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Spare the Rod and Spoil the House!

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What is the Problem?

In seeking a means of protection from lightning discharges, we have in view two ends, the prevention of injury to life and property; and the other the prevention of injury to life. In the case of a building in whole or in part, the work should be done; and if, as physiologists express it, electric energy is a force, we must then consider the prevention of injury to human beings. If we wish to build in some form that makes our electric energy pass on without injury, we shall have to adopt a system of protection from lightning.

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, man 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.

When, however, some facts were known in regard to electricity a hundred and forty years ago, and among these was the attracting power of points for electric power, and the conducting power of metals, lightning-rods were introduced with the idea that the electric energy existing in the lightning-rods to which it was conveyed by the conduction of the bodies, the building would be saved.

The question as to dissipation of the energy involved was entirely ignored, naturally and from this to this, is to the best of our endeavors, in accord with this principle, which has never been satisfactorily protected. The reason for this is apparent when it is considered that the electrical energy existing in the atmosphere before the discharge, or more exactly, in the column of electricity from the cloud to the earth, above referred to, reaches its maximum value on the surface of the conductors that pass between the column of electricity, so that we can be sure that the greatest display of energy will be on the surface of the very lightning-rods and buildings, and damage results, so as great as to be practical in the case.

It will be understood, of course, that this display of energy on the surface of the old lightning-rods is aided by their being more or less insulated from the earth, but it is equally true that the very existence of a mass of metal as an old lightning-rods can only tend to produce a disastrous dissipation of the electrical energy upon touching the earth," 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 cleared our minds of the idea that in providing protection again by building must furnish some means by which the electrical energy may be more or less dissipated, we shall ask the question, why an improved form be given to the rod so that it shall be in this dissipation?"
Science ns-22 (556), 169-181.