

**PROJECT 10073 RECORD CARD**

1. DATE <i>6</i> November 1957	2. LOCATION Over Pennsylvania	12. CONCLUSIONS <input type="checkbox"/> Was Balloon <input type="checkbox"/> Probably Balloon <input type="checkbox"/> Possibly Balloon  <input type="checkbox"/> Was Aircraft <input type="checkbox"/> Probably Aircraft <input type="checkbox"/> Possibly Aircraft  <input type="checkbox"/> Was Astronomical <input checked="" type="checkbox"/> Probably Astronomical <b>Aurora</b> <input type="checkbox"/> Possibly Astronomical  <input type="checkbox"/> Other _____ <input type="checkbox"/> Insufficient Data for Evaluation <input type="checkbox"/> Unknown
3. DATE-TIME GROUP Local <i>6</i> 2040Z GMDT	4. TYPE OF OBSERVATION <input checked="" type="checkbox"/> Ground-Visual <input type="checkbox"/> Ground-Radar <input type="checkbox"/> Air-Visual <input type="checkbox"/> Air-Intercept Radar	
5. PHOTOS <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. SOURCE Civilian	
7. LENGTH OF OBSERVATION Not given	8. NUMBER OF OBJECTS 1	9. COURSE SW
10. BRIEF SUMMARY OF SIGHTING <i>S.</i> Bright lights changing color, white to amber to red, traveling SW with great speed. White on top, red on bottom.		11. COMMENTS Probably Aurora Borealis.

6 November 1957 Aurora(21 Cases)

the aurora was visible over most of the central United States. At that time the principal displays were in the northern sky, but the aurora moved southward during the night and reached its maximum over the center of the forms of the sun at the edge of the horizon at 10:30 p.m. By 10 o'clock the display had disappeared." Other Northern Hemisphere observers favorably commented on the display. Mr. A. E. Schell, of Wausau, Wisconsin, observed at Glacier Park, Montana, that northern lights "filled the entire sky. He tells us the bright beams reached directly to the zenith, and the constellations Lyra and Perseus were completely obscured by the display. The degree of convergence was dark blue, appearing much like an open eye with a black node in the top. The rays were separated at least 15 degrees from each other. Although remaining relatively stable, these features alternated and brightened."

Mrs. Frank Shunk and R. J. Welch, of Cedar Rapids, Iowa, also described the September 11th display as "one of the best displays seen this year." They noted that "at seven minutes past 10 o'clock the display reached the zenith, and continued to increase until about 10:30 p.m. The display was so brilliant that it was possible to see the stars in the southern sky, and the display was visible in the north as far as the horizon."

On the 12th, the aurora was still prominent, though the northern sky was no longer as brilliant near Cepheus as on the 11th. Mr. Welch noted a "bright aurora that appeared by rapid pulsations." Mr. Frencken, of Hinsdale, Illinois, watched from 8:30 to 10:30 p.m. until the display's climax two

very large and bright red patches formed in the east and west.

Other reports of September 11th have been received from C. F. Orr, Norwalk, Wisconsin; L. Alexoff, Madison, Wisconsin; T. V. Lynden, St. Bernard, Ohio, and R. R. Powell, Lawrence, Kansas.

Auroral activity continued at a high level throughout the month. Another bright display was observed only four days

later on the 15th, when Mr. Feibelman took his pictures.

The next night, September 16th, the stage of development of the second major lower aurora at Pittsburgh was photographed by Mr. Feibelman for more than an hour.

Chris Schell saw two auroras during the month, one on the morning of September 2nd from Elizabethtown, New York, the other

**The September 11th**  
aurora was so bright at  
Pittsburgh that Walter  
A. Feibelman's photo-  
graph, at 11:03 p.m.  
EST, shows the rayed  
structure very distinct-  
ly, despite the interfe-  
rence by clouds and  
bright moonlight. Mr.  
Feibelman noted that  
maximum auroral in-  
tensity occurred near  
10:50 or 10:55 p.m.  
Some of his pictures  
record rayed arcs with  
the parallel rays very  
thin and numerous. As  
seen elsewhere under  
better sky conditions,  
this display was among  
the most extraordinary  
in years.

after full moon by Walter A. Feibelman, who makes systematic photographic records at Pittsburgh, Pennsylvania, in cooperation with the IGY Auroral Data Center at Cornell University. He commented on the wide extent of this aurora, reaching far into the west and southwest. A bright red spot appeared near the close of the display.

