



#### CAUSE OF AURORA

*This most unusual group of sunspots travelling over the face of the sun caused H. W. Wells of the Carnegie Institution of Washington to predict, two days in advance, the beautiful display of northern lights that glorified the heavens on September 18. This photograph was taken at the U. S. Naval Observatory on September 16.*

#### PHYSICS

## Brilliant Aurora Display Predicted Two Days Ahead

### Tremendous Exploding Sunspots in Unusually Large Group Gave Warning of Disruption of Radio Reception

ONE of the most brilliant displays of northern lights on scientific record was predicted two days before it occurred on Thursday, Sept. 18.

Studying the formation of sunspots as reported by the U. S. Naval Observatory, H. W. Wells of the Department of Terrestrial Magnetism of the Carnegie Institute of Washington on Tuesday concluded that there was to be a display of aurora. He made the prediction to Dr. John A. Fleming, head of the laboratory, and through government agencies a number of observing stations,

some as far away as Alaska, were asked to be on the alert.

The Cheltenham, Md., magnetic station of the U. S. Coast and Geodetic Survey was also enlisted. Early Thursday morning one of the most violent magnetic storms on record began.

Covering the whole sky with moving sheets and streamers of transparent light, some of it green and pink, the great aurora of September 18, as it will be known historically, provided a most spectacular sky sight at Washington, the waves of light seemed to be coming

from directly overhead, forming a great corona. There was a greenish haze over the sky as the lights flashed on and off as though a master electrician were painting a scene with cosmic flood light. Backgrounding the aurora were the stars which seemed even more brilliant than ever in the transparent sky.

Tremendous exploding sunspots caused the heavenly display, although the spectacle of the aurora itself originates only about 50 to 80 miles above the earth. Particles emitted from the sun at tremendous speeds take about 2 days to travel to earth, smashing into atmospheric atoms and molecules, mostly oxygen and nitrogen, stripping them of their outer electrons and causing them to luminesce. Scientists in laboratories can duplicate on a small scale this phenomenon. For details on the aurora, see *SNL*, Sept. 20, p. 187.

When sunspots in passing over the center of the sun are rapidly growing in area, then Mr. Wells finds that atmospheric disturbances accompanied by bad radio reception, magnetic storms that disrupt wire communications, and aurora may be expected.

Dr. Harlow Shapley, director of Harvard College Observatory, pronounced the display as seen from Cambridge the most brilliant seen there, equalling northern lights seen in much more northern latitudes. At Mt. Wilson Observatory, Calif., a red aurora was observed.

Observed by millions, the aurora excited wonder and admiration. Telephone calls flooded observatories, scientific institutions and newspaper offices.

*Science News Letter, September 27, 1941*

By increasing efficiency of maintaining and firing furnaces, home owners and operators of apartments and office buildings can save more than \$150,000,000 in fuel bills a year, says the Bureau of Mines.

In the present war, Belgium's University of *Louvain* has been so damaged that only 15,000 volumes in a library of 900,000 are left intact.

The first *mink* raised on ranches in the United States yielded inferior pelts, but now mink furs from farms tend to be superior to wild mink.

About 5,500 pounds of *silkworm* are used each year by one electric company as wire covering in radio, meter, and small instrument coils, but nylon or rayon can be used when present stocks are gone.