh produced a proprietary product – a breakfast cereal, "Marsh's Caloric Dried Meal." The cereal business, during last half of the 19th century, was akin to the patent and proprietary medicine industry. Marsh, with his dried meal cereal, unknowingly anticipated Dr. John Harvey Kellogg's 1894 accidental discovery of flaked cereal.



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Marsh's Caloric Grain Dryers, the cereal business, and his grain shipping company provided a substantial income. With his second fortune intact, Sylvester Marsh decided to retire in 1855, at the age of 52, and move to Boston. As might be expected of a man who had been a workaholic all his life, the sudden inactivity manifested itself in a physical upset, which he called "dyspepsia."

To shorten this necessarily long introduction, let it suffice to report that Marsh decided to go back to work. The project he selected for a new career was to build a railway to the 6,288-foot summit of Mount Washington in his home state of New Hampshire. Mount Washington is the highest peak in the Northeastern United States.

The Mount Washington Cog Railway

In June 25, 1858, three years into retirement, Sylvester Marsh was granted a five-year charter from the state to build his railroad. For three years, unexpected demands of his Chicago business interests and the Civil War prevented any action on building the railroad that most people regarded as an impossible task. In 1863 Marsh returned to the state capitol and got a five-year extension to his state charter. Still, it wasn't until May of 1866 that Marsh began to have his experimental locomotive built and the first 660 feet of track laid.

The first locomotive was built near Boston at the machine shop of Campbell, Whittier & Co. using Marsh's plans. Once built, it was taken apart, brought to Littleton, New Hampshire by train, and ox-carted 25 miles to the Mount Washington site and reassembled.

It was August 29, 1866 when officials and guests arrived at the base of the mountain to witness the first run of new steam engine. The locomotive had been named Hero, but somehow it didn't look like the hero it would soon prove itself to be. Someone in the crowd thought the upright boiler (Figure 5) looked like a condiment bottle, a common item on

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kitchen tables of the period, and cried: "It looks like a peppersauce bottle." From that moment on, the engine was nicknamed "PEPPERSASS" which, of course, is "peppersauce" pronounced in the local New Hampshire dialect. Some of the guests got aboard a little flat car that had been built, and Peppersass repeatedly pushed it up the steep track and brought it safely down again with complete control.

In April 1867 a Swiss envoy came to New Hampshire to see Marsh's "experiment." The Swiss Government asked for his assistance. He gladly gave gratis patent drawings, photographs and advice. In 1871, the first European cog railway began operation of Switzerland's Mount Rigi. Since the Mount Washington Railway's completion, 57 similar mountain-climbing cog railways have been built in 35 countries around the world. (Nineteen years after a stay with Sylvester Marsh, Otto Gruninger, working with Roman Abt, designed the cog railway that opened in 1891 at Pike's Peak in Colorado.)

The bottle-resembling Peppersass was the first mountain-climbing cog railway engine in the world. It was used to build the railway and later haul passengers after the railroad was finished on July 3, 1869. The Peppersass, as originally built, resembled the standard stationary steam engine of the time. There was no tender or fuel storage; these features were added later. As described in the March 5, 1864 issue of Scientific American (Figure 6), "…the vertical boiler was mounted on trunnions which allowed it to remain vertical on the steep grades of the railway. Its boiler was of hand riveted design and operated at 50 pounds of steam pressure, yielding 45 horsepower."

Interesting Facts About Mount Washington and its Cog Railway

• The Native Americans called Mount Washington "Agiocochook".
• A mountain man named Darby Field was the first to climb the mountain in 1642.
• Ethan Allen Crawford, in 1821, made the path that the cog railway would eventually take.
• The length of the railway is 2.81 miles.
• The ascent is 3,625 feet.
• The average grade is 1,290 feet to the mile.
• Because of the rugged terrain, three of the three and one half miles of track are built on trestles.
• The steepest part of the track, with a grade of 37.41%, is known as Jacob's Ladder (Figure 7), and is the second steepest such track in the world. (At that incline, the heads of the passengers in the front of the coach are 13 feet higher than the heads of the passengers in the back.)
• There are nine curves of radius varying from 497 to 945 feet.
• Each trip requires over one ton of coal and 1,000 gallons of water to move the engine through the entire almost-three-mile trip. (The train stops halfway up the mountain to take on water.)
• The peculiarity of this railroad is its central cog-rail (Figure 8) which consists of two pieces of wrought-iron, parallel to each other and connected by strong pins.
• The teeth of the driving wheel of the engine play into the spaces of the cog-rail. There is also a ratchet, which could hold the locomotive at any grade.
• The engine rests on outer rails, which are four feet seven inches apart.
• For stopping trains and controlling their descent, both friction and atmospheric

