NEW METHOD OF PROTECTING BUILDINGS FROM LIGHTNING.
S C H A R P E R  A N D  S P O I L  T H E  H O U S E !

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 great power of the lightning as a destructive force. A building to whole or part, it is necessary that work should be done; that, as physicians express it, we should "treat the patient". The energy capable of doing the damage which we seek to prevent exists in the column of electricity. We are compelled, in some form, to make it capable of appearing as we call electricity. We will therefore call it that electric force on earth, it is not necessary for us to consider in this place; but that it exists there can be no doubt, as it manifests itself on a ship at sea, and in the lightning discharges. Therefore, it is the conversion of this energy into some other form, and the accomplishment of this energy of a more or less permanent nature.

Why Have the Old Rods Failed?
When lightning-rods were first proposed, the science of electro-magnetics was entirely undeveloped; that is to say, in the middle of the last century scientific man 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 as much of each of the other forms, and no more. The doctrine of the conservation and conversion of energy was first clearly worked out in the early part of this century. There were, however, some facts in regard to electricity a hundred and forty years ago; and among these were the attracting power of a point 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 itself and its contents would be made safe.

The question as to dissipation of the energy involved was entirely ignored. And the result was at times disastrous, in spite of the best endeavors. It is generally recognized that in a thunderbolt the electricity is distributed through a discharge channel, or on a pathway. The potential to be seen in the discharge channel or pathway is the cause of all damage, as it goes directly to the building. It is then that the old rods failed. They were not strong enough to dissipate the energy, and therefore, the energy remained to do the damage. The purpose of the new method is to provide a means of dissipating this energy in such a manner that it will be dissipated without injury or damage to any other body, and that the building itself and its contents will be made safe.

A Typical Case of the Action of a Small Conductor.
Franklin, in a letter to Collinson read before the London Royal Society, Dec. 13, 1756, describing the partial destruction by lightning of a church-tower at Newbury, Mass., 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 gable-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 second floor, till it came near a plastered wall; down by the side of that wall to a clock, which stood about twenty feet below the bell. The wire was not bigger than a common knitting needle. The spike was split all to place by the lightning, and the part hanging in all directions over the square in which the church stood, so that nothing remained above the bell. The lightning therefore struck the church and the clock in the above-mentioned wire without hitting either of the buildings, or having any effect upon them (nothing unusual with the wires which went under the plastered ceiling, through which the wire passed, a little bigger, and without hurting the plastered wall, or any part of the buildings). The wall in the side of the church which was struck by lightning was about the thickness of a gose-skull. From the end of the pedestal a strong shot of fire went through the wire to a clock, which was several feet higher. . . . No part of the said mentioned long, small wire, between the clock and the hammer, could be found, except a short piece of it lying under the wire, on the floor. The wire was about the thickness of a gose-skull. From the end of the pedestal to the clock, a strong shot of fire went through the wire to a clock. The clock was standing fully upright, and the pedestal and clock and wire, all well with the wire. . . . The powder is by common fire, and had only left a black smoky track on the place left, three or four blocks broad, darkest on the edge; all the edges, all the ceiling, under which it passed, and down the wall. . . .