NEW METHOD OF PROTECTING BUILDINGS FROM LIGHTNING.

SPARE THE ROOD AND SPOIL THE HOUSE!

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 injuries to persons. To provide a building to wholly or in part, it is necessary that work should be done; that is, as physicists express for, it is necessary that electro-magnetic energy be dissipated through the building. Of these two, the energy capable of doing the damage which we seek to prevent exists in the column of electricity itself; some part, not in the form that makes it capable of appearing as we call electricity. We will therefore call it electric energy, and we will consider it as necessary for us to consider in this place; but that it exists there can be no doubt, as it manifests itself in many ways. There are, therefore, the conversion of this energy into some other form, and the accomplishing of the prevention of the effects of lightning. The manner of the prevention of the effects of lightning is therefore to dissipate the energy of the lightning-discharge into other forms, and to cause the building to be safe.

Why have the Old Rods Failed?

When lighting-rods were first proposed, the science of energetics was entirely undeveloped; that is to say, in the middle of the last century scientific men had not come to recognize the fact that the different forms of energy—heat, electricity, mechanical power, etc.—were convertible one into the other, and that each could produce just so much of each of the other forms, and no more. The doctrine of the conversion 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 a hundred and forty years ago; and among these were the attracting power of points for an electric particle, and the conducting power of metals. Lighting-rods were therefore introduced with the idea that the electricity existing in the lightning-discharge could be converted into the building which it was proposed to protect, and that the building and its contents would be thus protected.

The question as to dissipation of the energy involved was entirely ignored. It was understood that the time to do it was in the best endeavor of the discharged body to the earth, as lightning-rods constructed in accordance with Franklin's principle have not furnished satisfactory protection. This reason for this is apparent when it is considered that the electrical energy existing in the column of electricity which has been transferred from the cloud to the earth, above referred to, reaches the building, the energy being dissipated, the surface of the building is electrically hotter than the building. Similarly, the largest display of energy will be where the material conducting the very lightning. The rods that were here to protect, and duly sized, so as often to be the case.

It must be understood, of course, that this display of energy on the surface of the old lighting-rods results from their being more or less insubstantial as old lighting-rods can be found the very existence of such a mass of metal that the energy upon the surface—"to draw the lightning," as it is commonly put.

Is there a Better Means of Protection?

Having cleared our minds, therefore, of any idea of conducting electricity, and having clearly in view the fact that to provide protection against lightning we must furnish some means by which the electrical energy may be dissipated thereby, the question arises: Is the improved form be given to the rod so that it shall act in this dissipation?"
Editor's Summary

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