

THE OTIS ELEVATING RAILWAY.

The eastern end of the Catskill range has been a favorite mountain resort for many years. Until within a short time the hotels on the top of the mountain were accessible only by a tedious stage ride up the face of the mountain, or by the rather circuitous route of the Stony Clove Railway, running from Phoenicia, on the Ulster and Delaware Railway, to the top of the mountain.

Recently an inclined railway has been built up the side of the mountain lying toward the valley of the Hudson, and extending from Otis station, on the Catskill Mountain Railway, nearly to the top of the mountain. This railway is known as the Otis Elevating Railway, having received its name from the firm of Otis Brothers, the well known manufacturers of elevator machinery.

The road is 7,200 feet long, with a rise of 1,600 feet. It runs in a straight course down the mountain without any lateral deviation, but it is not a true inclined plane. It is made up of four curves, two of which are circular while two are parabolic. This plan has been worked out by the engineer, Thomas E. Brown, to secure, as far as possible, the balance of the two cables used in moving the cars, the cables alone weighing ten tons each.

The engines which operate the cables are located at the upper terminus of the railway, within about three hundred feet of the old Catskill Mountain House, which is seen in the general view. The engines are of the Corliss type, built by the Hamilton Corliss Engine Works. They are seventy-five horse power each at one-fourth cut-off, the diameter of the cylinders being twelve inches, the length of the stroke being thirty inches. The shaft, which is common to both engines, is provided with two brake wheels, which are each encircled by a brake strap. The shaft also carries a pinion which engages a spur wheel on the shaft of one of the cable drums. The driving cable drum has a loose rim provided with a grooved periphery which receives the cables, the rim being carried by friction. The other cable drum simply supports the cables. The cables, which are connected up parallel, are attached to one car, and passing twice around the drums extend out of the engine house around a sheave, thence to the other car.

The track, as will be seen by reference to the general view, has three rails, the center one being common to both cars, there being a separate outer rail for each car, except at the turn-out, shown in the general view, about half-way up the mountain. Here for a very short distance the tracks separate into separate and distinct two-rail tracks. With this arrangement, it will be seen that when one car goes up the other must necessarily go down, and, so far as the cars themselves are concerned, they balance each other.

The cars have a seating capacity of ninety passengers, a caboose being provided for a proportionate amount of baggage. The seats are like those used in the elevators of the Eiffel tower, being constructed on a curve which enables the passengers to easily adjust themselves to the different inclinations of the railway.

To the ties on each side of the central rail are secured heavy timbers which extend from one end of the railway to the other, and upon each car is firmly attached a clutch capable of gripping this timber upon the top and sides. The clutch is under the control of a governor which rolls on the top of the timber. Any considerable increase in the speed of the governor releases the clutch and causes it to be thrown forcibly into the timber, thus instantly arresting the downward motion of the car. The two cables are also attached to a swivel plate upon each car, which is connected with the clutch mechanism, so that should one of the cables fail, the other will turn the swivel plate and cause the clutch to engage the timber. The clutch can also be operated by hand at the will of the conductor.

Upon the cable-driving drum is placed a strap brake which, together with the brakes on the engine shaft, is operated by air pressure. The engines are provided with link motion, and the shifting of the engine may be effected by means of an air cylinder in the tower above the engine room. In fact, all the controlling mechanism may be operated by simply turning air valves connected with the air brake system, and to insure the stopping of the cars at the ends of the road a lever is provided, which is moved by the car so as to throw into action the engine-controlling levers and brakes, to immediately stop the engine and to hold the cable securely in the position in which it is stopped.

