

Tex., Cal., Dak., Mich. 8th, Ill., Ind., Ia., Kan., Neb., Tex., Wis., Wy. Ty. 9th, Ind., Kan., Mich., Neb., Tex., Wy. Ty., Mo. 10th, Ill., Mich., Wy. Ty. 15th, Dak., Ia., Minn. 16th, Wy. Ty., Mich., Utah, Nev. 17th, N. M., Mich., Neb. 18th, Neb., Col., Ia., Utah, Tex., Minn. 19th, Neb., Dak., Ia., Kan., Mo., Neb., Wis., Tex., Mich. 20th, Ark., Ill., Ind., Ia., Kan., Mich., Mo., Tex., Wis., Neb. 22d, Ala., Dak., Minn. 23d, Fla., Ga., Ill., Ia., Mo., Dak., Ala., Wis. 24th, Dak., Ill., Ia., Kan., Wis. 25th, Mich., Ill., Ind., Ia., Kan., Mich., Ohio, Tenn., Tex., Mo., Wis., Ky. 26th, N. Y., Conn., Ill., Me., Md., Mass., Miss., Mo., N. J., Ohio, Pa., Tex., Va., Ala. 27th, Fla., Ark. 28th, Kan., Mo. 29th, Ia., Kan., Neb., Dak., Wis. 30th, Neb., Col., Minn.

*Auroras*.—Pembina, Dak., 25th; Bangor, Me., 28th, 29th; Thatcher's Island, Mass., 22nd; Burlington, Vt., 22nd, 29th; Eastport, Me., 27th, 29th, 30th; Newbury, Vt., 21st; Gainesville, Ga., 24th; Mt. Sterling, Ill., 19th; Vevay and New Corydon, Ind., 26th; Nora Springs, Ia., 6th; Gardiner, Me., 22nd; Orono, Me., 27th; Mechanics Falls, Me., 30th; Waltham, Mass., 29th; North Lewisburg, Ohio, 23d; Woodstock, Vt., 26th; West Charlott, Vt., 23d.

*Telegraphic Communication interfered with by Atmospheric Electricity*.—Umatilla, Or., 21st, during a high wind instruments became intensely electrified, sparks were drawn by the finger from the circuit wires and all metal parts of the instruments, some of the joints emitted a crackling sound; 26th, during gust of wind instruments electrified. Santa Fe, N. M., 1st, 4th, very great on wires. Pembina, Dak., 18th, very strong on wires; 29th, between 8 and 10 p. m., line unmanageable; 30th, on wires.

## OPTICAL PHENOMENA.

*Solar Halos*.—1st, Ind., Miss. 2nd, Tex. 3rd, Tex., Conn., R. I. 4th, Miss. 5th, Tex. 7th, Iowa. 8th, Ohio. 9th, Ohio. 11th, N. C., Mass. 12th, Nev. 13th, Ohio. 15th, Wis., Ohio. 16th, Ohio, Iowa. 17th, Conn, N. Y., Neb., R. I., Vt. 18th, Tex. 20th, Ind., Ohio. 23rd, Ind., N. Y., Pa., W. Va., Ohio. 24th, Iowa, Idaho, Conn. 25th, R. I. 26th, Ind., Kan., Fla. 27th, Ohio, Ky. 28th, N. J., Ohio, Pa., N. C. 29th, Tex. 30th, Conn.

*Lunar Halos*.—1st, Tex. 3rd, Tex. 4th, Ga., Wis., N. C. 5th, N. J., Fla., Tex. 6th, Ia., Neb., N. J., Tex., Ind. Ty., Fla., Minn., Ga., Conn., Mass. 7th, Miss., Mo., Tex., Va., Kan., Minn., Ga., S. C., Conn., Mass. 9th, Ind., N. J., Minn., Ohio, Mich., Ga., Va. 10th, N. J., Tex., Minn., Conn. 11th, Nev., Tex., Minn., Ill., W. Va., Me. 12th, Wis., Dak., Tex., Minn. 13th, Ind., Md., N. J., Tex., Minn. 14th, N. J., Tex., Ia., Ill., Mass. 15th, Dak., Tex., Wis. 16th, Ia., Tex., Mich., Ill. 17th, Nev., Tex., Ill. 19th, Tex. 20th, Ind., Tex. 23rd, Ind. 30th, Tex.

