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 destroy a building in whole or in part, more work should be done; that is, as physically express it, energy is required. Just before the lightning-discharge takes place, the electricity is increased in the column of air extending from the cloud to the earth in some form that makes it capable of appearing as what we call electricity. We will therefore consider the electrical energy. What this electrical energy is, it is not necessary for us to consider. It is employed to produce destruction of buildings. The problem that we have to deal with, therefore, is the prevention of this great display of energy, so that the development of this in such a way as shall result in the least injury to property and life.

Why Have the Old Rods Failed?

When lightning-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 into one another, and that each could produce just as much of each of the other forms, and so on. The doctrine of the conservation and correlation of energy was first worked out early in the 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 spark, and the conducting power of metals. Lightning-rods were therefore introduced with the Hickock and Morehouse form of lightning-rod, which was supposed to convey around the building which it was proposed to protect, and that the building would be saved.

The question as to dissipation of the energy involved was entirely ignored, nor was it considered that a rod would be of no use unless that part of the energy which is not dissipated was returned to the earth. The reason for this is apparent when it is considered that the electrical energy existing in the atmosphere before the discharge is more exact, in the column of air from the cloud to the earth, above referred to, reaches its maximum value on the surface of the conductors of the lightning. Conductors, such as the column of dielectric; such that the greatest display of energy will be on the surface of the very living-lightning-rods that were meant to protect and dissipate energy. Why this is so, it cannot be understood, of course, that this display of energy on the surface of the old-lightning-rod is aided by their being more or less insulated from the earth, and the very existence of such a mass of metal of a considerable extent that the old-lightning-rod can only tend to produce a disastrous dissipation of electrical energy upon the object of its protection; i.e., to the lightning, as it is so commonly put.

Is there a Better Means of Protection?

Having cleared our minds, therefore, of any idea of conducting electricity, and keeping always in view the fact that in providing protection against lightning we must furnish means by which the electrical energy may be harmlessly dissipated, the question arises, Can an improved form be given to the rod, so that it shall aid in this dissipation?"