

Snowburst: A 1974 Oswego Special

by

Robert B. Sykes, Jr.*

For the 1972 meeting of the Eastern Snow Conference the weather at Oswego, New York blossomed into an interesting although expected blizzard-burst. This incident, while timely for the devoted weather specialists among the Conference attendees, was but one of a series of local major weather events during the latter half of the winter for 1971-72. (Sykes, 1972, pp. 2-7.) As though to rest, the following winter of 1972-73 turned out to be rather mild generally in almost all aspects around the Oswego Area. To some extent here the winter of 1973-74 showed some surprising and distressing parallels. However, the winter turned out when considered in its entirety, somewhat colder than normal and with heavier than normal snowfall. Yet, in comparison to recent winters beginning in 1969 it was rather mild, especially in regard to seasonal snowfall amounts. (Sykes, 1972, pp. 32-46.) However, a 17-hour period during the 13th of January ending near 1700 produced an exceptional amount of snowfall over a rather small area. The incident was a superb example of one of the very local snowband developments. New snowfall amounts are shown in Figure 1.

While the available data were insufficient to compile an accurate snowfall isopleth chart, indications as shown by sketched-in lines are that a land area of some 15 miles long by about half as wide received new snowfall in excess of 30 inches during this comparatively short period. Parts of the area (including Southwest Oswego) even stopped snowing for anywhere from around 1½ to 3 hours, yet received near to, or even over 30 inches. The snowfall amounts from the Nine Mile Point Area southward to Fulton were carefully obtained by an experienced mobile reconnaissance team. The measurements are believed to be reliable for new ground snowcover conditions near the end of the storm in that area. The amounts in Oswego City near Route 104 were also carefully obtained as were the rather large amounts in Southwest Oswego close to Route 104. Moving eastward from Southwest Oswego, the apparent drop-off may in fact not be quite as sharp as indicated since the 36 inch amount represents an average of perhaps four individual measurements made after snowfall stopped. While the observer, Dr. Tony VanGeet from the College (SUCO), is not a meteorologist, he is an experienced scientist. He believes that new snowfall depths of 36 to 40 inches were representative of new snowfall measurements for his area. The 48+ inch amounts to the south of Oswego were not measured by experienced weather

*Associate Professor, Department of Earth Sciences
State University College at Oswego, Oswego, New York