*Mirage*.—New Bedford, Mass, 28th to 30th; Fall River, Mass., 23d; New London, Conn., 8th, 14th, 22d, 23d, 27th, 28th; Burlington, Vt., 24th.

## MISCELLANEOUS PHENOMENA.

**BOTANICAL.**—*Arkansas*—Helena, 3d, if town keeps healthy, cotton will come in, in a few days. *Colorado*—Summit, Rio Grande Co.: The following is a brief summary of an attempt to raise vegetables at the altitude of 11,300 feet, (latitude 37° 28' N., longitude 106° 30' W.): June 14th, radish and turnip seeds sown; 26th, maize, mexican beans, peas, potatoes, beets, kohlrabi, horse radish, parsley and spinach planted; 29th, lettuce sown; July 13th, peas up; 20th, potatoes; 25th, corn, beets and spinach; 31st, radishes ripe. August 1st, horse-radish up. Radishes grew to be roots five inches long and half an inch thick: turnips, three-quarters of an inch in diameter; Indian corn-stalks, three feet high; mexican beans, three feet high; peas, five inches high and blossomed, no fruit; potatoes, stems six inches high, tubers three-quarters of an long; beets, four inches long and one-eighth of an inch thick; kohlrabi and parsley did not come up; horse radish one and one-half inches high; spinach and lettuce, three inches high. September 20th, frost killed everything in garden, except lettuce and spinach. *Connecticut*: New London, 30th, white dahlia in bloom. *Florida*: Milton, 30th, all crops harvested, except sweet potatoes. Sugar cane in market since first of the month. *Indiana*: Milford, 22d, in bloom, strawberries, blackberries, plums, lilacs, currants and dog wood. *Iowa*: Fort Madison, 20th, potatoes very poor; fruit abundant and good; corn crop very good. Guttenburg—20th, potato crop very small. *Kansas*—Independence, 30th, corn crop severely injured by drought; acreage of winter wheat sown only one third that of last year. *Louisiana*—Concordia Parish, 2nd, cotton is opening very rapidly; all hands are picking; worms have appeared in portions of the field and are eating in spots; crops of this parish far below those of last year. *Massachusetts*—Waltham, ripe, 8th, indian corn; 7th, wild grapes; fading of leaves, 4th, blackberry, 7th, wild grape, 20th, alder, 17th, hazel bush, white birch, 23rd, red maple. Watertown, 9th, grapes ripe. *Mississippi*—Newton, 5th, farmers picking cotton, as it is opening very rapidly. Durant, 4th, cotton crop very poor. Torrence, 5th, cotton opening very rapidly. Summit, 4th, all crops very good. Brookhaven, 4th, forest leaves beginning to change color; ripe, 25th, persimmons, winter grapes; hops in full bloom twenty days later than usual. *Missouri*—Lebanon, 25th, tobacco crop almost a failure, because of dry weather; harvesting corn, crop poor. Corning, 20th, the tenderest flowers are as green and blooming as in summer. Springfield, 30th, winter wheat sown; many cherry and apple trees still in full bloom; one apple tree of Red June variety has fully ripened its second crop. *New Jersey*—Vineland, 30th, foliage of cherry, maple, cottonwood and some others faded and mostly fallen. Freehold, 12th, second crop of strawberries gathered. *New Hampshire*—Auburn, 30th, apple crop good;

