The preceding letter would have been published at the time had not the Editor desired to obtain a few specific observations by Mr. Clough for publication in this connection. Since that time the author has been assigned to duty in Washington, and is still pursuing the study of this interesting subject which has also attracted the attention of Messrs. Douglass and See of the Flagstaff Observatory, Ariz., whose publications in the American Meteorological Journal and various astronomical journals are well known. The whole subject of scintillation has been treated quite thoroughly in a memoir by Prof. Exner, of Vienna, and the relation between scintillation and the condition of the atmosphere was for a long time studied by Montigny of Brussels; but we believe this is the first effort to apply what is known as the "schleier method" to the determination of the general direction of movement of the atmosphere.

The "schleier method," so called by its inventor, Professor Toeppler, was first applied to the photographic study of the movements of the air around moving objects. In the hands of Professor Mach and his son, at Vienna, this has become a powerful instrument of research, applicable to many problems in meteorology and a very full exposition of the method has long since been in the hands of the Editor, awaiting a favorable opportunity for presentation to American meteorologists and physicists. Meanwhile, we trust that Mr. Clough will succeed in making his simple method practically useful to meteorology.

KITES WITHIN A THUNDER CLOUD.

By Mr. THOMAS HOVENDEN.

Mr. Thomas Hovenden, who has established a kite apparatus of his own manufacture at Plymouth Meeting, Montgomery Co., Pa. (*15 miles northwest of the Weather Bureau station* at Philadelphia), sends the following account of a recent experience at his station:

On June 25 used a diamond cell No. 11 as pilot kite. Wind at the surface 18 to 20 miles per hour, from the southwest at first but shifting to southeast later. Diamond cell No. 10 was attached when 4,000 feet of line were out, but before the next observation (in about twenty minutes) the pilot kite entered the base of a thunder cloud that was forming and was torn from the wire, the stray line breaking. This storm did not reach the earth at the station for about forty-five minutes. All the wire and kite No. 10 were recovered. Kites Nos. 10 and 11 were exact counterparts, each having 30 square feet and being 4½ feet high, of the diamond cell pattern. The pilot kite when entering the thunder cloud at its base shifted toward east of southeast, while the lower kite was pulling in an almost opposite direction. Electric shocks were slight except after the kite reached 4,500 feet when they were strong, forming a continuous arc about 3 inches long, with sparks, now and then, about an inch long. The height of the pilot kite when it entered the thunder cloud was about 4,200 feet, and the wire was still being paid out fast enough to scorch the brake ropes of the reel. When the pilot kite was torn away the thermometer also sailed off into the next county. I have lately made and flown a 14-foot kite, having 216 square feet of surface. I append the record of the flight of June 25 which ends with the reading at 3:50, or about twenty minutes before the pilot kite was torn away; of course the temperature record of the kite was lost.

Kite observations, June 25, at Plymouth Meeting, Pa.

Time.	Length of line.		Angular elevation of kite.	Azimuth of kite.	Pull.	Inclination of wire at reel.	Corrected elevation of kite.	Surface conditions.		Wind direction
	Dial.	Feet.						Wet bulb.	Dry bulb.	
h. m.			°	°	*Lbs.*	°	*Feet.*	° *F.*	° *F.*	
2 45	240	1,320	43	20 e. of n.....	28	35	890	79	84	sw.
2 55	363	2,000	42	25 e. of n.....	24	25	1,307	77	81	sw.
3 15	636	3,500	42	35 e. of n.....	32	15	2,286	78	89	sw.
3 25	636	3,500	35	35 e. of n.....	20	20	1,963	77	88	sw.
3 50	727	4,000	31	50 e. of n.....	20	15	2,029	79	90	se.

The fact that the lower kite and the wire at the reel veered steadily more and more to the right as the lower kite ascended is here beautifully shown. The further and extremely great veering of the upper or pilot kite, by which it was deflected to the east of southeast at about 4 p. m., while the lower kite pulled toward the northwest, shows that the lower southeast wind was at this time and in this portion of the thunderstorm overlaid by an upper northwest wind.

METEOROLOGICAL EXTREMES AT NORTHFIELD, MASS.

By Mr. A. D. ELMER, Jr.

[Mr. A. D. Elmer, of Northfield, Mass., communicates the following collection of interesting meteorological events at that place, which may serve as a slight extension of the very interesting work, by Sidney Perley, entitled "Historic Storms of New England," published at Salem in 1891. In some cases Mr. Elmer has omitted the full reference to the proper authority from which the record is copied, but, in general, the items have all been verified.—ED.]

1815. September 23, great September gale; the only authentic West Indian hurricane in New England; passed between Providence and New London and, via Worcester and Connecticut River Valley, to the St. Lawrence River west of Montreal. From "Our First Century. By R. M. Devens. C. A. Nichols & Co., Springfield, Mass.; A. H. Walker, Columbus, Ohio. 1877." Pierce "On the Weather" notes a northeast gale at Philadelphia, September 22.

1816. A cold summer; ice every month of the year and heavy snow in June. These items, from old records, refer to the memorable year 1816, when there was no summer either in this country or in England and nearly every green thing was destroyed. For fuller details see Pierce "On the Weather" and Perley "Historic Storms."

1821. Great whirlwind on June 30. This quotation from an old book reminds one of the tornadoes in New Hampshire and Massachusetts, September 9, 1821. For fuller accounts see Perley's Historic Storms.

1866. June 7, a cloudburst. Quoted from Temple and Sheldon's History of Northfield.

1869. October. Worst floods on record, particularly in the Connecticut River. Quoted from a local diary kept by A. D. Elmer, sr., and refers especially to Northfield, as equally heavy floods have occurred in the lower Connecticut.

1881. October 14, at Central Vermont Railroad station, maximum temperature 92°.

1885. March 18, minimum temperature —20°.

1887. August 18, windrush from the southwest, or a western tornado. (This and all subsequent notes are from manuscript meteorological records kept by Mr. Elmer at Northfield.)

1888. February 14, maximum 49°; February 16, minimum —29°; February 17, maximum 39°. There was, therefore, a fall of 78° in forty hours, followed by a rise of 68° in thirty-two hours.

1888. March 11–14, deepest snowfall viz, 2 feet 6 inches.

1896. April 16, maximum temperature 96.5°; September 23, 9 p. m., temperature 31°; September 24, 2 a. m., minimum temperature 27°; summer temperature in the vicinity of or warmer than 90° on sixty-four days; during a hot spell in August 100° was recorded twice; 100° recorded three times during season; weather driest on record April to August, inclusive, except for the extra rainfall of July; first drought, eight weeks; general deficiency of the five months, one-third (excess of July one-half); first drought unbroken five weeks; December 25, —15°; December 28, —16°.

1897. January 28, snowfall 18 inches; estimated velocity maximum wind gusts, 60 miles; April 19, 1 p. m., strong south gale, clear, temperature 71°; 8 p. m., strong northwest gale, clear, temperature 29°; April 20, 5 a. m., strong north wind, clear, temperature 16°; fall, 42° in seven hours, 56° in sixteen hours; summer temperature July 1 (only two