In the tower in front of the controller is a governor driven by the engines below, which indicates the maximum speed by closing an electric circuit and ringing a bell. A wire extends from one end of the

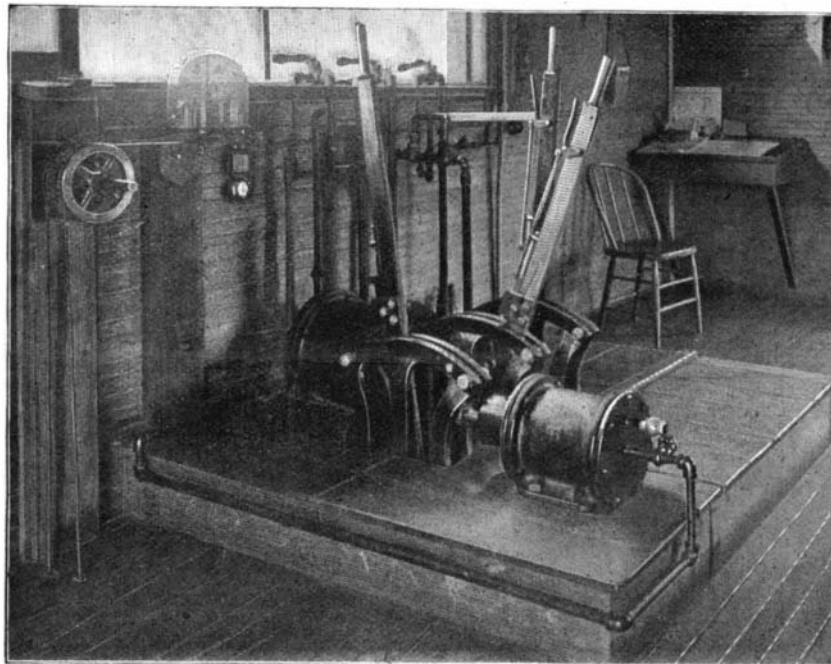
road to the other for electric signaling, and a telephone system has been provided, by means of which telephonic communication may be had between the cars and between the cars and the stations at the ends of the road. The passengers as they are carried up this road survey a magnificent scene which can never be adequately produced on canvas. For the details here presented we are indebted to C. F. Parker, assistant engineer.

Passenger Car Improvements Wanted.

Although the summer of 1895 has now departed, the ever-present and perplexing question of the ventilation of passenger cars is still here. It is true that the question of ventilation will soon assume a different phase; will become a question of how to get warmth into a car instead of how to get it out; but the troubles of the day car passenger in summer are very real, and will recur again next summer as surely as the world rolls round, and possibly some of us who may have problems in this field to settle then would do well to begin considering them now. The criticisms and complaints of passengers, which are the sharpest incentive for action in this matter, are now at their height, and there are more of them (counting only the intelligent ones) than ever before. Their intensity is, of course, greatest at the end of August, when the charms of summer have been mostly transformed into commonplace vexations, and every one is growling at something or other.

A sample criticism is that of a Buffalo correspondent, writing to the New York Tribune. He says:

"Have the railroad authorities no rules for regulating the indiscriminate ventilation of passenger cars by private individuals? The other day, in going from New York to Buffalo, it was my fate to sit behind an untraveled barbarian who persisted in keeping the



CONTROLLING MECHANISM OF THE OTIS ELEVATING RAILWAY.

window open during the entire journey. I was thus forced to ride for eleven hours in a hurricane of smoke and cinders that nearly put my eyes out, and left me with a cold, from the effects of which I have not yet recovered. It was useless to appeal to the conductor, he having no authority over the action of passengers in such cases, and equally useless to try a change of place. The fresh air fiend seems to have a devilish instinct for establishing himself on the front seats, whence the cyclone of dust and dirt in which he revels may sweep through the entire car, to the discomfort of the greatest number of victims.

"Now, I would respectfully suggest that the railroad authorities themselves take this matter in hand and remedy the abuse, as they can easily do, with perfect equity to all parties, by setting aside a certain number of seats in the rear of each passenger coach for those who enjoy the current of 'fresh air' that follows in the wake of a locomotive, and absolutely prohibiting the opening of windows in the forward part."