potato crop a failure, rotting badly. Contoocookville, 7th, forest leaves falling; 9th, cutting corn; 21st, grapes ripe. *New York*—Waterburg, 30th, yield of wheat generally good; barley only fair; potatoes not a full crop; corn crop good. Wappinger's Falls, 7th, ripe, buckwheat, cutting and curing; cutting corn; 24th, eggplaut ripe. North Volney, 21st, second crop of strawberries gathered. Palermo, 7th, cutting corn; 20th, forest foliage beginning to change color. Vernon Centre, 15th, hops nearly all harvested, one-third of a crop, quality extra; 20th, potatoes nearly all gathered, crop very light, one half rotten, will not average five bushels to the acre; 21th, corn harvest begun; 25th, pears a complete failure; apples, very heavy crop. *North Carolina*—Weldon, 1st, grapes ripening. *Ohio*—Bellefontaine, 30th, corn ripe. Ruggles, 30th, foliage of forest trees beginning to change color. *Texas*—Melissa, 30th, harvesting corn, crop very fine; cotton crop only fair, somewhat injured by ball worm; farmers sowing winter wheat. Gilmer, 30th, picking cotton, crop fair, army cotton-worm in a few isolated places; corn crop heavy; sweet potatoes, good crop. Corsicana, 30th, cotton in good condition. *Vermont*—West Charlotte, 18th, wild roses in bloom; Strafford, 28th, raspberry and strawberry blossoms seen. *Virginia*—Broad Oak, Albemarle Co., 15th, cutting tobacco, crop only fair, much worm eaten; 20th, cutting corn, crop good; 30th, seeding wheat; Johnstown, 9th, second crop of strawberries gathered; plum trees in bloom. *Wisconsin*—Wautoma, 30th, buckwheat and corn all harvested, fair crop of each.

**INSECTS.**—*Locusts*: Fort Madison, Iowa, 30th, injuring fall wheat lately sown. Cresswell, Kan., 7th, flying south; 20th, north. Genoa, Neb., 9th, flying south. Denver, Col., 30th, no grasshoppers this season, in consequence of which farmers are harvesting very large crops. Bismarck, Dak., 1st, 2d, at great altitudes, flying southerly; 3d, on ground, few in air, numbers decreasing rapidly; 4th, very few on ground, none in air; 5th, 6th, 7th, rapidly decreasing, many dying; 9th, disappeared. Yankton, Dak., somewhat numerous until about the 12th, and disappeared almost entirely after the cold weather of the 26th. Fort Sill, Ind. T'y, 23d, quite a number from the north; 24th, remaining; 25th, great numbers traveling south; 26th, swarms from north, great many alighting; 27th, few remaining; 28th, few flying north, great many on ground; 29th, few flying north; 30th, more numerous than at any time since their appearance, depositing eggs. Dodge City, Kan., 6th, swarm came to earth from the northeast with the wind; 7th, 10 a. m., immense swarms, disappearing at 3 p. m., height of swarms 50 to 1000 feet, flying from northwest; 10th, 11 a. m., quite thick, swarms about 1000 feet high flying west with the wind. *Chinch bugs*: Cresswell, Kan., 26th, eating young wheat. Reports from Sierra county, Cal., state that grasshoppers appeared there in May and June, since when they have become very numerous, destroying almost entire crops in the Sierra valley. *Katydid*s: Wappinger's Falls, N. Y., 29th, 30th.

**BIRDS.**—*Swallows*: Fall river, Mass., 13th, disappeared; Oregon, Mo., 23rd, 25th, 29th; Genoa, Neb., 10th, disappearing; Contoocookville, N. H., 3rd, disappeared; Wappingers Falls, N. Y., 30th; Bellefontaine, Ohio, 1st, disappearing. *Thrush*: Somerset, Mass., 10th, flying S. *Whippoorwill*s: Fayette, Miss., 27th, disappeared; Wappingers Falls, N. Y., 12; Auburn, N. H., 20th, disappeared; Palermo, N. Y., 5th, last seen. *Ducks*: Monticello, Ia., 30th, S; Contoocookville, N. H., 11th, NE. *Martins*: Melissa, Tex., 10th, disappeared. *Pigeons*: Monticello, Ia., 23rd, S; Palermo, N. Y., 10th, S; Keusico, N. Y., 1st, W; Broad-oak, Va., 27th, S; Chicago, Ill., 20th, W; Louisville, Ky., 20th, S. *Kingbirds*: West Charlotte, Vt., 7th, S. *Geese*: Monticello, Ia., 25th, S; Fort Madison, Ia., 11th, S; Oregon, Mo., 23rd; Genoa, Neb., 14th, S; Dover Mines, Va., 17th, S; Sacramento, Cal., 5th, first of the season, returning from the N.; Bismarck, Dak., 25th, S; Pembina, Dak., 19th, S; Louisville, Ky., 21st, S. *Grouse*: Boise City, Idaho, 7th, preparing for winter quarters. *Blackbirds*: Milford, Ind., 22nd, in large flocks; Contoocookville, N. H., 4th; Wappingers Falls, N. Y., 1st; Palermo, N. Y., 6th, S; Melissa, Tex., 19th. *Hummingbirds*: West Charlotte, 24, 19th, last seen. *Bluebirds*: Monticello, Ia., 28th, S; Oregon, Mo., 25th; Wappingers Falls, N. Y., 29th. *Quails*: Oregon, Mo., 21st; New London, Conn., 27th, first seen. *Robins*: Monticello, Ia., 27th, S. *Bluejays*: Ringgold, Ohio, 18th. *Nighthawks*: Contoocookville, N. H., 1st, disappeared; Wappingers Falls, N. Y., 8th, 15th. *Orioles*: Contoocookville, N. H., 4th, disappeared. *Cabbage worm and lice*: Broad Oak, Va., 30th, very destructive. *Catbirds*: Fayette, Miss., 22nd; Oregon, Mo., 26th. *Cranes*: Fayette, Miss., 6th, S; Genoa, Neb., 18th, S.