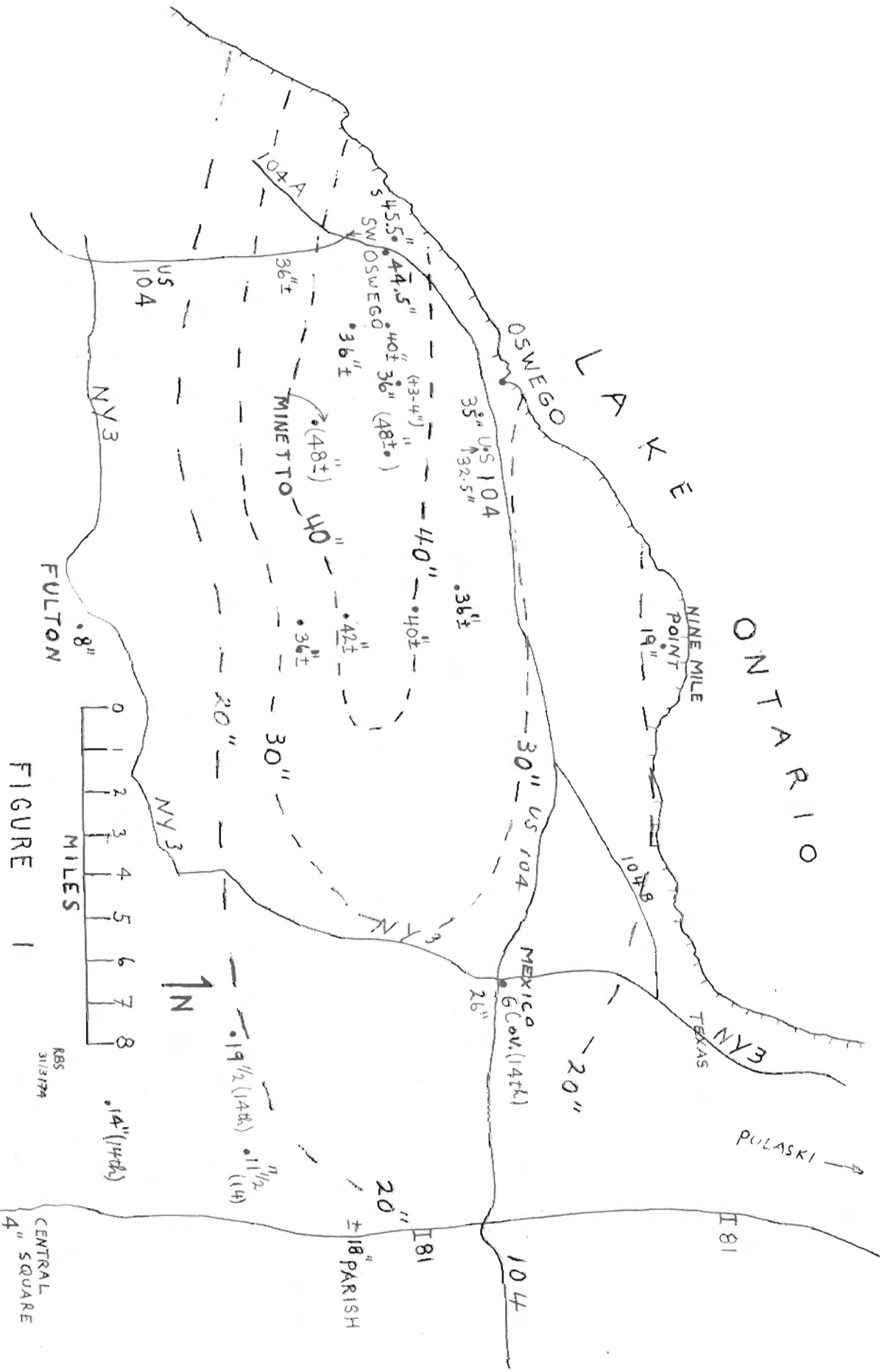


FIGURE 1

personnel. However, these persons are well acquainted with snowfall problems and are long-time members of the community. They are not prone to exaggeration on such matters.

Thus, Figure 1 suggests a rather heavy snowfall area with a predominately west-to-east axis from the vicinity of Southwest Oswego toward the Village of Mexico. The central parts of this area appear to have had snow continuously although with some intensity variations. The northern and southern edges appear to have had some breaks in the heavy snowfall conditions related to some oscillatory movements of the band, northward and southward. Some ground snowcover depth measurements made during a return visit on 14 January are also shown and identified in the Figure.

A typical weather condition report during much of the 17-hour storm period at Southwest Oswego is illustrated from the extracted 1200 report:

Sky obscured in very heavy snow; visibility due to falling snow averaging between 0.02 and 0.03 miles (roughly 100 to 150 feet); wind averaging in direction from about 250° (WSW) at a speed near 10 mph at the standard elevation of 10 meters (near 32 feet); surface wind of only 3 to 5 miles-per-hour; no significant drifting of surface snowcover occurring; atmospheric pressure of 30.53 inches of mercury reduced to sea level, and steady (very high for the area for this kind of heavy snowfall situation); temperature 16.5°F; relative humidity near 100%; snowflakes averaging between 3/8 and 1/2 inch in size to the extent of 60 to 70% of snow in the air; snowflakes clumped and showing moderately heavy riming; and, the rate of snowfall measured at, at least 4 inches per hour.

Figure 2 is a table of snowfall measurements made to a snowboard at Southwest Oswego. Some notes accompany the table.

During the 1973-74 snowfall season we continued, but on a reduced scale, our snowfall studies which were initiated during the International Field Year Great Lakes (IFYGL) in connection with the Oswego Area Weather Radar. Accordingly, an experienced team of Mr. Paul Cardinali and his student assistant, Mr. Randall Baxter, of the Central Square School System performed some mobile reconnaissance from the Central Square - Fulton areas northward to the vicinity of the Nine Mile Point. Regular mobile telephone communications were maintained with the author who was unfortunately immobilized due to faulty car window wiping equipment. Some of the snowfall measurements from the reconnaissance are plotted on Figure 1 from Nine Mile Point southward. Their measurements along the transect with repeat visits to stations previously measured, indicated snowfall rates between 7 and 8 inches per hour and upwards near the center of the band.

