

## WEATHER

# Cloud Seeding Debated

Scientists at the U. S. Weather Bureau report research results showing that the chances for rain from warm and supercooled clouds are greatest when the air is clean.

➤ WEATHERMEN are debating if indiscriminate cloud seeding on a large scale during the past five years could have caused the worst drought of recent times in the Midwest and Southwest.

Basis of the debate is a scientific report to the National Academy of Sciences meeting in Washington by Dr. Ross Gunn of the U. S. Weather Bureau. He finds that the cleaner air is, the better are the chances of rain from warm and supercooled clouds.

For many years cloud seeders have claimed they can increase rainfall by throwing into the air certain chemicals around which raindrops form. The idea is to add to the number of tiny particles normally present, thus causing more rain.

Now it seems such operations might actually have been inhibiting rainfall, and might have caused recent severe droughts.

Dr. F. W. Reichelderfer, Weather Bureau chief, urged that hit-or-miss cloud seeding be discontinued immediately until new studies are completed.

When questioned concerning the implications of Dr. Gunn's report, he said, "more research of a thorough and fundamental nature on cloud physics is urgently required."

Dr. Reichelderfer said he did not be-

lieve cloud seeding caused the drought, but noted that Dr. Gunn's report suggested contaminating particles in the atmosphere may decrease rainfall.

Dr. Gunn's studies, made in a 60-foot expansion sphere in Texas, show the size of newly formed cloud droplets depend critically on the air's cleanliness, clean air giving more rain. Droplets formed in dirty air are too small to grow, but if the air is sufficiently clean, droplets large enough to fall as rain are "immediately formed by condensation."

This contradicts the idea of adding particles to increase rainfall as cloud seeders have done.

Dr. Gunn concludes that pollution is swept out of the atmosphere during periods of general cloudiness and precipitation, thus reducing the number of particles present. Droplets formed thereafter can then grow still larger, increasing the chances of appreciable precipitation.

"The rain-producing cycle is, therefore," Dr. Gunn reported to the Academy, "provided with a feedback or regenerative mechanism which usually proceeds in a given mass of air until the air is appreciably dessicated (dried)."

The particles around which raindrops

and water vapor form usually accumulate in fair weather. The presence of these particles may delay rainfall until the clouds become sufficiently unstable so that the overlying clean layers are lifted or cooled. Then the precipitation cycle may be re-established, Dr. Gunn concluded.

Byron B. Phillips, also of the Weather Bureau, cooperated in the research.

Science News Letter, May 4, 1957

## CHEMISTRY

## Credit Pliny With First Chemical Test

➤ A ROMAN SCHOLAR, Pliny, has been credited with developing the oldest recorded test for a chemical element more than 2,000 years ago. Dr. John H. Yoe of the University of Virginia credited his early fellow chemist with devising a test for iron in sugar.

Pliny's test, Dr. Yoe pointed out at the American Chemical Society meeting in Miami, is the first known instance of the use of colorimetric analysis.

As a "reagent," or chemical detective, Pliny used a piece of papyrus soaked in a watery extract of gallnuts. When dipped in vinegar, Dr. Yoe explained, the papyrus turned dark blue or black if iron was present.

"This seems to be the first chemical reagent on record and, although now more than 20 centuries old, it still may be used for the detection of iron in vinegar and other liquids, though filter papers, rags, or wood shavings have replaced the ancient papyrus," Dr. Yoe said.

Science News Letter, May 4, 1957

## PALEONTOLOGY

## Rare Fossil Egg Acquired By American Museum

➤ AN EGG laid about 120 million years ago by a sauropod dinosaur, thought to be one of the largest animals ever to walk on land, has been acquired by the American Museum of Natural History, New York. It is the only such egg in the Western Hemisphere.

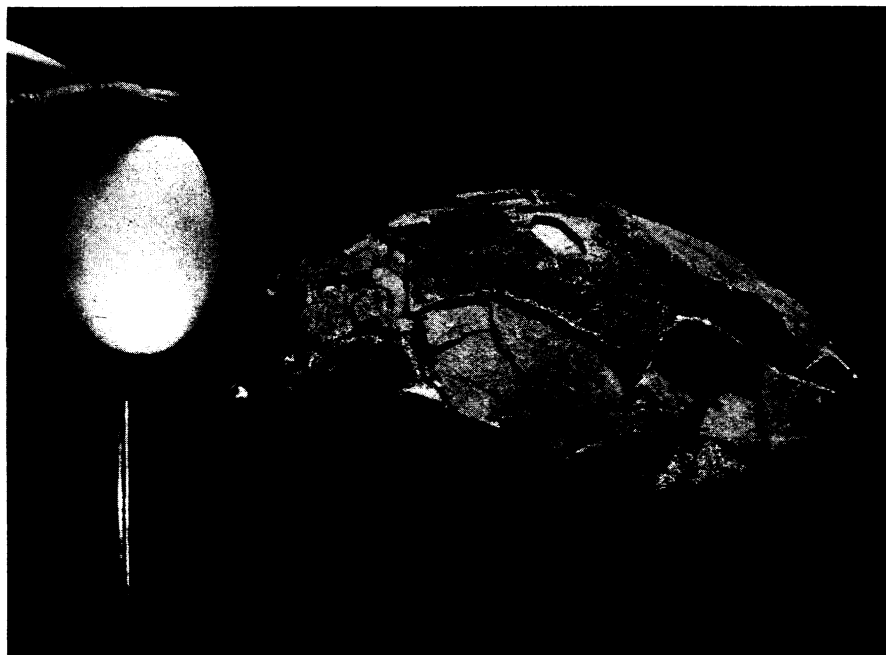
The rare fossil egg, described by Museum curator Dr. Edwin H. Colbert as "about twice the size of an ostrich egg," will be on exhibit at the Museum during the summer.

It has been attributed to the dinosaur *Hypselosaurus priscus*.

The inner parts of the egg are perfectly preserved and part of the shell has been retained.

One of several discovered at Aix, France, in 1869, the egg was given to this Museum by the Museum of Natural History, Aix, in exchange for an egg of an early horned dinosaur called *Protoceratops*. The horned dinosaur egg was one of a group found by an American expedition in Outer Mongolia during the 1920s.

Science News Letter, May 4, 1957



**FOSSIL EGG**—The large size of the rare dinosaur egg acquired by the American Museum of Natural History is apparent when it is compared with an ordinary hen's egg. The fossil egg is slightly crushed and flattened.