THE WORK OF THE ROTARY SNOW PLOW.

BY WALDON FAWCETT.

On the American railway lines which are called upon during the winter to combat the heaviest drifts of snow, the form of plow known technically as the rotary is rapidly superseding all other forms of apparatus for clearing paths for trains. It is this interesting adjunct of the equipment of the up-to-date steam road that has rendered possible the maintenance of communication in the face of blizzards on lines that traverse the higher levels of the Rocky Mountains—steel-tracked highways that in some instances attain an altitude of 11,000 to 12,000 feet above sea level.

The rotary, in the present scope of its operations, is a comparatively recent innovation. The transcontinental railroads were largely dependent in the early days upon the hand shovel as a means for clearing the tracks, and it was frequently necessary to detail all available employees of the road for this labor in order to keep the trains moving. In some instances locomotives in strings of three, four, or more, forming improvised battering rams, were employed to aid the hand-shovelers, but the danger of derailment was so great that the practice had to be abandoned except under especially favorable circumstances.

However, this rather primitive method of employing the locomotive as a snow fighter pointed the way for the invention of the push plow or "gouger," which might be termed the immediate predecessor of the present-day rotary. Indeed, the wedge-shaped plow which "bucks" the drifts, impelled by the force of several locomotives behind it, is a type which yet finds extensive utilization on railroads which are seldom called upon to cope with a heavy snow blockade.

The rotary, which has revolutionized the method of battling with an excess of snow, is, in its principle of operation, radically dissimilar to the earlier design of snow plow in that, instead of scooping or shoveling aside the snow by mere force of impact, it virtually burrows or bores its way through the barriers presented. This is accomplished by means of a large wheel or snow screw located at the forward end of the machine. This wheel, which somewhat resembles in form the propeller of a steamship, is, in the case of the average plow, from eight to twelve feet in diameter, although this latter dimension is exceeded in the case of the largest rotary in the world, which is a feature of the rolling stock of the Denver, Northwestern & Pacific Railway—the Moffat road in Colorado.

The snow screw of a rotary is made up of a series of hollow, cone-shaped steel scoops, each equipped with a knife. As the wheel revolves at high speed, these blades strike the snow and ice, loosening it and throwing it into the scoops. The wheel proper is inclosed in a metal hood, at the top of which is a square opening or funnel. By the revolution of the wheel the snow caught up by the scoops is thrown through this opening with great force, and the funnel is so shaped that the snow is hurled in an oblique direction, and caused to fall at a distance of from fifty to one hundred feet from the side of the track, according to the speed at which the wheel is being operated. Moreover, the hood is given an inclination so that the falling snow does not descend upon the top of the rotary, and bury the machine in a drift of its own making.

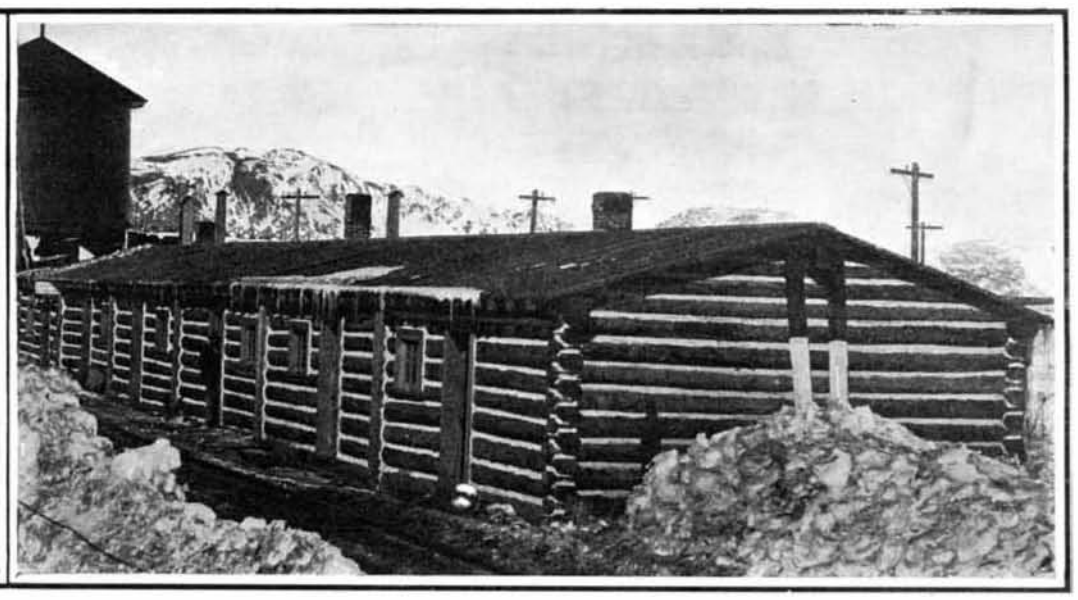
Locomotives are, of course, required for the propulsion of the rotary, but the snow screw is actuated by an independent engine of a design somewhat in accord with the familiar marine type. The rotary must withstand the force of the pushing engines behind as well as counteract the side motion of the large wheel, and consequently the roof and sides of the machine as well as the framework are of iron and steel construction, and the machinery is set as near to the ground as possible, in order to contribute to its stability. The weight of the average rotary, complete with tender for fuel and water, considerably exceeds one hundred tons.