A noteworthy auroral storm on the night of September 22-23, widely seen over the United States, is discussed by James E. McDonald in his article on page 14. R. E. Morehead, at Des Moines, Iowa, describes this aurora as consisting of rays converging on the zenith, some extending down nearly to the southern horizon. Almost half the sky was brilliant red at the height of the display, a few rays appearing almost blood red; in the northern sky, however, the forms were mainly greenish white.

On the West Coast, at Vancouver, British Columbia, Terry Taylor watched the peak of the September 22nd display at 8:50 p.m. Pacific standard time. He writes, "The corona had grown into a spectacular red-and-white whirlpool of milky light, with a clear spot in the center. Bright rays covered over 75 per cent of the sky, nearly obliterating the 2nd-magnitude stars in Cassiopeia. In the densest

September 29th from Pittsfield, Massachusetts. The latter was noted with formations with strong red patches.

The northern lights reported here can at best comprise only a small part of the total auroral activity during this memorable month, for they are merely a sampling from a limited geographical area. Only when systematic records of the world-wide auroral program have been analyzed will the over-all story be learned.

#### COMET MRKOS AND SOLAR ACTIVITY

Recent photographs of Comet Mrkos, according to astronomers at Herkies Observatory, show the occurrence in its tail of irregular, changing patches of light. These patches are composed of ionized gases, whose luminosity is caused by jets of fast-moving electrons, protons, and alpha particles ejected from the sun. Similar streams of solar corpuscular radiation that collide with the earth are responsible for the bright northern lights observed during the present peak of the 11-year cycle of solar activity.

Comet Mrkos is the object that was so conspicuous during August, but its rapid recession from the sun has now carried it into the southern sky, where it is very faint.

