

A Science Service Feature

Released upon receipt
but intended for use
June 22, 1933

? WHY THE WEATHER ?

Mailed June 15, 1933

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THE AUDIBILITY OF THUNDER

A good deal of mystery has been made of the fact that artillery firing can be heard at much greater distances than thunder. During the World War cannonading in Flanders was often heard in England at places 140 or 150 miles from the battlefields. Thunder is not generally audible at a greater distance than 10 or 12 miles, and hardly ever as far as 40 miles.

The mystery can be explained. In the first place, the intensity of a sound depends upon the density of the air in which it is produced and not upon that of the air in which it is heard. The air diminishes in density upward. Balloonists thousands of feet above the earth hear with remarkable clearness sounds from the ground below, but people on the ground cannot hear similar sounds from the balloon. As thunder is mainly produced at the level of the clouds, it is subject to this peculiarity.

Again cannonading is heard at great distances only when the air is comparatively calm, and perhaps only when it is arranged in well-defined horizontal layers, of such a character as to keep the sound from spreading far aloft. Very different conditions prevail during a thunderstorm. In fact the conditions are then just such as would scatter and dissipate the sound waves. Lastly, the noise of a cannon comes from a single place and the energy of the disturbance is concentrated to produce a single system of sound waves; while the disturbance due to lightning is spread over the long path of the discharge.

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