Other correspondents followed, suggesting various remedies. One wants at every window a screen, such as is used in Pullman cars, to be removed only by the conductor or brakeman. A New Jersey woman says that she raises her umbrella in front of her and thus causes the cinders to fall upon the vicious person who is the cause of the trouble, and these cinders, even though they are cold, have the well-known moral results of coals of fire when they fall upon the malefactor's head. A more businesslike woman, Fanny Kellogg, says that she pins a stout newspaper up in front of her, fastening it to the side of the car and to the back of the seat by three stout, ordinary pins.

The reader will have noted by this time that our title, which had to be short, does not precisely define our subject; that this is not intended to be an essay

on methods of ventilation proper. That problem has well known limitations which we do not care to disturb at this time. The present question is, Assuming that we must admit to the cars in summer a large supply of outdoor air, not too much when the train is running rapidly, and yet all that we possibly can when it is standing at a station, how can we avoid dirt and objectionable draughts?

The Buffalo man must have seen, without being told, that suitable rules cannot be formulated, much less enforced. The assignment of back seats would be harder to manage even than the car seat hog question. Windows not to be opened would have to be locked, and that would make trouble, for our complainer himself would want his window open some of the time. The brakeman, even if he be an accomplished hotel clerk, cannot attend to forty windows all at once. Theoretically, he might lock all the windows simultaneously by time locks electrically controlled, soon after leaving the heating chamber, commonly termed a head house, and open them before the next stop; but practically, even if this mechanical suggestion were reasonable, he could not suit the passengers by such a method. The temperature of a well-filled car rises so rapidly when the openings are closed, and the draughts so easily become violent when windows and doors are opened, that no one person could think of pleasing a carfull. Even with windows bolted down and the patent crank's ideal ventilating apparatus in full operation, our troubles would not be half cured.

Probably we shall always have to have openable car windows. That much must be conceded to the traditional spirit of American independence. With 40 windows and 40 sovereigns in a car, what shall we do? Any observant traveler will often have noticed that if each passenger could control the window opposite the seat in front of him he would be much better off than

now, even with the control of his own window taken out of his hands. But this is out of the question, for a large share of the people who travel are much like the Englishwoman who would hold no intercourse with one to whom she had not been introduced, even when she was drowning. We are inclined to think that the Tribune correspondents have the germ of the most practicable idea. A folded newspaper is not available in the majority of cases, and not every one could adjust it in good shape with "three stout, ordinary pins," even if he had them; shields outside the window would not probably prove a practicable and satisfactory solution, for they could not be attended to without additional porters, and the passengers would break or lose them rapidly if left to themselves. But a shield inside the car, Fanny Kellogg's newspaper changed into a wooden or metallic shield, shaped scientifically and attached to the car so as to be conveniently opened or closed, ought to be a very satisfactory contrivance. There must be an ample supply of ingenuity in the car shops to make the right thing.

It would be desirable to have such a shield normally in position, so that a passenger would have to take action only when he desired to have the breeze from his neighbor's window, and to accomplish this, while not obstructing the light or impairing the cheerfulness of the car, might be somewhat difficult, but not impossible.—Railroad Gazette.

A Remedy Against Fleas.

All persons who have lived in a house which has become infested with fleas in summer will know how these creatures inhabit the floor by preference, and how they will jump upon the legs and ankles of every one who passes near them. Taking advantage of this fact, some years ago, when the lower floor of McGraw Hall of Cornell University was badly infested by fleas, which had come from animals temporarily kept there in confinement, Professor S. H. Gage invented the following ingenious plan. He had the negro janitor put on a pair of rubber boots, and then tied sheets of fly paper, with the sticky side outward, around the legs of the boots. The janitor was then told to patrol the lower floor for several hours a day. The result was gratifying and rather surprising. The sheets of fly paper soon became black with fleas and had to be changed at intervals, but by this means the building was almost completely rid of the pest, with a minimum of trouble to every one except to the janitor.—Insect Life.

