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 in view the prevention of any damage to buildings, and the other prevention of injury to life. In order to destroy a building in whole or in part, it would be necessary to do that, to discharge electricity on it, or to prevent the dissipation of electricity. The only means of protection is, therefore, to give up to the discharge of electricity.

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 clearly worked out in the early part of this century. There were, however, some facts known in regard to electricity at this period and forty years ago; and among these were the attracting power of points for electric spa, and the conducting power of metals. Lightning-rods were therefore introduced with the object of utilizing the electricity existing in the lightning—dissipating it around the building which it was proposed to protect, and that the building would then be saved.

The question as to dissipation of the energy involved was entirely ignored, because it was assumed that the building was already dissolved, and that it could not be destroyed. It was this assumption that led to the failure of the old lightning-rods.

NEO-DARWINISM AND NEO-LAMARKISM.

By LESTER F. WARD.

Annual address of the President of the Biological Society of Washington delivered Jan. 24, 1891. A historical and critical review of modern science, and of the problem of the transmission of transmitted characters. Darwinian, Acquired Characters, Theories of Heredity, Views of Mr. Galton, Teachers of Professor Weismann. A Critique of neo-Darwinian, Neo-Lamarckian, the American "School," Application to the Human Race. The new theories being presented, are discussed, and the current American opinion characterized, and opposed to the extremes of the non-transmissibility of acquired characters.

Price, postpaid, 25 cents.

N. D. C. HODGES, 874 Broadway, New York.

As the electrical energy involved manifests itself on the surface of conductors, the improved rod should be metallic; but we cannot suppose that we make it comparatively small in size, so that the total amount of metal running from the top of the house down to the lightning-rod cannot be, under these conditions, less than an inch and a half wide, and the foundations shall not exceed one pound. Suppose, again, that we introduce numerous insulating joints in this rod. We shall not have a rod that experience shows will be readily destructeted—will be readily dissipated—when a discharge takes place—and it will be evident that, as far as the electrical energy is consumed in this way, there will be the less to do other damage.

The only point that remains to be proved as to the utility of such a rod is to show that the dissipation of such a conductor does not tend to injure other bodies in its immediate vicinity. On this point I can only say that I have found no case where such a conductor (for instance, a bell wire) has been dissipated, either under the influence of a gasoline-exploding, or a gas-exploding, or any other damage.

As the electrical energy involved is dissipated, there is no necessity, whether in the form of heat, or in the form of electrical energy, for the rod to be dissipated, for no electrical energy is dissipated in this way, if the rod is a metallic one, and is in the form of a metal, that of copper. The rod is therefore dissipated, and it is used to dissipate the energy, and this energy is dissipated, without the rod itself being dissipated.

A Typical Case of the Action of a Small Conductor.

Franklin, in a letter to Collins, held before the London Royal Society, Dec. 28, 1755, describing the partial destruction by lightning of a church-tower at Marylebone, London, wrote, "Near the bell was fixed an iron hammer to strike the hours; and from the tail of the hammer a wire went down through a small gimlet-hole in the floor that the bell stood upon, and through a second floor in like manner; then horizontally under and near the plastered ceiling of that floor, till it came near a plastered wall; then down by the side of that wall to a clock, which stood about twenty feet below the bell. The wire was therefore much larger than one conductor, and the pole was split all to pieces by the lightning, and the parts lying in all directions over the square in which the column stood, so that nothing remained above the bell. The lightning passed between the hammer and the clock in the above-mentioned wire, without hurting either of the doors, and passing on to the opposite end, and making the gimlet-holes, through which the wire passed, a little bigger, and in the process of burning the plastered wall, it went on to the anode aforesaid wire and the pendulum-wire of the clock extended; which latter wire was about the thickness of a goose-feather. From the end of the pendulum, down quite to the ground, the building was exceedingly rent and damaged. . . . So part of the aforementioned small wire, between the clock and the hammer, could be found, except about two inches that hung to the tail of the hammer, and about as much that was fastened to the clock; the rest being exploded, and its particles dissipated in smoke and fire, as gun-powder is by common fire, and had no effect on any buildings whatever except the clock and the hammer, which were split all to pieces by the lightning, and the parts lying all in different directions in the square in which the column stood, so that nothing remained above the bell. The lightning passed between the hammer and the clock in the above-mentioned wire, without hurting either of the doors, or having any effect".

One hundred feet of the Hedges Patent Lightning Disipater (made under patents of N. D. C. HODGES) will be mailed, postpaid, to any address, on receipt of five dollars ($5).

Correspondence solicited. Agents wanted.

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