A rotary traversing a snow-blocked track is operated at a speed varying from two to twelve miles per hour, according to the character of the drifts encountered. The plow can burrow through light or soft snow at the last-mentioned speed, but when densely-packed banks are encountered, which have ice formations four or five inches in thickness scattered through the snow, it is seldom considered safe to attempt to operate at a speed exceeding four miles per hour. The weight and character of the snow also dictates the speed at which the snow screw is operated, the latitude allowed being that between one hundred and fifty and three hundred revolutions per minute.

A pilot stationed in a pilot house at the forward end of the rotary directs all the operations of the plow, not only regulating the speed of the snow screw in accordance with the fluctuations recorded by a resistance indicator, but also communicating to the engineers of the locomotives in the rear the necessary instructions regarding the increase or diminution of speed as circumstances may necessitate. It is claimed that a rotary plow could be successfully operated, on the auger principle, in snow of any depth, if means be found to get rid of the snow excavated.

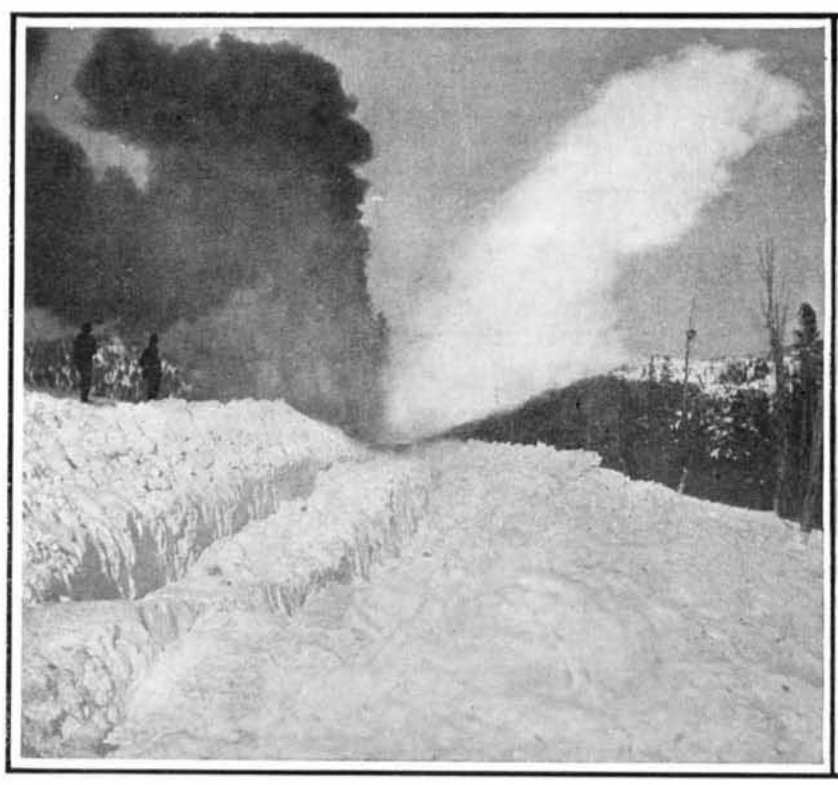
Aside from its increased efficiency, the rotary has recommended itself to railroad officials by reason of the economy of its operation as compared with the "gouger" type of plow. A rotary never requires more than two locomotives to push it through the heaviest drifts, whereas it was nothing uncommon, when the wedge-shaped plows were almost universally employed on the Rocky Mountain divisions of the railroads, to see seven locomotives employed to furnish the requisite energy to shove one of the old-fashioned plows through heavy drifts. At certain seasons of the year almost every passenger train on the mountain roads is preceded by a rotary. This is necessary by reason of the fact that in exposed locations a strong cross wind will, in as short an interval as fifteen minutes, pile up a formidable drift in a location that has been cleared by a rotary. In the region that might be termed the home of the rotary, it is nothing unusual for an aggregate snowfall of more than 42 feet to be recorded during the season.

