Summary of meteorological observations at Michilimackinac (Mackinac), Mich., from August, 1802, to April, 1803, both inclusive

	Temperature									Days with precipitation	Days with snow	Days with thunderstorms	Days with fog	Clear	Partly cloudy	Cloudy	Wind—prevailing direction
	Mean [1]	Maximum	Minimum	Mean Maximum	Mean Minimum	Range											
						Mean daily	Greatest	Least	Absolute								
1803																	
January	13.3	36	−14	16.5	9.2	7.2	20	0	50	8	8	0	0	17	3	11	W.
February [2]	17.7	50	−24	24.4	9.8	14.8	34	2	74	1	1	0	0	24	0	3	S.
March	25.2	49	−10	30.3	19.4	10.9	24	0	59	8	3	0	4	17	2	12	W.
April	39.4	59	20	45.4	33.2	12.2	30	1	39	12	3	1	0	14	5	11	E.
1802																	
August	67.4	83	36	71.9	62.1	9.7	32	2	47	7	0	3	4	23	1	7	SW.
September [3]	61.8	73	40	65.9	57.5	8.9	26	2	33	6	0	1	1	19	4	6	N.
October	51.0	72	30	55.4	46.5	8.6	18	2	42	9	2	0	2	11	2	18	N.
November	41.9	60	29	44.2	39.4	4.9	15	1	31	7	3	0	4	10	1	19	S.
December [4]	21.0	49	−11	24.0	17.5	6.6	15	0	60	7	7	0	1	16	2	12	N.

[1] Mean of 3 observations, sunrise, noon, and sunset. [2] Record for 27 days. [3] Record for 29 days. [4] Record for 30 days.

Measurement and determination of magnitude of cooling. (By Dr. V. Conrad, Vienna, reprinted from Gerlands Beiträge zur Geophysik Vol. XXI, Part 2/3, 1929.)—Summary: From January to April, 1928, observations with L. Hill's katathermometer were being made at the sanatorium Grafenhof (Salzburg). Synchronous measures of air temperature and wind velocity (with the anemometer) allowed a comparison between the cooling power observed with the Kata (H) and calculated out of the wind velocity and air temperature with Doctor Hill's formula (h). The investigation shows: (1°) That the quotient H/h is very little influenced by the air temperature; (2°) that there is a functional connection between the value of H/h and the wind velocity. Within certain bounds, given by the present observations it is possible to express the mentioned connection analytically. The size of H/h reaches values >2 at very little velocities and becomes nearly constant (0.9) at velocities >1 m/s. If the conclusions drawn from the present material hold, it will be possible to calculate the cooling power in mgcal/cm², sec. out of wind velocity and air temperature (for velocities >1 m/s) with Hill's formula slightly corrected.

Tornado, May 1, 1929, at Fort Smith, Ark. (By Truman G. Shipman).—The morning weather map of May 1, 1929, showed a troughlike barometric depression extending from the Rio Grande Valley northeast across the middle Lakes region. A pressure reading of 29.48 inches was reported at Abilene, Tex. An extensive HIGH covered the western portions of the United States with a pressure reading of 30.36 inches at Boise, Idaho. Sharp drops in temperature and steep temperature gradients were noted over western Texas and the southern Rockies. A rather well defined line of opposing winds appeared near the center of the trough. The P. M. map showed much the same conditions moved eastward with a low pressure reading of 29.38 inches over Little Rock, Ark. The morning map of May 2, 1929, published at Washington, D. C., showed that the southern center of the depression moved about 1,250 miles in 24 hours or about 52 miles an hour.[1] This is considerably less than the velocity of the tornado as it passed over Fort Smith.

Telephone calls and weather conditions indicated the presence of a tornado at 2:30 p. m. The beginning of the tornado could not be seen from the office as it approached from the opposite side of the building. An attempt was made, but given up to reach the roof at this time. After the storm had passed northeast of the building, two office employees ascended to the roof and saw the tornado cloud over Sand Prairie, Crawford County.

The tornado formed in Oklahoma and was observed by a bus driver along the Fort Smith-Gore Highway. It was also observed at Peno, Okla., about 4 miles west of Fort Smith. It almost followed the path of the tornado that struck Fort Smith, May 28, 1924, and seemed to be high in the air as that storm was. The first funnel cloud observed in Fort Smith appeared where Wheeler Avenue crosses the Missouri Pacific tracks where it hit the Fort Smith Handle Co.'s plant. This cloud was described as a ropelike or serpentlike formation swaying in the air, but rather clear and distinct. The heaviest damage was inflicted here and along a path about one-fourth to one-half mile to the east. The second tornado cloud was shaped like a sheaf and was wide and less distinct. The third cloud was an inverted cone which did not reach the ground but formed immediately after the second. The storm then seemed to pass almost entirely over the city doing only light, scattered damage until its reached Sand Prairie, Crawford County, about 8 miles distant. This tornado cloud was observed by the employees of the office from the roof of the Federal Building in Fort Smith at 2:37 p. m. The cloud was shaped like an inverted truncated cone, rather wide and poorly defined and its outlines somewhat dimmed by light rains. The tornado had traveled 8 miles in 7 minutes at about 69 miles an hour which is close to the extreme wind velocity as recorded at the Weather Bureau office. In general the path was slightly north of east and very narrow. The nearest part of the path lay about 1¼ miles southeast of the office building.

Before the arrival of the first funnel-shaped cloud in Fort Smith at Wheeler Avenue and to the right and in the rear of where the cloud formed, an educated and reliable observer reported rain descending in sheets, clouds seemed to be boiling over and between the sheets of descending rain, an open space. He interpreted this as a wide, sheaf-shaped vortex without the cloud sheet leaving it transparent.

At a few times in the path of this tornado, what appeared to be explosive effects accompanied by vapor were seen and reported by observers, including Mr. Baughman of the Weather Bureau office. These observations are quite interesting and would indicate that the temperature in the tornado funnel varied during its progress, ranging from slightly below to slightly above the dew point. The thermograph at the Weather Bureau office, 1¼ miles distant, showed a temperature of 66° (fig. 1) at the time of the tornado and a dew point of 63° was observed at a special observation at 2:50 p. m.

[1] It is preferred to believe that there was a rise in pressure in the southern end of the trough which would automatically transfer the center to the north, rather than that there was an actual progression of the southern center.—ED.