JUNE LEWIS.

New Methods of Treating the Sick.


Scientific Work in Marine Biology at Newport. W. F. Castle. 64.


Indian Painting in Southern California.

F. 66.

Notes and News. 67.

Notes on the Occurrence and Distribution of Unmentionable. M. A. Carleton. 68.

In Necessity, First. W. H. C. Leake. 69.

F. W. A. W. Gregson. 70.


Bacteria in Her's Eggs. Melvin A. Bramson. 72.

A Manual of Suggestion. F. W. Dudley. 73.


A Note on the Application of Scientific Method to Literature. C. M. Jenner. 75.

Letters to the Editor. C. G. 76, 77.

Book Reviews. A. 78.

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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 all injury to the persons or property in buildings, and the prevention of the destruction of the buildings themselves.

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 scientists 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 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 poles for electricity, and also the conducting power of metals. Lightning-rods were therefore introduced with the idea that electricity existing in the lightning-stroke could be conducted away around the building which it was proposed to protect, and that the building would thus be saved.

The question as to the dissipation of the energy involved was entirely ignored, however, and it has been the experience of those who have for some time been the most strenuous advocates of this idea, that lightning-rods constructed in accordance with Franklin's principle have not furnished satisfactory protection. The reason for this is apparent when it is considered that the electrical energy existing in the atmosphere before the discharge is of such a magnitude that in the columns of lightning from cloud to earth, above referred to, reaches its maximum value on the surface of the conductors that chance to be within the columns of electricity; so that the greatest display of energy will be on the surface of the very lightningrods that were meant to protect, and damage results, as some prove to be the case.

It should 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, and that, even in the very existence of such a mass of metal as is used in old lightning-rods, there is only to produce a dissipation of electrical energy upon the surface, "to draw the lightning," as it is so commonly put.

Is there a Better Means of Protection?

Having cleared our minds, therefore, of any idea of conducting electricity, and keeping clearly in view the fact that in providing against lightning we must furnish some means by which the electrical energy may be lessened, or at least, if we cannot prevent it, "out, the question arises, can a new form be given to the rod so that it shall all in this dissipation?"

NEO-DARWINISM AND NEO-LAMARCKISM.

By LESTER J. F. WARD.

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As the electrical energy involved manifests itself on the surface of conductors, the improved rod should be metallic, but should not be a simple conductor, we suppose that we make it comparatively small in size, so that the total amount of metal running from the top of the foundation to the ground is as small as the foundations shall not exceed one pound, Suppose, again, that we introduce a very small amount of metal in the rod, and we have to show by our experience that the designs of the species made easy by means of analytical methods, OR B. B. F. Hay, Ph. I. Price, in paper cover. postpaid, $1.50.

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In the case of lightning, it is wholly impossible to prevent its passage through a building, even if it be built of incandescent materials, and therefore the best plan is to prevent its passage through the metal of the building. On this principle, a large number of designs have been made easy by means of analytical methods, for the protection of buildings from lightning, and in the case of 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 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 dis-