September 1-5, and The Great Aurora  
Sept. 22-23 September 1957

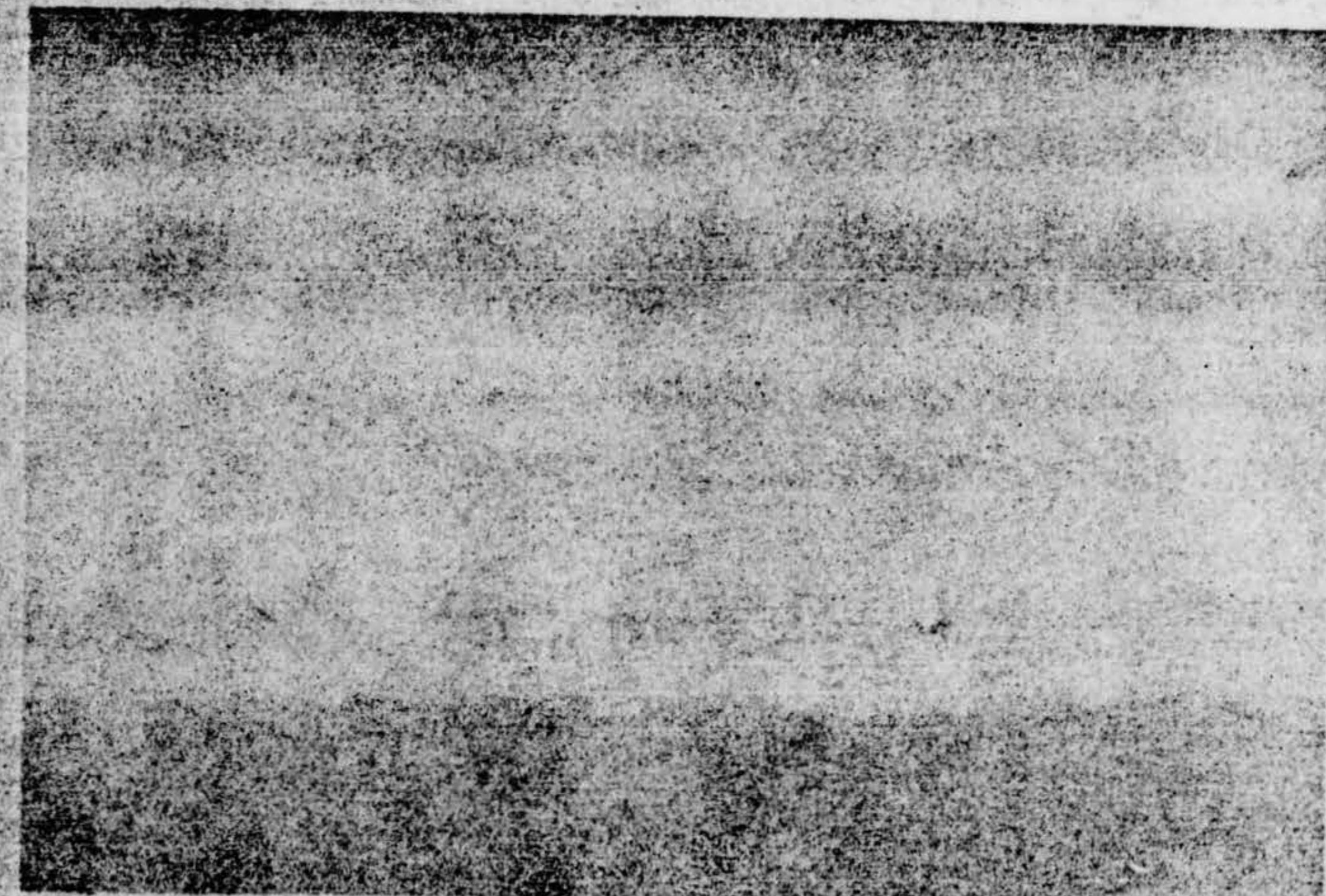


### SEPTEMBER AURORAE

DURING the great September naval maneuvers conducted in the North Atlantic by the combined fleets of the N.A.T.O. powers, much difficulty was encountered in maintaining radio communications. This was a consequence of the intense solar activity which had reached high levels during the previous month. Several disturbances of the earth's ionosphere and magnetosphere were recorded, and it is believed that they contributed to the communication difficulties.

In other parts of the country during September a series of northern lights. The month was in its opening hours when Theodore L. Agos, of Worcester, Massachusetts, secured the pictures reproduced here, of a very brilliant display seen low in the northern sky from the summit of Mt. Wachusett.