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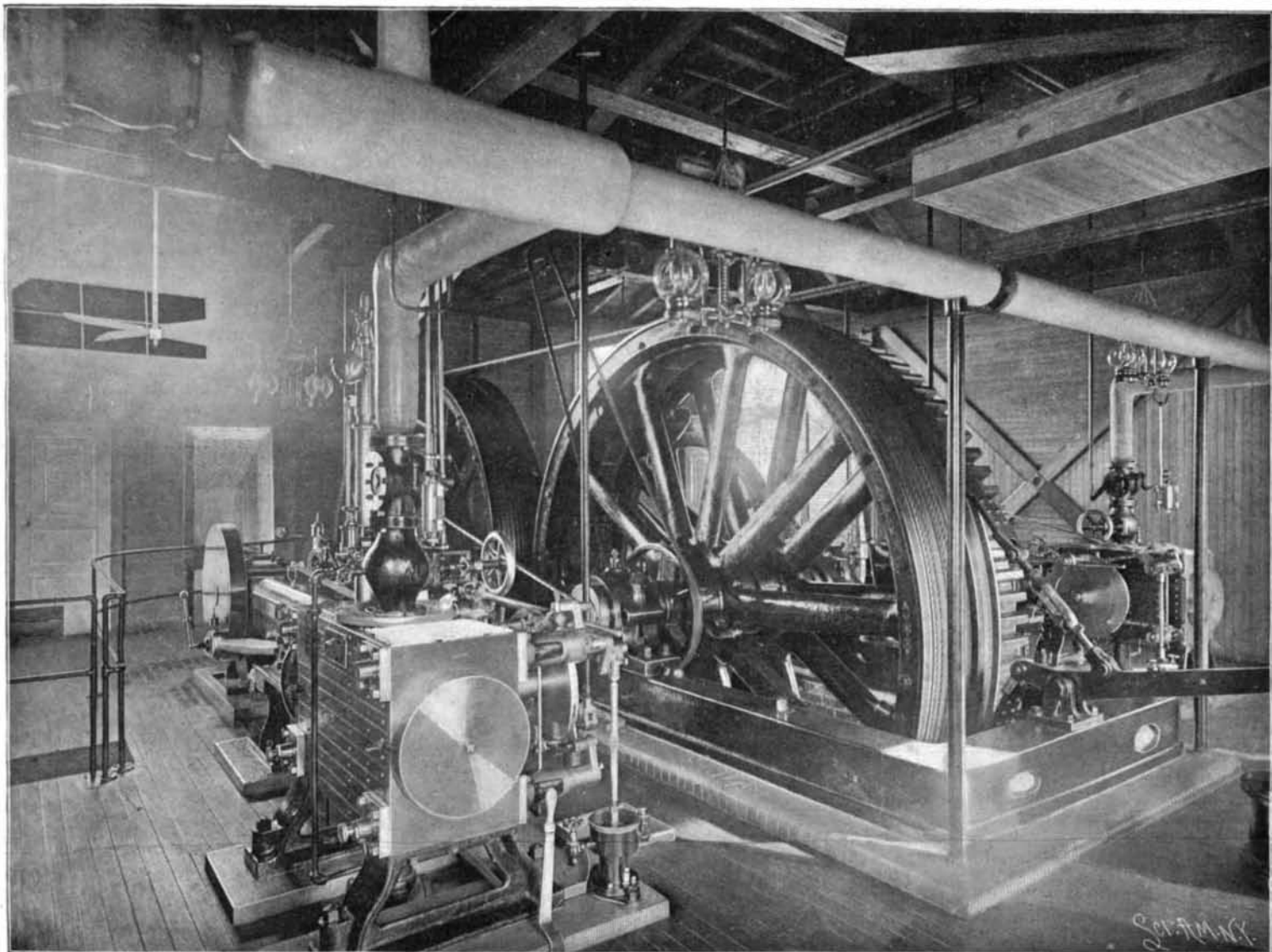
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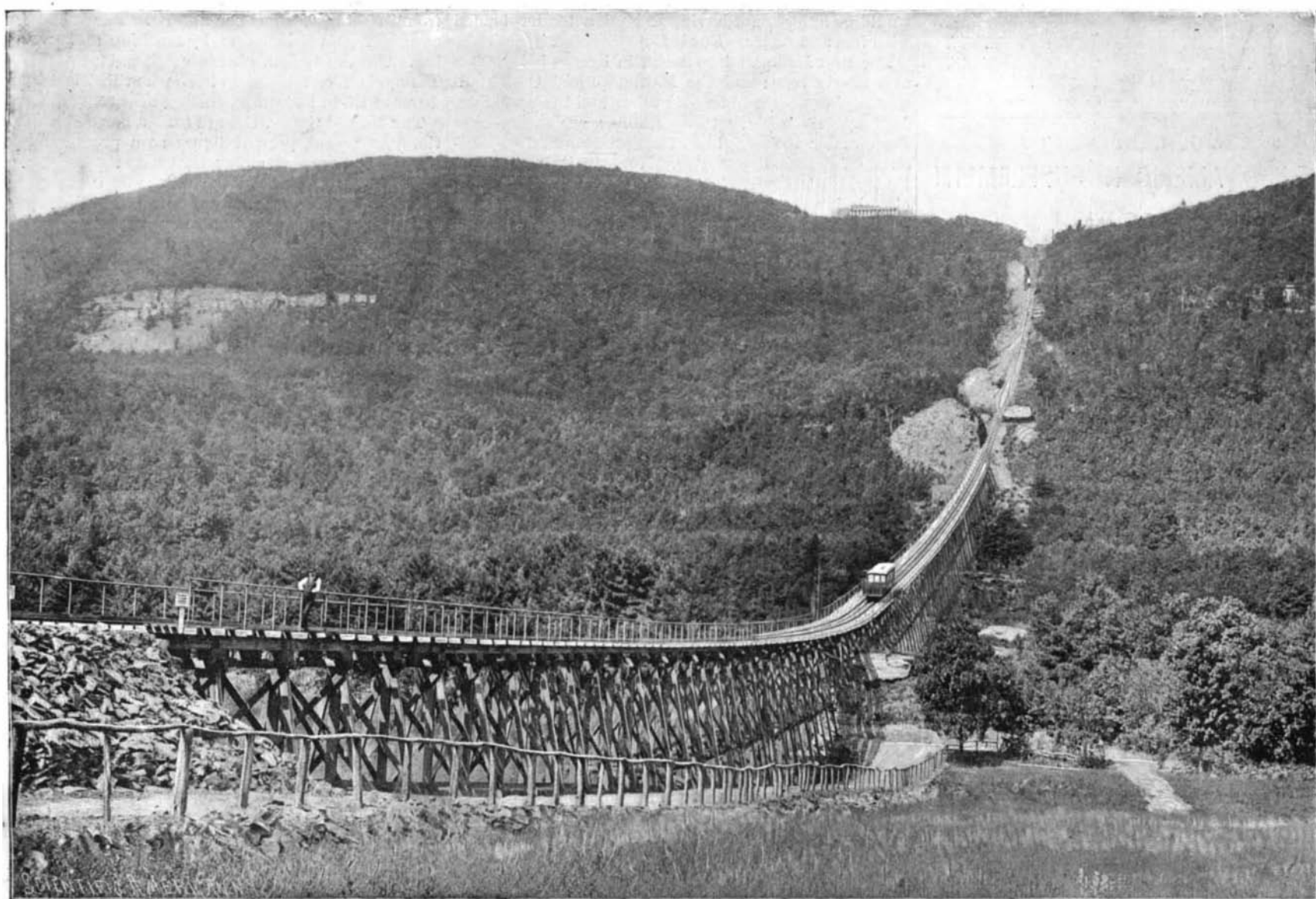
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ENGINES OF THE OTIS ELEVATING RAILWAY.



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THE OTIS ELEVATING RAILWAY, CATSKILL MOUNTAINS, N. Y.—[See page 215.]