At the Rear of a Rotary Snow Plow Pulling Up a Mountain Side.

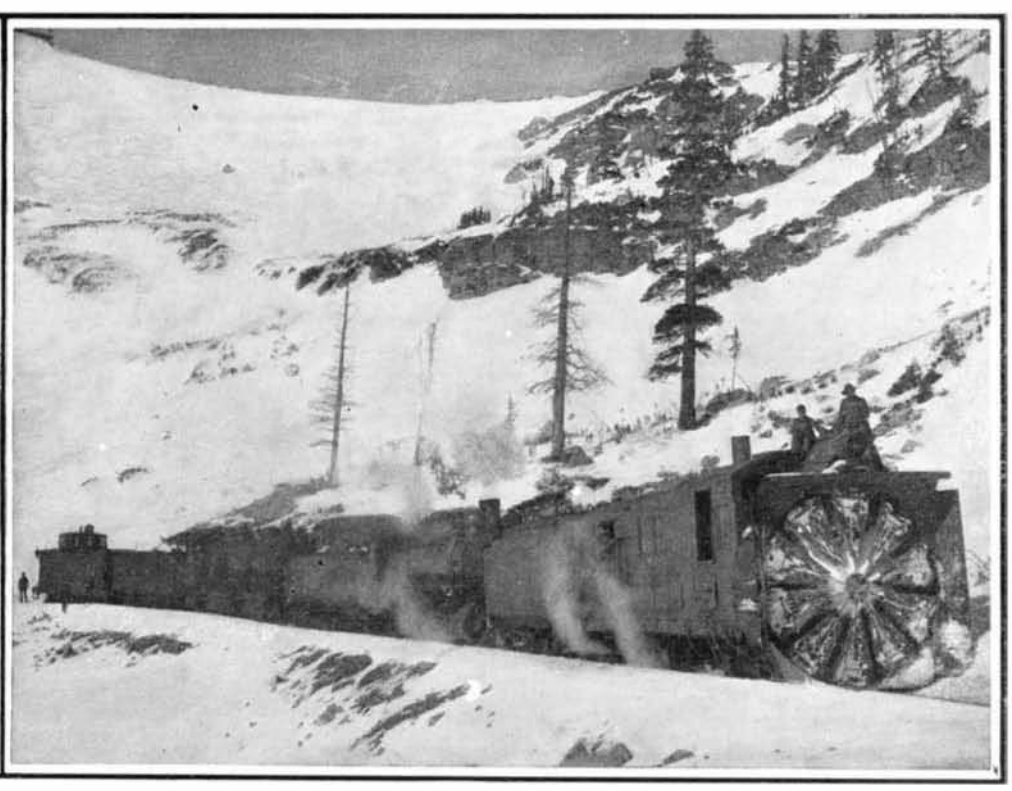


The Strongest Wooden Railway Station in America, Situated at Corona, Col., in the Rocky Mountains at an Altitude of 11,660 feet.

The results have been published of tests of automatic couplers submitted to a commission of Russian railroads in response to an offer of prizes in an international competition for the best automatic coupling. Not a single coupler has been considered to meet the conditions laid down. No first or second prize was given, but a third prize was awarded to L. Boireau.



The Cloud of Snow Tossed by the Plow as It Plunges On.



The Largest Rotary Snow Plow in the World.

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