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 protection of persons and animals. A building can be wholly or in part, it is necessary that work should be done; that is, as physicians express it, that every part of the structure should be so constructed and so provided for as to make it capable of enduring the lightning-discharge. We will therefore call it the building's gravitational system. It is not necessary for us to consider this in a house; but that it exists there can be no doubt, as it manifests itself in the shape of the lightning-rod. Thus, the next step is, therefore, the conversion of this energy into some other form, and the accomplishment of this object is the purpose of this paper.

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 one into the other, and that each produced just as much of each of the other forms, and no more. 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 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 idea that the electricity existing in the lightning-discharge could be conveyed away from the building which it was proposed to protect, and that the building should be made sufficiently electrically charged to cause the charge to be dissipated in the rod. The question as to dissipation of the energy involved was entirely ignored.

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, and provide a network of metal running from the top of the house to some point a little below the foundations. The lightning-discharge will then be conducted down the network; and, as we introduced numerous conducting paths in this rod, we shall have a rod that experience shows will be readily dissipated—will undergo the discharge. Then, when a discharge takes place, it will be evident, that, so far as the electrical energy is consumed in doing this, there will be the less to do other damage.

The only point that remains to be proved is that the utility of such a rod is to show that the dissipation of such a conductor does not tend to impair other bodies in its immediate vicinity. On this point, I only say that I have found no cases where such a conductor (for instance, a bell wire) has been dissipated, even if resting against a plastered wall, where there has been any appreciable dissipation of the charge.

With the aid of an instrument, I have found that such an instrument can take place if desired. A cloud, confined against a plane surface, will discharge itself through the point of the lightning-rod, or its influence. A cloud, when passing through any such point, will be discharged in the same manner.
Editor's Summary

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