

SUNSPOT CREDITED WITH RAIL TIE-UP

New York Central Signal System Put Out of Service by Play of Northern Lights.

The sunspot which caused the brilliant aurora borealis on Saturday night and the worst electrical disturbance in memory on the telegraph systems was credited with an unprecedented thing at 7:04 o'clock yesterday morning, when the entire signal and switching system of the New York Central Railroad below 125th Street was put out of operation, followed by a fire in the control tower at Fifty-seventh Street and Park Avenue.

This is the first time that a sunspot has been blamed for such a piece of mischief. From other accounts it appeared that the electrical disturbance on the sun and its varied effects on earth were of a severe kind, which occurs only a few times in a century. Other memorable electrical storms coincident with the discovery of sunspots occurred on Sept. 1, 1859; Aug. 3, 1887, and in September, 1909.

The interruption of the signal switching system was reported to have been due to a ground current, one of the disturbances accompanying the electrical storm, between Fifty-seventh Street and the Grand Central Station. The automatic signaling and switching devices and the telephone and telegraph systems of the roads immediately stopped. Fumes came from the insulation of electrical wires in the tower, and dense smoke followed.

Disturbs Park Avenue Residents.

While all outgoing and incoming trains were stopped, the Fire Department extinguished the fire in the tower, but not until the residents of many Park Avenue apartment houses were coughing and choking from the suffocating vapors which spread for blocks.

While repair work was being done on the electrical system, the switches were turned by hand and trains rolled in and out of the station, half an hour or more late. The Grand Central Station in the meantime had become crowded by thousands.

The brilliant sky effects continued all Saturday night and were visible at dawn yesterday. Sunrise drowned them out. Beautiful effects preceded the break of day. The aurora borealis, which had draped the heavens in varying tints despite the bright moonlight, held its own easily against the first glow in the east. As the glow grew brighter the shimmering streamers and sheets of pink, yellow, orange and faint violet seemed to coalesce into a steel-colored arch, extending from horizon to horizon, shaking and vibrating, growing dim for a time and then standing out distinctly again.

The steel color faded into a pale yellow, which spread itself with the characteristic trembling, wavy effect of the aurora borealis over the whole vault of the sky. An orange shade began to rise above the glow of the dawn. Cloudy formations of the orange tint gradually swept over the stiff curtains of yellow. Then the sun's rim appeared and washed all the strange dyes out of the heavens.

Solar Explosion Bombards Earth.

What happened, according to the prevailing sunspot theory, is that an explosion in the sun bombarded the solar system with countless billions of electrical particles, which became brilliantly visible as they were being caught by the earth. While the electrical cloud formations seemed in open places like Central Park to be only a few hundred feet high and the streamers of light seemed to be plunging into the treetops, the lights were probably a greater distance away.

Experiments have indicated that the auroral effects extend from a few hundred yards above the earth to a distance of 80 or 100 miles. The ground currents and atmospheric "strays" which put electrical systems out of

commission are supposed to be electricity arriving here directly from the sun—an eight-minute journey for an electrical current.

The last great electrical storm of this kind occurred on Sept. 25, 1909. Its effects were spread pretty well over the earth. It was observed as far south from the North Pole as Northern Italy, and as far north from the South Pole as Australia and South Africa. Sir Oliver Lodge wrote the following explanation of that one:

"The cosmic electric-magnetic disturbance such as the earth experienced on Saturday is now believed to be due to solar radio-activity. For in addition to its ordinary radiation on which the earth entirely depends, the sun is at times technically radio-active, and the eruption not only produces sunspots, but also expels crowds of electrons, which fly at prodigious speed in straight lines after the manner of the Beta rays of radium.

Magnetic Needles Deflected.

"Whenever the atoms of these minute electrified projectiles rush past the earth, as they do at the rate of some thousand miles a second, they constitute a powerful electric current and are liable to deflect magnetic needles.

"Some of them, however, as in the recent case, actually encounter the earth's atmosphere, and they mostly deflect to the Poles. Some of them, especially at times of the equinox, may come down near the Equator. Those which journey to the Poles are accompanied by a current in the crust of the earth from the Equator to the Poles, and this it is which disturbs the telegraphs, being picked out or tapped by them en route. They also produce auroras in the neighborhood of the Poles."

F. W. Henkel, in "Weather Science," says of the auroras:

"They have some unknown connection with the outbursts on the sun, the appearance of large sunspots and unusually bright prominences occurring simultaneously as auroras and magnetic storms on the earth.

"This has been strikingly shown on various occasions. On the afternoon of Sept. 1, 1859, Messrs. Carrington and Hudson, observing the sun simultaneously, saw two luminous objects make their appearance on the disk at the edge of a great sunspot of a brightness at least five or six times that of the neighboring regions on the solar surface 'photosphere.' These objects moved about 36,000 miles in five minutes and then disappeared. A great magnetic storm, and brilliant aurora followed on the same night."

Obscure Question of Astronomers.

The origin of the sun spots is one of the obscure questions of astronomy. It is usually supposed to be some sort of explosion of gases. The present spot is about twelve times the diameter of the earth in length and about three times its width. Whether the spot is a depression in the surface of the sun is undetermined, despite many attempts to solve the question.

The sun spots are believed to have an important effect on weather conditions here. Weather predictions are sent out from the Santa Clara Observatory, based on the expected effects of the sun spots on atmospheric conditions on the earth. The Weather Bureau at Washington has made exhaustive studies of the subject, but does not attempt as yet to make practical use of the sun spot theory in predicting weather.

The connection between sunspots and auroral displays has long been known, although clear-cut cases in which the eruption of sunspots has been followed by great auroras and electrical storms have been few. One of the connections is that the number of sunspots increase and decline in a regular order over periods of between ten and eleven years. Auroras do the same. The years when there are the most sunspots are the years when there are the most auroras and the years when there are the fewest sunspots are the years when there are the fewest auroras.

What causes the explosions in the sun, if they are explosions, is unknown, but one theory prominently advanced in recent years is that the planets have some connection with the sunspots. Some spots disappear in a short time. Some have remained visible for eighteen months. By telescope the spots are seen to be whirling, sometimes to the left and sometimes to the right.