FIGURE 2

<u>DATE</u>	<u>PERIOD</u>	<u>INCHES</u>	<u>ACCUMULATED AMOUNTS</u>
1-13-74	0000 - 0500	10+	
	0500 - 0700	* 0.5+	*10.5
	0700 - 1000	8	18.5
	1000 - 1100	4.5	23
	1100 - 1200	4	27
	1200 - 1300	6.25	33.25
	1300 - 1400	4.15	37.4
	1400 - 1500	2.6	40.0
	1500 - 1600	4.2	44.2
	1600 - 1700	1.3	45.5

NOTES:

1. Snowfall to 0500 measured at 0500 to ground and on car roof. Amounts varied from 9.5 to 10 inches of new fall. Close to 10 inches appeared reasonable.
- 2.* Amount from 0500 to 0700 was estimated, since field trip activity was accomplished during period. Snow nearly stopped. The band which produced most of the earlier heavy amount appeared to have moved northward as observed partly during the abortive field trip. But another band may have started forming to the south although insufficient evidence was available for precise determinations. Wind conditions right at the surface had increased slightly with resultant slight drifting. The amount of 0.5 inches is believed conservative.
3. Subsequent snowfall depth amounts were made to snowboards. Several measurements were made each time. The figures used represented the conservative side of the average due in part to the angles at which the readings were made. Author's visibility-snowflake size rate of snowfall method was not used.
4. The final column tallies the measured amounts, not the ground snow-cover totals.

Figure 3 is a photograph by Mr. Cardinali of Randy Baxter as he emerged from one of the deep new snowfall measurement sites in a protected but not drifted location. The depth of the snowfall into which he had struggled is clearly indicated by the "snowline" still appearing on his jacket. Considering that his normal height in stocking feet is about 6 foot 2 inches and that he is undoubtedly standing on at least 4 to 6 inches of snowfall compacted under his feet, it is evident that he is in snow of considerable depth. While there were apparently somewhere around 4 to 6 inches of old snowfall on the ground the new amount in the measurement just made by Randy was about 42 inches. At the time of this photograph, late in the afternoon, the snowfall had relaxed considerably although another inch or two of snow may have fallen. Travelling conditions were too difficult to return to the site that day.

Figure 4 is a typical example of the "catch" onto a 10 x 10 centimeter black felt surface, subdivided into 5 centimeter squares. The exposure time of the felt was close to two seconds. Many irregular shapes, stellar and otherwise as well as heavy riming may be detected.

Figure 5 is a photograph also by Mr. Cardinali showing the northern edge of the cloud street, just north of Nine Mile Point and over Lake Ontario, which was producing the snowburst. Here the new snowfall is much less or approximately 19 inches. At the time of the picture it had temporarily stopped snowing and visibility to the north was 15 miles or greater. Visibility was less than a mile to the south where the northern edge of precipitation was at this time, near 1700. The Sun could be seen shining to the Lake's surface, only a few miles to the north.

Returning to Figure 1, Mr. Howard Shapiro, a student at the College, made several measurements immediately after the snowfall stopped. He lives about one-third of a mile south of the author's residence. His readings averaged about 44.5 inches of new snowfall. All observers noted the rapid settling of this lake effect snowburst snowfall. Such settling is to be expected, even when there is no sunshine. The water-to-snowfall ratios appear to have averaged between 1 to 30 and 1 to 35. Mr. Jack Kaplan, a student at the College, obtained several such measurements. He also made a great number of observations of snowfall and visibility conditions and took off on some mobile reconnaissance trips during the storm period. Most observers seem to agree generally that this particular snowfall was characterized by clumping of snow crystals and snowflakes but that graupel was not a common occurrence. Along with clumping the common stellar crystal shapes were frequently pretty well encrusted with rime. Even in open places such as at Southwest Oswego there was comparatively little drifting, a feature sharply in contrast with the high wind-heavy snow situation that occurred during the 1972 Eastern Snow Conference visit. As is often the case, the snow crystals and flakes averaged larger (up to and more than 100%) closer to the Lake in comparison to average inland locations such as Fulton. At Fulton the water-to-snowfall ratio appeared closer to 1 to 20 as reported by Mr. Cardinali.



