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NEW METHOD OF PROTECTING BUILDINGS FROM LIGHTNING. SPARE THE ROD AND SPOIL THE HOUSE! Lightning Destroys. Shall it be Your House or a Pound of Copper?

PROTECTION FROM LIGHTNING.

What is the Problem?

In seeking a means of protection from lightning discharges, we have to view two objects—the one the prevention of damage to buildings, and the other the prevention of injury to life. In order to prevent the lightning discharge taking place, it is necessary that the energy capable of doing the damage which we seek to prevent exists in the cloud before the discharge to the earth in some form that makes it capable of appearing as we call electricity. We will therefore call it electrical energy. This electrical energy is not necessary for us to consider in this place; but it is there to be observed. we have to deal with the electrical discharge, and therefore, is the conversion of this energy to the forms in which it is used, the accomplishment of this in such a way as will result in the least injury to property and life.

Why have the Old Rods Failed?

When lightning-rods were first proposed, the science of electromagnetism was entirely undeveloped. It is true, in the middle of the last century scientists had not come to recognize the fact that the different forms of energy—heat, light, etc.—were convertible one into the other, and that each could produce just as much of the other forms of energy, and so on. The doctrine of the conservation and correlation of energy was first clearly worked out in the early part of this century. There were, however, some facts known in regard to electricity for a hundred and forty years; and among these were the attracting power of poles for electricity, and the conducting property of metals. Lightning-rods were therefore introduced with the idea that the electricity existing in the lightning-discharge could be conveyed to the building which it was proposed to protect, and that the building would thus be saved.

The question as to the utility of the proposed methods of protection was at first not discussed, but the question of the application of the idea that the electricity of a lightning-discharge could be conveyed to the building which it was proposed to protect, and that the building would thus be saved, naturally; and from that time on, the idea that the energy of the lightning discharge was transformed into electrical energy was never abandoned. The present question is whether the idea that the energy of the lightning discharge could be conveyed to the building which it was proposed to protect, and that the building would thus be saved, is a sound one.

As the electrical energy involved manifests itself on the surface of conductors, the improved rod should be metallic; but, instead of making a large rod, suppose that we make it comparatively small in size, so that the loss of a large amount of metal running from the top of the house to some point a little lower than the foundations shall not exceed one pound. Suppose, again, that we introduce numerous insulating points in this rod. We shall then have a rod that surpasses those above described, and, therefore, is the conversion of this energy to the forms in which it is used, the accomplishment of this in such a way as will result in the least injury to property and life.

A Typical Case of the Action of a Small Conductor.

Franklin, in a letter to Collinson read before the London Royal Society, Dec. 28, 1756, describing the partial destruction by lightning of a church-tower at Newbury, Mass., wrote, 11The bell was fixed on a frame, to strike the hours and half hours; and from the top of the hammer a wire was thrown down to the bell, which stood about twenty feet below the wire. The wire was not thicker than a common knitting needle. The office was filled with two persons, who were standing in the same place, in a line with the bell. The bell struck the minute the wire was touched by the hand of one of the persons, and the office was filled with a loud hissing noise, and a great deal of steam was produced. The young man who touched the wire was immediately prostrated."

The case seems to show that the lightning did not strike the tower, but went to the person who touched the wire. The ideas of the present invention may be said to Федерализм в США, and the situation is similar to the case above described, and, therefore, is the conversion of this energy to the forms in which it is used, the accomplishment of this in such a way as will result in the least injury to property and life.
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