

LIGHTNING



The earliest men must have thought that the vivid lightning flash and the roaring voice of thunder that followed it were the anger of the gods, especially when they sometimes saw other men struck and killed by lightning. In fact, lightning is a gigantic electric spark. If wires connected to the two terminals of an electric battery are brought very close together, a little spark will jump between them. Lightning flashes are enormous electric sparks jumping from one part of a thundercloud to another, or from the cloud to the ground.

Lightnings may be up to eight kilometers long, and to jump such distances they need a voltage or electrical pressure several hundred times as great as that of the electricity supplied to our houses. Scientists do not fully understand how this great electrical pressure is built up in a thundercloud. But when sufficiently charged, the thundercloud will emit a lightning flash which takes place in the form of a long spark which follows the path of least electrical resistance. It often appears as a zigzag line called forked or chain lightning, which leaps from the cloud to the ground in less than one-tenth of a second. Where it strikes the ground, solid rock may be melted by the huge power of the electrical discharge. It is

this kind of lightning that sometimes kills people. However, there is not much risk of being struck by lightning unless you are at or near the highest point in the neighborhood or are sheltered under a tall tree standing by itself. Indoors there is little risk.

Sheet lightning is a flash from one part of a thundercloud to another or from one cloud to the next. Summer lightning or heat lightning is the reflection in the clouds of flashes a long way off. The thunder that follows a lightning flash is caused by the sudden expansion of the air, since any electric spark causes a very large rise in temperature in the nearby air.

A building is not likely to be struck if protected by a lightning conductor. This device was invented in 1752 by Benjamin Franklin. It consists of a spiked metal rod fixed above the highest point of the building and connected by a copper strip to rods or wires buried in the ground. its principal function is to prevent lightning, or at any rate reduce its severity by discharging the cloud harmlessly. The spikes direct a stream of neutralizing charges at the cloud above, disarming it and rendering it harmless. If lightning does occur, the discharge will not be so strong and the metal of the conductor is an easy path to earth. Thus the electricity passes harmlessly through the conductor instead of tearing through the building.

The sparks in an electric drill or a motor car engine give out radio waves which cause interference in radio or television sets.

Lightning flashes are gigantic sparks, and so can cause interference over large distances. This is heard as scratching and

crackling sounds on a radio.

Although lightning does a great deal of damage throughout the world, it has one good effect. The flash causes the nitrogen and the oxygen in the air to combine, and when dissolved in the raindrops, they fall to the earth as natural nitrates. Nitrates are a valuable fertilizer. This means they help plants and crops to grow.

Answer the following questions using complete sentences.

1. What did early man think a thunderstorm was ?
2. When do thunderclouds send out a flash of lightning ?
3. What are some unsafe places to be at during a thunderstorm ?
4. Why do we sometimes see lightning when the weather is still fine ?
5. What causes the thunder ?
6. How does one make his home safe from lightning ?
7. Benjamin Franklin made our homes a safer place to be in. Explain.
8. Describe how a lightning conductor disarms a thundercloud.
9. Why do we sometimes hear crackling sounds on our radios ?
10. In what way is lightning a farmer's friend ?