By 1876 the Cog Railway and White Mountain tourism were flourishing. Records show that by then, Marsh was planning three new cog railway projects. But nothing came of these plans as human calamities intervened. In 1877 both of Marsh's sons, 32-year-old Frank and 21-year-old Sylvester Jr., died within two months of each other. Sylvester March died of pneumonia, at his home in Concord, New Hampshire, on December 30, 1884.


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Scientific American.

A WEEKLY JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

Vol. X.—No. 10. NEW YORK, MARCH 5, 1864.

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MARSH'S PLAN FOR ASCENDING THE WHITE MOUNTAINS BY STEAM.


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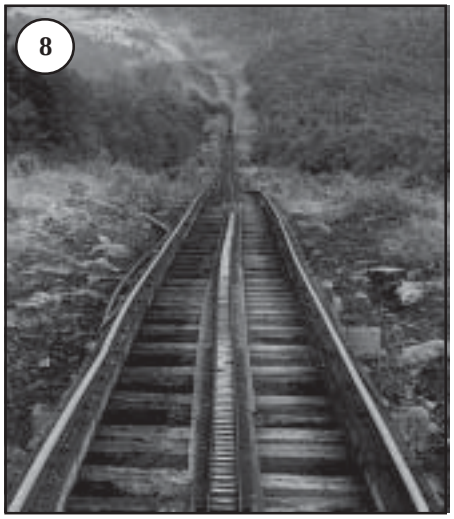
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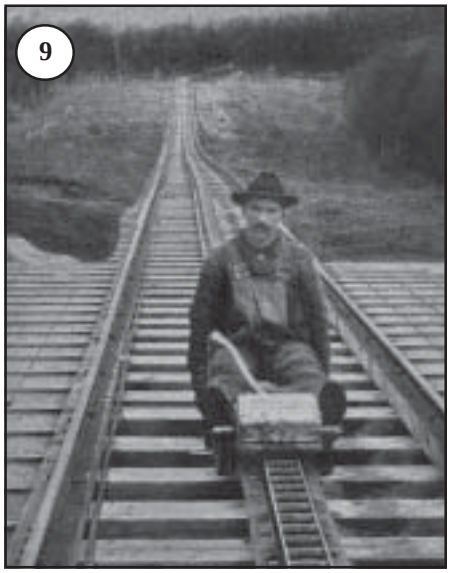
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brakes are employed. In other words, the descent is controlled by admitting air to the driving cylinders, which compresses the air. (Also, the passenger car has an individual braking system and a brakeman to control the descent.)

• The (current) engines weigh about six and a half tons, and are rated at 50 horsepower, but by their gearing the power is greatly increased, at the expense of speed, which is two miles an hour.

• The engine always takes the down-hill end of the train, which consists of locomotive, tender, and one car that accommodates about 50 passengers.

• Since the railroad operates today with locomotives first designed in 1878, during the winter they rebuild, repair, and actually build new engines in their own shop right on site.

What Happened to Old Peppersass?

"Peppersass, was used on the railway for about twelve years before being retired. Fortunately, it was not scrapped, but stored on the property. In 1893 it went on display in Chicago at the Columbian Exposition where it rested on an elevated track. After the Exposition, it was placed on display in the Field Museum of Natural History in Chicago for eleven years. It was then displayed at the Louisiana Purchase Exposition in St. Louis in 1904. After this exposition it went to Baltimore, Maryland where it came under the control of the Baltimore and Ohio (B&O) railroad. For the next 23 years it remained stored and out of sight. In 1928, it was exhibited in Halethorpe, Maryland, at the Iron Horse Fair. Following the display in Maryland, Peppersass was about to be stored away again by the B&O Railroad.

