

ing near the cathedral, at the distance of 3,921 feet from the first point of descent, and the northern division of the flash wreaked its fury on a cottage in a neighboring village, situate 8,531 feet from the cathedral. The same individual speaks of another instance in which five trees, standing at some distance from each other, were smitten, though not more than a single peal of thunder was heard. Still more numerous fureations are reported; for it is said that during a tempest at Landerneau, and St. Pol de Leon, twenty-four churches were struck, though three distinct claps only were heard at the time.

The second class differs from the first in the range of surface over which the flash is diffused. From this circumstance the discharge is designated sheet-lightning.

Sometimes it simply gilds the margin of the cloud from which it leaps; but at others it floods it with a lurid radiance, or else suffuses its surface with blushes of a rosy or violet hue.

Turn we to the third class of lightnings. These are not only remarkable for their eccentricities, but they have been made the subject of considerable contention. They neither assume the form of long lines on the one hand, nor of sheets of flame on the other; but exhibit themselves as balls, or globular lamps of fire. From Prof. Wheatstone's ingenious experiments, it has been shown that an ordinary flash, although darting, as it may seem, from horizon to horizon, does not occupy the thousandth part of a second in its transit. Nay, it has been calculated that the spark obtained from an electrical machine comes and goes in the millionth part of a second. Yet, spite of this characteristic velocity, lightnings of the third order have been seen strolling along at a leisurely pace, or traversing the air at an easy trot, such as the eye might readily follow, or the foot positively outstrip.

A striking illustration occurred to a M. Butti, at Milan:

One summer's day, while a terrible thunder-storm was raging, this individual was seated in his apartment, when his attention was withdrawn from the commotion in the heavens to a little human hubbub in the street below. *Guarda! guarda!* cried a number of voices. On looking out of the window he perceived a globe of fire moving along the middle of the street at some distance from the ground, but with an upward slant in its course. Eight or ten persons were in chase of the meteor, and by advancing at a quick step they were enabled to keep up with its motion. It glided past M. Butti's window. Anxious to know a little more about the strange traveler, he ran down stairs and joined the hue and cry. On it went for about three minutes more, still sauntering along at the same cool pace. But at length it came in contact with the tower of a church, and vanished with a moderate detonation. Here, then, was an instance in which a man might easily have overtaken, shall we say a thunderbolt, and, if necessary, have beaten it hollow!—*Fugitive.*

#### PROF. HENRY ON ACOUSTICS.

In the construction of buildings, and especially those intended for public purposes, very little attention seems to be paid to the principles of acoustics. We could mention several churches in the city who are faultless in architectural beauty and symmetry, and yet are so ill adapted to speaking, by their violations of all the ascertained principles of sound, that few, if any, of our ministers can fill them.

Prof. Henry, who has for several years devoted much of his time to the investigation of this subject,

before the Scientific Convention at its late session in Albany, read a very able and interesting paper, in which he gave the results of his experimenting in practical acoustics. After very succinctly reviewing the peculiarities of ancient architecture, and expressing a hope that every vestige of such architecture might be preserved with scrupulous care, he proceeded to treat of modern edifices. While the principles of sound, he said, have been studied with care for a half century, these principles have but rarely been applied to the construction of rooms, intended for public purposes. What is wanted is, a combination of scientific knowledge, the results of careful investigation, till the highest practical skill in determining the question of the application of acoustic principles to public buildings becomes necessary to institute experiments. Such experiments have been tried under his direction. One experiment proved that the voice, while a person reads a book in an open field, in the ordinary tone, is heard distinctly in front to a distance of a hundred feet, at the side to a distance of seventy-five, and in the rear to a distance of thirty feet. In experimenting in practical acoustics, it is, therefore, necessary to place the speaker opposite a wall, and to note the distance at which he ceases to take cognizance of the reflection of the sound of his voice. A wall lined with thin board will produce a reflection, loud, but short. A steel wall will produce the highest degree of resonance; so will a wall of glass. The principles of acoustics thus laid down, have been applied with success in the construction of the new lecture-room in the Smithsonian Institute. A committee, of which Prof. Henry was the hub, was charged with the duty of making this apartment as nearly perfect as a public room could be. The original plan was modified; the lower floor was forsaken, because of the heavy pillars which studded it, and an upper room was selected, into which a portion of the towers was thrown, so as to break up the sound. The speaker stands upon the rostrum in much the same position he would occupy if he stood in the mouth of a trumpet, and the rays of sound go from his lips straight forward, undivided by angles in the building. The room is one hundred feet by eighty, and fan-shaped, with a gallery in horse-shoe form, and a smaller gallery behind. In either of these latter, you may hear the slightest whisper from the stage. The walls are lath and plaster.—*Christian Intelligencer.*

From the New York Tribune.

#### COAL OIL.

The production of oil from coal is not a new discovery, but the discovery of coal beds in this country of a character to yield a sufficient amount of oil to pay the expense of extraction has but recently been made. In Scotland the Boghead Coal has for several years been used solely for distillation, being far too valuable for fuel. The oil from this coal is used upon the English and French railroads, and the demand is always in excess of the supply. Railroad managers prefer it to the best sperm oil. In Nova Scotia there is another deposit of coal at the Prince Albert Mine which also yields a good quantity of oil; and these, with the exception of the Breckinridge, are the only localities yet known where the coal yields a sufficient quantity of oil to pay the expense of manufacturing. Since the experiments of the Breckinridge Company were made with such a successful result, the whole country has been explored for oil-bearing coals, but thus far the experiments have resulted in disappointment. No coal has been yet found which could be made to yield much more than