

**A TREATISE ON LIGHTNING
CONDUCTORS;
COMPILED FROM A WORK
ON THUNDERSTORMS**

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A treatise on lightning conductors; compiled from a work on thunderstorms by Lucius Lyon & Sir S. W. Harris

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LUCIUS LYON & SIR S. W. HARRIS

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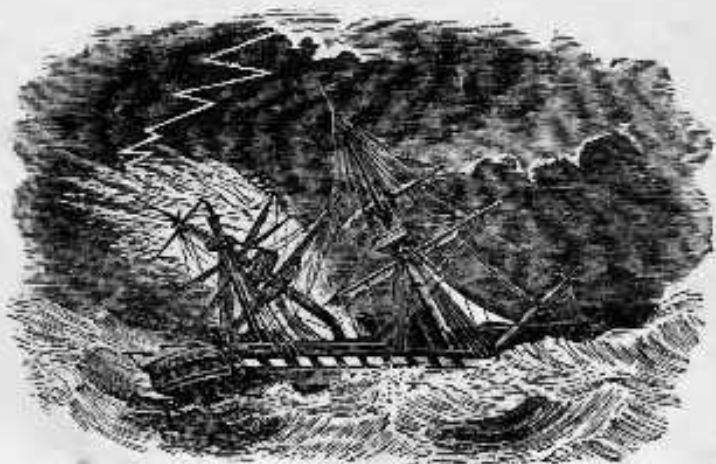
A TREATISE
ON
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COMPILED FROM

A WORK ON THUNDERSTORMS, BY
S. W. HARRIS, F.R.S.,

AND OTHER

STANDARD AUTHORS.



BY

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See page 88

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P R E F A C E .

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It is not a little remarkable, when we consider the prevailing disposition of the times to apply the discoveries of natural science to useful purposes, and to embody them in those material forms which make them subservient to the wants of man, that, among the books which are incessantly issuing from the press, none has yet appeared, in this country, exclusively devoted to the subject of practical electricity. Theoretically, indeed, the study of the phenomena of electricity awakens a lively interest in every mind, both on account of the wonderful developments which are constantly made, and the subtle and mysterious nature of its essence; seeming, as it does, to occupy the interval between mind and matter; but, since the brilliant experiment of Dr.

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Franklin, identifying lightning with electricity, although much information has been acquired, both in this country and abroad, no treatise has been published, exhibiting to the American reader those facts which are necessary for his guidance, in applying the discovery of Franklin successfully to the protection of life and property.

The only explanation of this circumstance which can be given is, that the construction and application of lightning conductors, has appeared to most persons a matter too simple to need any aid from books, while not a few have looked upon the whole theory as absurd, and as a source of danger rather than of safety. There has been, consequently, but little encouragement for the compiling of a work calculated to bring before the community all that has been learned on this subject.

The various systems of rodding, however, which have sprung up of late, and the different modifications of the conductor, which have been patented and presented to the public, each claiming some peculiar advantage over all its competitors, have created a curiosity, if not a necessity, which seems to justify the publication of the present volume.

The valuable treatise recently published in London, from the pen of S. W. Harris, F. R. S., is quite

too expensive to admit of general circulation; and it is thought, too, that one less extended will be better adapted to the wants of the American public. The compiler of the following work has, therefore, aimed to comprehend within reasonable limits all the facts that are essential, omitting such details as are merely curious, or such as suggest no new and valuable application of science. He has made a free use of all the materials within his reach, referring, for the satisfaction of the reader, as well as in justice to his authorities, to the book and page from which they have been derived.

There can be no doubt of the utility of such a book as is here presented. After expending large sums of money for the most approved apparatus of rods, many persons have been bitterly disappointed in their expectations, and have received no adequate return for their outlays. The truth is, that our countrymen have not acted on this subject with that shrewdness for which, in other things, they are proverbial. They have taken too much upon trust, and neglected the investigation of the facts. The iron conductors, put up at no inconsiderable cost, and supposed to secure perfect safety to the structures which they surmount, instead of proving themselves faithful sentinels and guardians in the hour of peril,

have too often turned traitors, and invited the destruction which they promised to avert. The "swift fire of Jove, hurled by his red right arm," has not unfrequently bolted from the iron track, prepared for its harmless descent, and, indignant at some defective joint, or sudden break, or the want of sufficient metal for its free discharge, has made a forcible passage for itself, often leaving shattered walls, and chimneys, and blazing roofs, to attest its terrific power. Happy for the sufferers if the blasted corpse of some loved one has not added unutterable woe to the desolation of the scene!

Such disastrous consequences are due, in part, to imposture, but far more frequently to the ignorance and carelessness of workmen, and to the blind credulity of those who have employed them. In many instances, too, the owners of property have suffered an apparatus, originally well adjusted, to get out of repair. The distrust which might have arisen from these accidents, has no doubt been mitigated or prevented, in a great degree, by the difficulty of detecting any defect in a system of conductors—a philosophical knowledge of the science of electricity often being requisite for doing so.

Partly from the imperfections alluded to above, but much more from the unaccountable apathy which

exists on the whole subject, a very large proportion of the owners of buildings in this country, and probably a still greater proportion in other countries, have neglected to avail themselves of the lightning conductor in any form. An incalculable amount of property, and many lives, which might be made at least relatively secure, are thus constantly and needlessly jeopardized. How great a risk is incurred, and how nearly absolute safety is attainable by conductors, the author hopes to demonstrate in the following pages.

Mr. Harris, in his unrivalled work on Thunderstorms, has the following appropriate Introduction:

“The fact of electrical conduction by metallic substances having been so long and so well established, any further discussion of the application of this principle to the purpose of protection against lightning may possibly appear to persons, conversant with such subjects, as in some degree superfluous. The damage, however, which so frequently occurs in thunderstorms, attended as it is with loss of life, and with serious inconvenience to the best interests of the country, may be fairly adduced as a sufficient reply to such an opinion.

“The beautiful spire of St. Martin’s church, in London, has been recently rebuilt, at a cost of full one thousand pounds sterling, in consequence of an explosion of lightning,

which fell on it in July last. Brixton church, near London, had also to undergo extensive repairs, rendered necessary from the same cause. In January, 1841, the spires of Spitalfields and Streatam churches, were struck by lightning, and the latter nearly destroyed; and in August of the same year an electrical discharge shook the spires of St. Martin's and St. Michael's churches, at Liverpool, both modern edifices of a costly and elaborate construction. In January, 1836, the spire of St. Michael's church, near Cork, was rent by lightning down to its very base; and in the following October the magnificent spire of Christ church, Doncaster, was almost totally destroyed by a similar discharge.

"Thus, in the United Kingdom alone, and within the short space of five years, we find at least eight churches to have been either severely damaged or partially demolished by lightning; to this list of casualties may be added the fine old church of Exton, in Rutland, which, according to the public journals, was in great measure destroyed in a thunderstorm, so lately as the 25th of last April. A writer in *Nicholson's Journal of Science*, states that he has made a calculation of the average annual amount of damage done by lightning in England alone, and that it cannot be far short of fifty thousand pounds.

"In the British Navy the effects of lightning have been most disastrous. Since the commencement of the war in 1793, more than two hundred and fifty ships are known to have suffered in thunderstorms. It is not possible to state with any degree of precision the total amount of damage