and when they meet, equal amounts of each are neutralized. If charges of these two kinds of electricity are some distance apart with a non-conducting medium, such as air, between them, the attraction between the two charges will exist, but the charges cannot meet and be neutralized unless some path of sufficient conductivity be offered.

If a metallic connection, such as iron or copper wire, be made between the two charges, the electricity would meet quietly and would be neutralized. Now if a metallic connection were made between these two opposite charges, except for an air gap for a small distance, the charges of electricity would break down the resistance of the air and jump the gap, making an electric spark if the voltage or electrical pressure of the charges were sufficiently high. To apply this explanation to a stroke of lightning, there is a negative charge of electricity in the earth and a positive charge in the cloud above the earth. These charges have an attraction for each other, the amount depending upon the voltage or electric pressure of the charges. The fact that air is a non-conductor of electricity prevents the charges from meeting under normal conditions, but at the time of a thunder storm, when the voltage of the charges becomes tremendously high or when the cloud comes sufficiently close to the earth, this electrical pressure is strong enough to overcome the resistance of the air and there is a stroke of lightning. This discharge naturally follows the path of least resistance, and if a tree or windmill or building or even a fence offers less resistance than the same distance of air, as they generally do, the lightning passes through the object on its way to the earth, and in this sense objects may be said to have an attraction for lightning. If these materials are good conductors of electricity, or in other words if they offer little resistance to the passage of the electricity, no damage is done, but if the resistance is high, as in the case of wooden structures, the discharge damages the material through which it passes, causing fire if the resistance is sufficiently high.

Water is a fairly good conductor of electricity. Often a wet building is struck by a comparatively weak stroke of lightning and no great amount of damage is done, but if the charge is large, fire is almost sure to result.

In some cases lightning overcomes the resistance of over a mile of air to reach the ground, and the charge of electricity necessary to do this is tremendous. The problem of protecting a building from damage by lightning is one of providing a good conductor of sufficient size to offer an ample path for the lightning should it pass down the building on its way to the earth. It seems impossible to calculate the size of a conductor necessary for the protection of buildings. This information is gotten from actual practice and experience along these lines.