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STANDARD PASSENGER LOCOMOTIVE.

Our engraving shows a standard passenger locomotive in use upon the New York, New Haven, and Hartford Railroad; it was designed by Mr. H. Kettendorf, who was, until recently, master mechanic of the road. The locomotive was built in the company's shops at New Haven.

The following are the dimensions:

Weight of engine and tender	65 tons.
Cylinders	18 in. x 24 in.
Drivers—diameter	5 ft. 9 in.
Length of frame	32 ft.
Boiler—steel, diameter	52 in.
Boiler—thickness of plates	7-16 in.
Fire box—length	6 ft. 6 in.
Tubes—steel, number	192
Tubes—length	11 ft.
Tubes—diameter	2 in.
Steam port—length and width	15¼ in. x 1¼ in.
Exhaust port—length and width	15¼ in. x 2½ in.
Lap—outside	⅞ in.
Lap—inside	1-16 in.
Throw of eccentric	4¾ in.

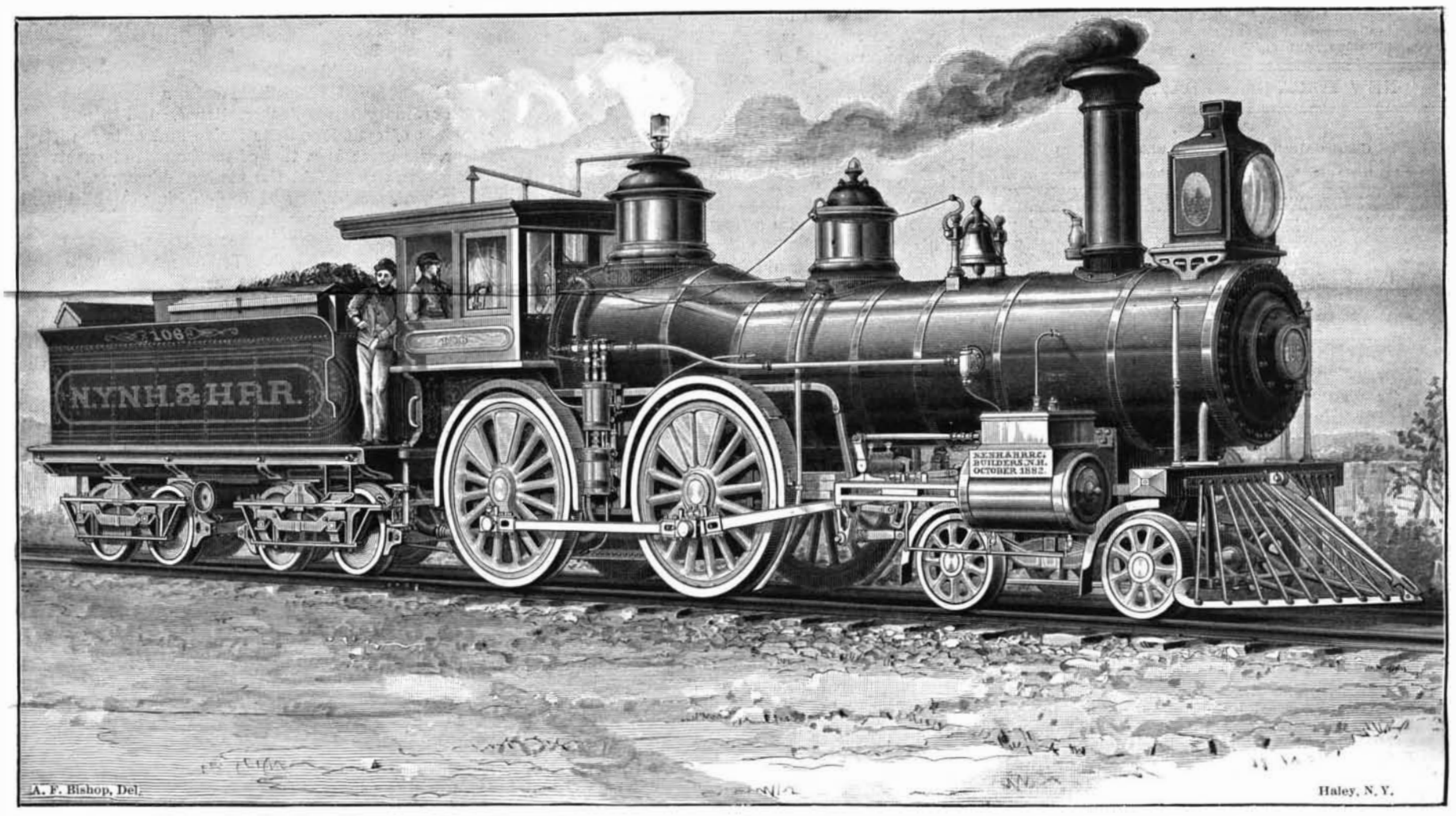
The locomotive, while not overloaded with polished work, presents a most attractive appearance; the frame is finished throughout its whole length. It is admirably proportioned, and capable of great and continued speed. The records of these engines show that their visits to the repair shop are few and far between, thereby indicating their mileage is at the maximum, while they incur a minimum expense for wear and tear.