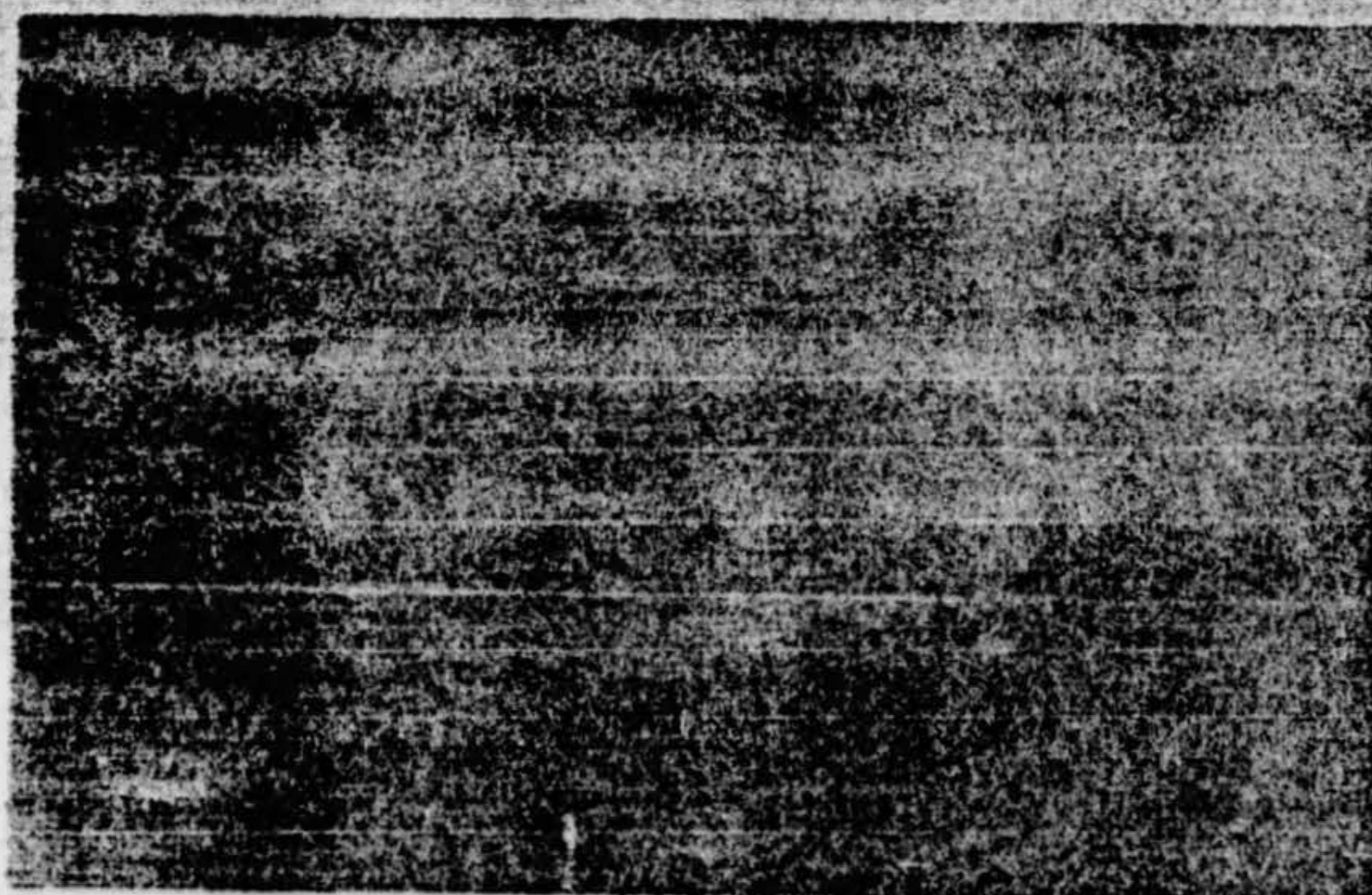
He pointed his Super Ikonta B camera in the directions northwest, north-north-west, and north. By means of such star-



groups as the Big Dipper, the pictures have been matched in azimuth, to make evident the pronounced changes in position and form of the auroral features in

Above and right: Three views of the fine northern lights on September 1st, photographed about 12:30 a.m. EST by T. L. Agos in central Massachusetts. He used an f/2.8 lens and Kodak Royal-X Pan 120 roll film. The nearly horizontal handle of the Big Dipper appears at the right in the second picture and the bowl is in the third picture.

Left: On September 1st, about 3 o'clock in the morning, A. J. Morehouse at Battle Creek, Michigan, secured this one-minute exposure on Tri-X film at f/4.5. He pointed his Kodamatic camera 20 degrees up the northwestern sky.



the intervals between the two-minute exposures.

Another reader of this magazine, Dr. J. R. Otopalik, reports a spectacular aurora at Greeley, Colorado, two mornings later, about 3 a.m. Mountain standard time on September 3rd. From the northern quarter of the horizon, greenish-white rays extended 70 degrees up the sky with the rising flashes that characterize a dancing aurora. A photograph of this same event, by A. J. Morehouse at Battle Creek, Michigan, is shown on this page.

Both of these displays were dwarfed by the widespread auroral storm on the evening of September 4th, which was extremely brilliant despite the presence in the sky of the moon only four days before its full phase. This display is perhaps to be classed with the greatest aurorae of the past few decades. From as far south as Batesville, Arkansas, J. R. Wright reports:

"I first noticed the spectacle as a yellow