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A REMARKABLE COLLISION.

"On Monday afternoon, January 17," says the *Post* of Lindsay, Canada, "the singular sight could be seen on Victoria Avenue of two locomotives piled one on top of the other, and a snow plow underneath crushed out of all resemblance to the useful machine that clears the track. During the afternoon a violent snow storm had prevailed. At times the snow fell in such a cloud as to prevent anything being caught sight of more than ten feet away. During the height of the storm, engine 634, driving snow plow No. 18, passed the junction (Lindsay north), having come south over the Cobocok line, under orders. A few minutes before, engine No. 624 left the station with a train of freight cars to haul to the junction. Just above Elgin Street, Driver McIntosh caught sight of the plow and engine, but it

Britton, photographer, after engines were hauled down to the yard to be dismounted.

This accident reminds us of one that occurred in 1874 on the Chicago and Northwestern Railroad, when two engines collided and reared up on end, locking their wheels together, and remained in upright position, presenting a remarkable spectacle. It was illustrated in *SCIENTIFIC AMERICAN SUPPLEMENT*, No. 40, September 30, 1876.

Protection of Buildings from Lightning.

The French Minister of Public Instruction recently submitted to the Academie des Sciences an important question concerning the fitting of lightning conductors for public schools and other large buildings. It appears that a departmental commission represented to

This general method of increasing the factor of safety in buildings, in case of lightning stroke, has been advocated in the *SCIENTIFIC AMERICAN* for the past twenty-five years, and we believe was first publicly suggested in these columns. We have repeatedly shown how faulty, if not useless, is the ordinary lightning rod system, where the lower end of the rod is simply stuck a foot or two into the dry ground; and we have urged, first, that the rod must have a thorough and extensive conducting surface in contact with the earth; second, that all metallic fittings both within and without the building should be connected with the rods, or with special rods leading to the ground terminals. Where there are underground metallic pipes, such as water, gas, or drains, the rods should be connected with them. If there are no such metallic pipes or masses,



A REMARKABLE COLLISION AT LINDSAY, CANADA.

was only a few yards away at the time. Driver McIntosh and Fireman Rogers jumped from the engine and landed in a snow bank. Conductor Pym was not so fortunate, for in scrambling out on the tender to make the leap he was a moment too late, and was thrown from the tender to the ground, escaping unhurt. Driver R. Johnston and Fireman Tutton of 634 stuck to their engine. In fact, the first intimation they had of the state of affairs was on seeing engine 624 making desperate efforts to climb up on top of the boiler of 634, accompanied with a fearful clatter and smashing of things generally. A cab behind 634 was uncoupled by the shock and shoved back nearly two hundred yards. The momentum of engine 624, backed by the weight of a long line of freight cars, was terrific. The engine was forced up the plow as if up a short and very steep grade, leaving the front truck and pilot buried in the board work of the plow. The pilot, smoke-box, stack, and upper works of engine 634 were smashed into pieces and thrown about. The tender of 624 followed the engine, and hung suspended by the couplings, with the rear truck resting on the track. It seemed almost incredible that such an enormous weight as that of a locomotive could be pushed up in such a manner and fastened so securely."

Our engraving is from a photograph taken by J.

the minister that it was necessary in a particular case to connect all the iron stairs and other internal metal work of a school building to the lightning conductors, so as to prevent the danger of lightning leaving the outside conductors and striking through walls or roofs at the insulated metal inside. The minister logically concluded that if this was done for one building, it should be done for all similarly circumstanced; and as this action would involve the expenditure of a considerable sum, he asked the opinion of the Academy upon the point.

The committee to whom the question was referred have reported to the effect that it is indispensable for the perfect protection of buildings from lightning that the conductors should be well connected with all important metallic masses inside. The case applies not only to iron in roofs, partitions, or staircases, but also to gas and water pipes, heating apparatus, and similar metallic fittings. It is laid down also that where there are many lightning conductors attached to a building, the nearest of them should be placed in connection with the metallic masses in question. It is understood on the part of the committee that the lightning conductors themselves are always properly "grounded," by being put in perfect connection with the earth by means of a well which is never dry.

then long trenches leading away from the building should be dug, deep enough to reach moist ground, pulverized coal should be placed in the bottom of the trenches, and the lower end of the rod extended for a considerable distance in the trench in contact with the coal, which is itself a conductor.

Importance of Furnishing Good Goods to Mexico.

In many lines of goods American manufacturers have a well established trade, says the *Mexico Financier*, referring to its own country, and this satisfactory condition of their business may be attributed to the excellence of the articles sent here, the care taken in packing, and the liberal terms accorded to Mexican buyers. In other lines of goods, especially in those which already are extensively sold here by German, English, and French houses, the American manufacturers, with some exceptions, are foolishly regardless of the elemental rules of sound business. It seems to be their policy to send here imperfect articles, or, when shipments are made of perishable articles, to neglect the same precautions they would take for long routes in their own country. The fact that the Mexican public requires the best grades of goods, and is accustomed to get them from Europe, in all but a few lines, needs to be impressed on American manufacturers.