"Reverend Guy Roberts, pastor of the Methodist Episcopal Church in Whitefield, New Hampshire, had been searching for the whereabouts of Peppersass for some time. With the help of Colonel W. A. Barron, owner of the Boston and Maine Railroad (B&M), Peppersass was finally found at the

It was sometime during the early days of the railway that an innovative employee devised a fast but dangerous means to descend the railway track. This was in the form of a homemade sled or toboggan that was little more than a wooden board about three feet long and a foot wide. Reinforced with steel, this slide-board (Figure 9) was especially designed to rest on the central cog-rail, and at the same time be prevented from sliding off when it was ridden down the mountain. Two long wooden handles, parallel to the board on either side and pivoted in front, served as crude but effective brakes. When pulled upward, the handles forced small steel plates to rub on the underside edges of the cog-rail so that a rider could slow down. Slide-boards originally came about as a convenience for track maintenance men who previously had to walk down the mountain at the end of a workday.

As well as convenience, slide-boards were a lot of fun, and they soon became the objects of sport and competition. The men soon discovered that these "Devil's shingles" as they were sometimes called, could quickly accelerate to alarming speeds. A good ride from the summit to the Base Station was made in about 10 minutes but employees began competing among themselves for the shortest elapsed time. The record time from summit to the Base Station was 2 minutes and 45 seconds! That equates to an average speed of 60 miles per hour.

Following the accidental death of an employee and a serious injury to another, slide-board use was forbidden shortly after 1906.

Baltimore and Ohio Railroad and delivered to the B&M shops in Concord, New Hampshire for a thorough overhaul and restoration. It was planned to put Peppersass on display in Bretton Woods at the foot of Mount Washington for all to see and enjoy.

"The Boston and Maine Railroad, who owned the Mount Washington Cog Railway at the time, decided to host a last run up the mountain. In conjunction with the New Hampshire Publicity Bureau, a gala celebration was planned to mark the return of Old Peppersass. Elaborate plans were made to run Old Peppersass up Mount Washington one more time before permanent retirement. The stage was set for the most spectacular run Peppersass ever made. It was to end, however in tragedy.

"July 20, 1929 came at last and the invited guests included governors from six states as well as New Hampshire's governor. After many speeches and events Peppersass came trundling up the track to the podium area amidst blasts from its whistle and the sounds of the engine.

"Six train loads of passengers headed up the mountain in front of the Peppersass, the last train towing a flatcar for photographers and newsmen. Peppersass climbed the route so familiar to her. All went well, and the 63-year-old engine performed as before. The trip was originally intended to only go as far as Jacob's Ladder with its 37.41% grade. However, all went so well that it was decided to continue over Jacob's Ladder and on to the Summit. It was decided to turn back when the Peppersass reached Gulf Tank. The hour was growing late and the other trains would be headed back down soon. The slow speed of the Peppersass would delay the down coming trains, so the decision was made to go back.

"The descent was started. Three other people joined the crew for the trip down. All was well for about a half mile of the descent. Then there was a loud crack from the front of the engine. A tooth had broken from one of the gears and caused the engine to rise up and out of the cog rack. When the engine came back down it did so on the right side of the rack and the cog was not engaged. This caused the old engine to immediately gain speed. The brakes were of no use because the cog was out of the rack. As gravity took over, the engine gained speed and was completely out of control with no chance of ever stopping. It raced down Long Trestle towards Jacob's Ladder, its speed unchecked. The Engineer yelled for all to jump. All jumped except one. He hung on all the way across Jacob's Ladder finally plunging to his death at the foot of the Ladder. Old Peppersass continued its wild plunge down the track, ripping pieces out as it went. Having covered almost 2,100 feet in her final plunge down the mountain, Peppersass finally left the track and was wrecked. Despite the presence of many photographers and newsmen, the actual wreck of the Peppersass was never recorded on film.

"The boiler did not explode and was recovered. Pieces of the engine were scattered all over the area and it was decided to gather them up and rebuild Old Peppersass for display. So, on July 29, 1929, the pieces of Old Peppersass were returned to Concord to be rebuilt. It can be seen to this day on display at the Base Station of the Mount Washington Cog Railway (Figure 10)."

The Mount Washington Cog Railway still operates today from early-May through early-November, depending on the weather conditions on Mount Washington, and is open to the public. Tens of thousands of visitors each summer come

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to ascend Mount Washington on the first mountain-climbing cog railway. In our electronically-controlled space age world, where steam power has been so long in obsolescence, the cog railway is almost as curiously different as it was when it was first built. It has somehow survived take-overs, depressions, recessions, energy crunches, hurricanes, fires, washouts, bad coal, legislators, frequent bad weather and almost 150 years of time.

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