FIGURE 3

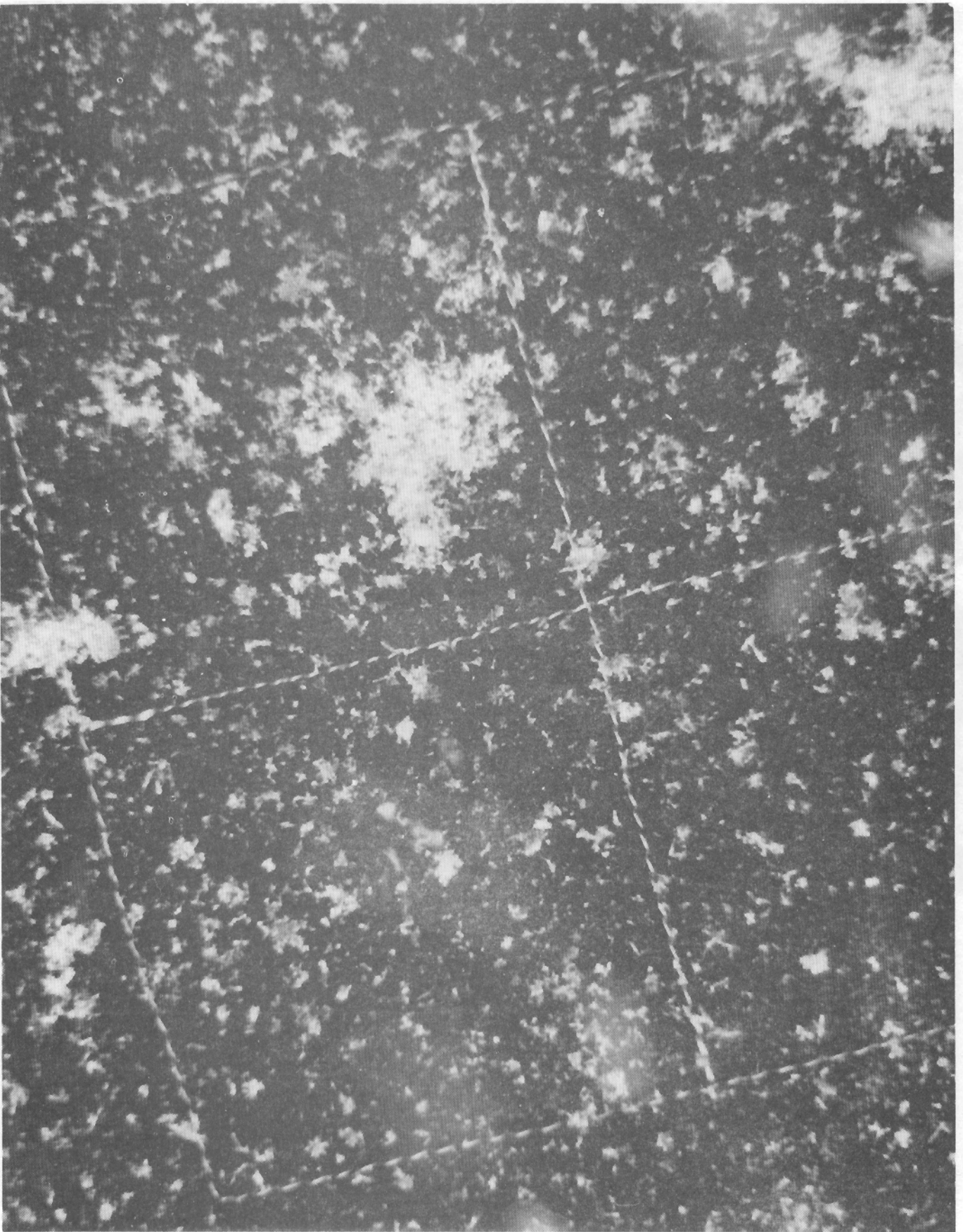


FIGURE 4

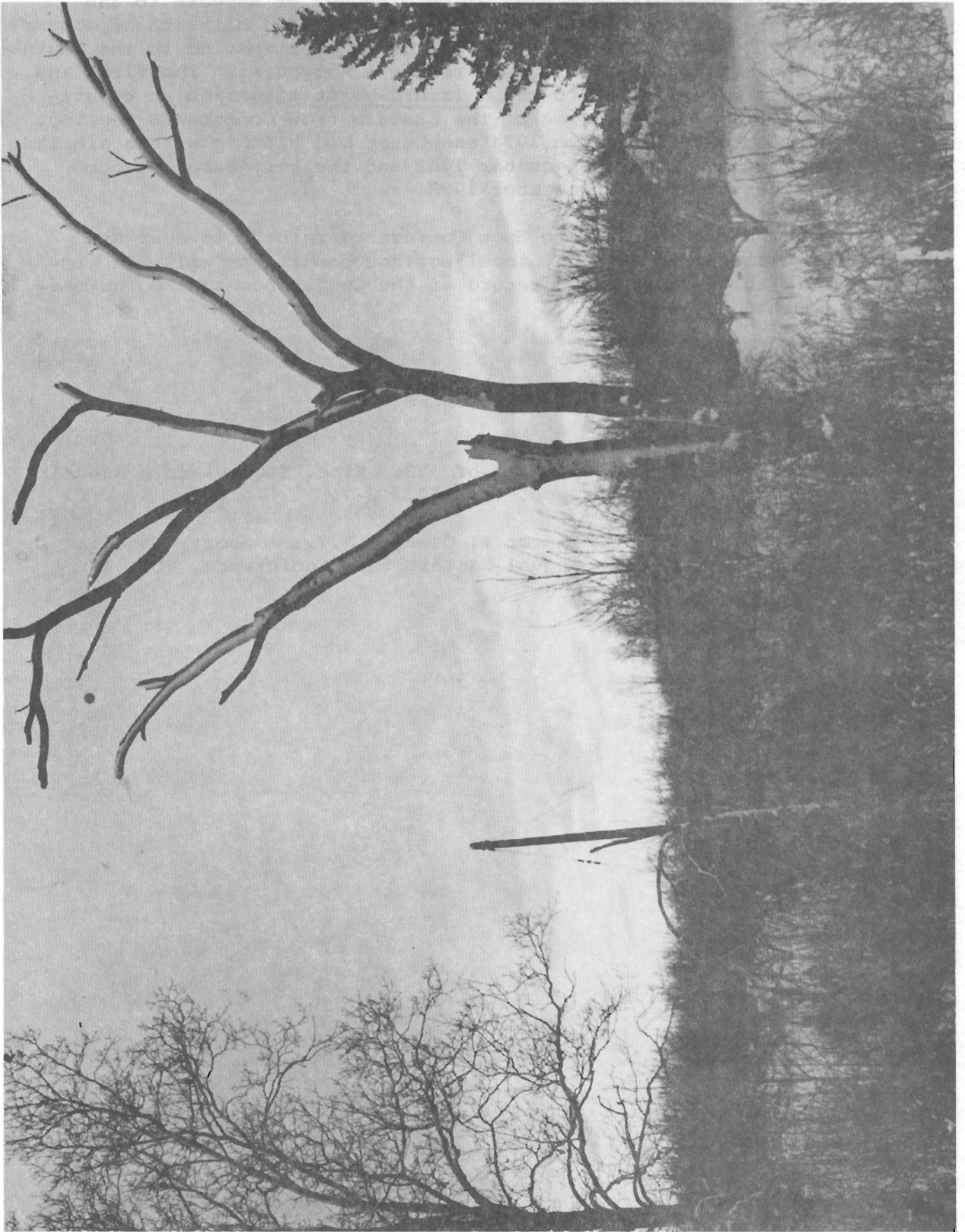


FIGURE 5

The 1974 snowburst was similar in a number of aspects to the second of the three phases comprising the so-called blizzard of January 27-31, 1966. The second phase of that great storm period in the Southwest Oswego Area and eastward, was really a snowburst. The first and third phases were similar to the blizzard-burst situation so beautifully illustrated at the time of the Eastern Snow Conference meeting. Drawing other parallels, the 1974 snowburst had kinship with a similar type storm of the 20th of December 1963 and the very famous record snowburst period of 7-11 December 1958.

When, and if the Eastern Snow Conference returns to meet at Oswego, we are confident that local weather conditions will add significantly to the historical record of the Conference and to the memories of attendees.

REFERENCES

- Sykes, R.B., Jr., On the Blizzard of '72. Proc. Twenty-Ninth Annual Eastern Snow Conference, Vol. 17. 2-7.
- Sykes, R.B., Jr., 1971/72 Winter at Oswego, N.Y.: A Short Commentary. Proc. Twenty-Ninth Annual Eastern Snow Conference, Vol. 17. 32-46.