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 human life. In our old friend a building in which there is a roof, it is necessary that work should be done; that is, as physiologists express it, there must be present the phenomenon of lightning. The energy capable of doing the damage which we seek to prevent exists in the atmosphere, ready to come in contact with this or that object. This is capable of appearing as what we call electricity. We will therefore call it potential energy. This electrical energy is, therefore, the thing we must consider in this place; but that it exists there can be no doubt, as manifestly the field exists in which we move. But the question we have to deal with, therefore, is the conversion of this energy into some other form, and the application 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-rod were first proposed, the science of energetics was entirely undeveloped; that is to say, in the middle of the last century scientists had not come to recognize the fact that the different forms of energy—heat, electricity, mechanical power, etc.—were convertible one into another, and that each could produce just so 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 a hundred and forty years ago; and among these were the attracting power of points for an electric space, and the conducting power of metals. Lightning-rod were introduced with the Hober’s patent existing in the lightning-disk containing a rod around the building which it was proposed to protect, and that the building would thus be saved.

The question as to dissipation of the energy involved was entirely ignored; and, from that time on, in spite of the best endeavors of those interested, lightning-rod constructed in accordance with Franklin’s principle have not furnished satisfactory protection. This 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 diectric from the cloud to the earth, above referred to, reaches its maximum value on the surface of the earth, to conductors that chance to be within the column of diectric; so that the greatest display of energy will be seen on the surface of the very lightning-rod that were meant to protect, and damage results, as so often proves to be the case.

It will 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, but in any event the very existence of the column of diectric through which the lightning was forced, although they were intended to be insulated, did not prevent the dissipation of electrical energy on its surface,—“to draw the lightning”.

Is there a Better Means of Protection?

Having cleared our minds, therefore, of any idea of conducting electricity, and of seeking clearly the fact in preventing protection against lightning we must furnish some means by which the electrical energy may be suitably dissipated, the question arises, “Can an improved form be given to the rod, so that it shall do it?” This dissipation?"
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and the female of that diminutive species in the act of feeding it. The tiny excavation could scarcely afford room for its feet, to say nothing of the body, and, with feathers fluffed so as to apparently double its size, the mouth extended to its utmost, while the midget foster-mother, at the hazard of being swallowed bodily, plunging her morsels far down the abysmal throat of the ungracious usurper, who has unavoidably destroyed the mother’s own kindling in the process of its development.” (Birds of Minnesota, p. 274).

The other case observed was somewhat later in the month. In both cases there was but a single specimen of the parasite, as is usually the case, and not one of the bird’s own offspring was to be found, which, I think, is also the usual thing.

In the case most critically studied the bird had left the nest and was diligently following the foster-parents, both of whom in attendance upon it, now to the ground, now to a tree, and all the while persistently clamoring for food, which they were unintermittently seeking to supply. And it seemed to me there was in the eye of the usurper a look of impious maliciousness, which seemed to express a semi-consciousness of wild satisfaction in the scandalous imposition.

The observations were the more interesting to me in that I, from my earliest recollections of bird-habit and instinct the “chippy” was among the most wary and jealous of the slightest intrusion or interference about the nest. I have known the disturbance of even the foliage in proximate to be sufficient to result in its abandonment. A note in American Ornithology, p. 294, speaks of it in the same way, and refers to it as the most punctilious on this point, often deserting the nest even after the eggs had been deposited. I have myself known the nest to be deserted upon an apparently smaller provocation after the full complement of eggs had been laid. It has, therefore, seemed strange to me that an egg so different in size and markings should be accepted and brooded, or that after the full-grown intruder had flown it should yet be so tenderly cared for, though its vagabond nature must certainly be recognized! Is it probable that the maternal instincts are so strong as to overcome all scruples even of the tragic sort involved in the case under consideration?

If Spizella is the frequent victim of this parasitism I should be glad to know more about it. Of all the cases where I have found the eggs of the cow-bird in the nests of other birds, I have yet to find the first case of such in the nest of the “chippy.” My observations may have been too limited, and I shall hereafter be on the lookout for making them more critical, and, at the same time, more extensive.

**LETTERS TO THE EDITOR.**

*Correspondents are requested to be as brief as possible. The writer’s name is in all cases required as a proof of good faith.

On request in advance, one hundred copies of the number containing this communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

**AN INTELLIGENT SQUIRREL.**

The new home to which I removed this summer has about it two-thirds of an acre of ground bearing several old oaks, maples and other trees. Naturally enough, it has introduced me to a number of interesting occurrences in furs and feathers. Of these the most interesting by far is a gray squirrel (Sciurus Carolinensis), the largest specimen I remember to have met. He made his first bow to us early in September, taking his position one morning upon a red oak some twenty feet from the house, with his four feet spread widely on the main trunk, his head downward and his beautiful great brush poised above his gray back. Here he remained motionless for a time, peering into a second story window where two little children were busy at play. Directly one of the children—a five-year-old—caught sight of the curious cadesdropper, and made the usual hullabaloo over him, vigorously assisted by her younger brother. The squirrel paid little attention to their excitement, save that he changed his position a little, but continued his observations. For a while there was a mutual ad-

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