

## GEOLOGY

# Great California Storm Changed Geography

**T**HE GREAT California storm that recently wrought havoc with the works of man, washing away houses, ruining streets, burying automobiles in mud, etc., brought notable changes also to the natural formations along the coast. These have been observed with a scientific eye by Prof. Francis P. Shepard, geologist of the University of Illinois.

"Most of the small intermittent streams which come down from the Santa Monica Mountains into the ocean near the city of Santa Monica," Prof. Shepard states, "are unable to build deltas during ordinary rainy periods because the waves remove the debris almost as fast as it is carried to the sea. The recent unprecedented rains, however, produced such excessive wash that the waves were unable to cope with it and sizable deltas were built during this short period.

"The deltas extend somewhat more to the south of the stream mouths than to the north despite the southerly winds which prevailed during the rain storm. It appears that some counter-current must have developed along the coast.

"Samples of the river water during the storm revealed large percentages of fine sediment, and the ocean water along the shore contained almost as much of this silt and clay. Examination of the deltas at low tide after the storm was over showed that the sediment was entirely sand and gravel, indicating that the fine sediments had been carried out to sea by the waves. This muddy material continued to discolor the water for some time and interfered with fishing miles from the shore.

"Where Beverly Boulevard comes down to the sea through a notch in the high coastal terrace west of Santa Monica, a flood of water 100 feet across and four feet deep swept over the road, in some places burying it deep in debris and elsewhere taking great gouges out of the slab. Where this flood crossed the Coast Highway and spilled over the bank into the ocean a narrow ditch was turned into a complex series of amphitheaters 100 feet or more in breadth, and great mudflows carried away the foundation of the margin of the road. This material eroded at this point was

mostly fine and when it was swept into the sea the waves carried it away, leaving only scattered boulders and vast quantities of driftwood on the beach.

"The Coast Highway which extends west from Santa Monica along the base of the mountains has been built in some places along the base of wave-cut cliffs which were abandoned by the sea through the forming of a wave-built beach at their base. The cliffs are almost vertical and are formed on unconsolidated sand and gravel.

"Many homes are located at the tops of these cliffs and at the tops of similar cliffs on the sides of Santa Monica Canyon. It might have been supposed that these precariously located residences would have been endangered by landslides from saturated ground, but these cliffs have had only negligible effects from the rain.

"On the other hand, the road cuts in solid, but weak rock along the Coast Highway were greatly eroded. . ."

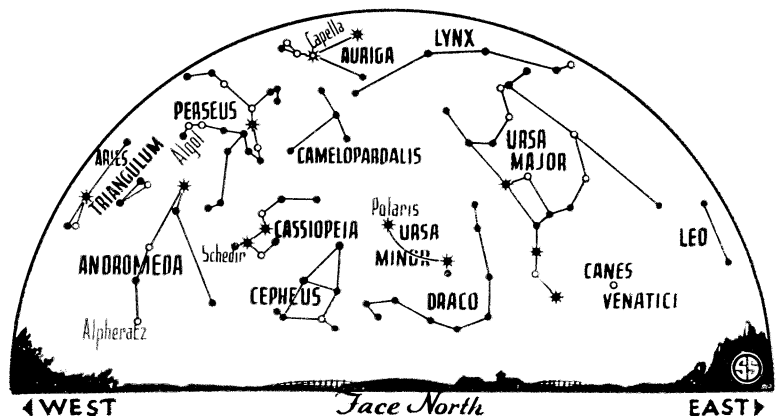
*Science News Letter, February 3, 1934*

## METEOROLOGY

## Sunspot Storms May Lighten Air

**G**REATER storminess in the earth's atmosphere, known to accompany an increase in sunspot numbers, may give us lighter air to breathe, through the stirring up of the air strata.

☼ \* ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



Passing months bring the "Great Dipper" of Ursa Major higher into the sky. It and other stars and constellations of the maps appear as represented about 10 p. m. on the first of the month, 9 p. m. on the 15th and 8 p. m. on the 30th.

This suggestion is contained in a communication by L. W. Tilton, of the National Bureau of Standards, to *Nature*. The refractivity of the air, or its power of bending a ray of light, is greater when sunspots and storms are fewer, Mr. Tilton says. Other things being equal, increased refractivity means greater density. He therefore suggests as a possible explanation that when the atmosphere is calm over long periods, certain denser components of the atmosphere, perhaps associated molecules or isotopes, settle down in greater numbers and produce at the earth's surface a gaseous mixture having a slightly higher index of refraction.

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## ORNITHOLOGY

## Poisoning of Ducks With Phosphorus Stopped

**B**OMBS of fiery phosphorus, exploded merely for testing purposes at the Army Proving Ground at Aberdeen, Md., have been causing thousands of unintended casualties; but these are now to be stopped. The casualties have been ducks, especially the precious canvasbacks, shovelling for food in the mud where lurked unburned fragments of the poisonous element from exploded test bombs.

Cessation of the destruction has been brought about through the necessity for dredging up part of the shallow bottom, to make an addition to the airplane landing field. In doing this work, the War Department is receiving the scientific cooperation of the bureau of biological survey, U. S. Department of Agriculture.

*Science News Letter, February 3, 1934*