The Mount Washington Railway.

The recent death of Sylvester Marsh, the eminent engineer and inventor, at the age of 81 years, recalls his work in the design and construction of the Mount Washington Railway. This is the highest of the White Mountain range in New Hampshire, reaching to an elevation of 6,293 feet above the sea, and is a noted summer resort. Years ago the summit was reached by a difficult bridle path, nine miles in length. Later, the mountain was scaled by a good carriage road, which was laid out so skillfuly that with an average grade of 12 feet to 100 feet the maximum was 16 feet to 100 feet. In 1852, while lost upon the mountain, Mr. Marsh conceived the idea of building a railway to the summit, but the opposition to what was considered to be a chimerical scheme prevented the granting of a charter until sixteen years later. At the time of the final passage of the bill, an amendment was offered to permit the construction of a railroad to the moon. The opposition which early railroad constructors met with in the form of mobs was here exhibited in the less tangible form of ridicule. The road was finished in 1869, at a cost of $150,000.

The mountain road is constructed on trestles, 2 1⅛ miles in length, with an average grade of 1,300 feet to the mile and a maximum grade of 1,980 feet to the mile, or a yard to every 8 feet. It contains nine curves, with radii varying from 497 feet to 945 feet. The first plans were designed to have the cars drawn by ropes, but this idea was abandoned for a track with a middle rail, which consisted of a rack made of two 3 inch angle irons, about 5 inches apart, and connected by round iron rods, 1½ inches in diameter and 4 inches between centers. The locomotive weighs 6½ tons, and pushes the cars ahead, the driving wheels having gears which engage in the central rack. The center rail is used by venturesome persons at all seasons of the year, with a sled formed of a board having two parallel guides to grasp the middle rail, and having a lever to increase this grasp whenever the use of a brake becomes necessary. The speed of such a sled is terrific, the descent of the mountain having been accomplished in this manner in seven minutes. A man on one of these sleds descends the track in advance of every down train, thus embodying a practical realization of the illustrated advice given by *Punch* a number of years ago, to stop railroad accidents by tying a couple of directors to each locomotive.

In descending trains air is let into the cylinders and the exhaust throttled, to provide a suitable resistance to the progress of the train. The heat produced by the work done in this compression of the air is absorbed by the admission into the cylinders of a spray of water, which as it comes from the exhaust pipe is converted into vapor, and presents the appearance of an escape of steam from the boiler. The extraordinary precautions which have enabled this road to carry passengers without a single injury during the fifteen years that the line has been in operation may best be illustrated by the answers of a conductor to the timid lady who asked how they kept the train from running down. He answered that it was accomplished by the pressure in the engine cylinder. The question was further urged as to the consequences of the failure of this method, and in answer to repeated questions the man gave information respecting the brakes gripping the middle rail, the power brakes upon the wheels, and the hand brakes for the same purpose; and also the pawls which drop into the rack constituting the middle rail. And then she persistently asked what would happen if all these failed? "That is a question of theology, madam!" he replied.



STANDARD PASSENGER LOCOMOTIVE OF THE NEW YORK, NEW HAVEN, AND HARTFORD R.R.

Three Colors in One Bottle.

For the bottom layer glycerine may be used, or colorless glucose sirup, or any other colorless liquid of high specific gravity. These may be colored by chromic acid, picric acid, indigo blue, caramel, or some aniline color. The middle layer may be water, for the coloring of which any water-soluble color may be chosen. The kind of color depends upon individual fancy. For the top layer oil of turpentine or naphtha may be selected. But it should be remembered that both of these liquids and their vapors are highly inflammable; hence the close proximity of a gaslight, as is customary with show-bottles, involves a certain amount of risk. A better plan is to use turpentine as the middle layer and alcohol as the top layer.

Sometimes cudbear and alkanet have been recommended for coloring the turpentine. The coloring matter of the former, however, is nearly insoluble in the liquid, and the latter only slightly soluble. It is much better to use a resinous substance, such as dragon's blood, or one of the vegetable oleoresins, which are quite resisting to daylight, as, for instance, oleoresin of capsicum, which imparts a reddish to reddish-yellow tint; or oleoresin of male fern, which imparts a greenish tint.—*American Druggist.*

Artistic Photography.

One of the finest and most picturesque scenes yet produced by the camera is a flock of sheep, grazing on the campus in Central Park. There is a pleasing variety in the attitudes of the animals, and although the number is large, each is a perfect portrait. The picture forms a study for the artist. The negative was made by Mr. Henry J. Newton, member of the New York Society of Amateur Photographers.