

This is a common cause of thunderstorms in some Rocky Mountain states, where lightning starts many forest fires.

Frontal thunderstorms develop in a long parade when a large mass of cold air moves into an area and wedges under a warm moist mass of air or when such moist air moves in over a cold mass of air. An up-draft is created as the warm, moist air is driven skyward, and again the three-stage development takes place. Thunderstorms formed under such conditions are common in the Midwest.

Weather scientists can predict the frontal type of storm quite accurately by charting the movements of large masses of warm and cold air. The heat type, however, is the result of more local conditions and is more difficult to forecast.

How large electrical charges build up within a thunderstorm is still not understood. An excess of electrons gathers at the base of the giant cloud, creating a strong negative charge, while at the top there is a strong positive charge.

Lightning occurs between the positive and negative portions of a cloud, between two clouds, or between a cloud and earth, equalizing charges.

Explosive Heating Causes Thunder

Thunder arises in the explosion that occurs along the path of the lightning channel. Lightning's flood of electrons heats the air in its path with sudden violence, often to temperatures of 18,000 degrees Fahrenheit. The air is forced to expand in all directions, creating booming sound waves.

A rumbling type of thunder is heard when the sound is reflected off clouds, hills and buildings, or when successive discharges or flashes occur within a giant cloud.

Because tall objects like buildings and trees attract lightning, wise homeowners install well grounded lightning rods atop their homes and wise golfers avoid hiding under trees during lightning storms.

The favorite target of lightning in the United States is the Empire State Building, which is struck as many as 68 times a year. However, a lightning rod and grounding through the steel girders protect the building and the people in it.

Some weather scientists believe that seeding cumulus clouds could keep them from growing to thunderstorm size, thus preventing lightning flashes. This belief is now being tested in the Northwest by the U.S. Weather Bureau and the Forest Service in a seeding program called Project Skyfire.

In addition to especially equipped observer planes and radar, weather scientists are using special "sferics" receivers that pick up some of the electromagnetic waves radiated by lightning. These receivers are enabling researchers to pinpoint areas of unusually great lightning in Montana, Wyoming and Idaho.

Similar equipment also is being used by the U.S. Weather Bureau to watch thunderstorms in the Midwest.

Producing many small clouds instead of one large one by seeding would not only reduce the chances of destructive lightning but also of hail, which falls only from towering cumulonimbus clouds.

• Science News Letter, 85:362 June 6, 1964

ORNITHOLOGY

Whooping Cranes Summering in Canada

➤ WHOOPING CRANE number 32 has departed for his summer vacation in Canada.

The last of the wild flock to leave the sunny refuge in Texas, this crane had been hanging around by himself for about two weeks, a Fish and Wildlife expert reported in Washington, D. C.

The first of the wild flock of the great white birds left the Aransas National Wildlife Refuge on the Texas coast around April 10. Since then the rare birds have been taking off singly or in groups of two or three for their spectacular 2,500-mile flight up the middle of the United States to their summer refuge near Great Slave Lake, Canada.

This long flight usually takes from two to three weeks, during which time hunters along their route are warned not to shoot or harm the birds which have been on the edge of extinction for many years.

Whooping cranes fly north in the spring to their summer camping grounds where they nest and produce their young. Then each autumn, as the icy winds get stronger, the handsome tall birds make their long journey back to Texas.

Every once in a while, some of the birds stay throughout the summer in Texas, reported the Wildlife official. Four of them stayed during the summer of 1946, and during the past few years it is not unusual to have one or two stay behind. Reasons vary as to why the birds do not migrate. It might be a wing injury or some other factor.

Because of the precarious state of the existence of these beloved creatures, tallest of the American birds, scientists are reluctant to molest them in any way or track them down. Flights of other birds can be tracked by placing small radio devices on their bodies and tracing their progress by the signals. But not on whoopers, said the official. We do as much as possible to keep man and civilization from interrupting their lives.

An unhappy setback to the nation's bird lovers came when Zoe, an 18-day old baby whooper died at San Antonio, Texas, of an apparent pulmonary failure. Hopes had been high for wildlife officials to start with Zoe and build up a flock of captive whooping cranes which would gradually be released to the wild flock. There now are seven captive whoopers, all in the New Orleans zoo.

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Do You Know?

A new 40mm grenade launcher enables an infantryman to fire as many as 250 explosive shells per minute.

Risk of *bacteremia* in patients with rheumatic heart disease may be decreased by selecting dental procedures that are least likely to introduce microorganisms into the blood.

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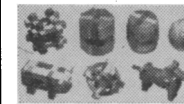
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