**Meteors.**—Boise City, Idaho, 20th; Yuma City, 12th; Fort Davis, Tex., 19th, 20th; Castroville, Tex., 1st, 2d, 4th, 22d; Pembina, Dak., 21st; Davenport, Iowa, 2d, 30th; Louisville, Ky., 8th, 11 p. m., meteor in NW fell from an altitude of 45° to 35°, when it burst and emitted sparks, leaving a track about 1° in length; Indianapolis, Ind., 5th; Ft. Adams, R. I., 28th; Gainesville, Ga., 15th; Vevay, Ind., 1st, 5th, 15th; New Corydon, Ind., 3d; Monticello, Iowa, 16th; Topeka, Kan., 28th, 29th, 30th; Gardiner, Me., 28th; Mt. Desert, Me., 28th; Woodstock, Md., 5th, 16th, 17th, 24th, 26th, 27th, 28th; Fall River, Mass., 20th; Rowe, Mass., 23d, 25th, 28th, 29th; Fayette, Miss., 2d, 12th, 13th, 15th, 16th, 19th, 24th, 25th, 28th; Corning, Mo., 20th, 26th; Oregon, Mo., 23d, 24th; Atco, N. J., 19th; Waterburg, N. Y., 17th, 26th, 27th, 30th; Palermo, N. Y., 22d; North Volney, N. Y., 28th; Hector, N. Y., 30th; Wappinger's Falls, N. Y., 1st, 14th, 25th; Flushing, N. Y., 15th; Fayetteville, N. C., 25th; Westerville, Ohio, 18th, 30th; Melissa, Tex., 3d; Johnstown, Va., 3d, 4th, 9th; Wautoma, Wis., 1st, 2d; Yuma, Ariz., 12th, six miles E. of station, about noon, meteor size of star of first magnitude, observed falling from NW. *August Meteors.*—The observer at Detroit, Mich., stated "that although a considerable number of falling stars were observed during the month of August, the number was much below the usual average during that month."

**Polar Bands.**—Guttenburg, Ia., 6th; Gardiner, Me., 29th; Fayette, Miss., 24th; Brookhaven, Miss., 25th; Freehold, N. J., 28th; Woodstock, Vt., 25th; Wytheville, Va., 2nd; Key West, Fla., 6th; Pembina, Dak., 21st.

*Zodiacal Light*: New Corydon, Ind., 5th to 7th, 25th to 27th, 30th; Monticello, Ia., 18th, 20th, 26th; Fall River, Mass., 24th, 25th; Cambridge, Mass., 16th to 20th, 22nd, 23rd, 25th, 27th, 30th; Waterburg, N. J., 30th; Savannah, Ga., 20th, 21st, 25th, 26th; Newbury, Vt., 23rd.

*Prarie and Forest Fires*: Morristown, Dak., 30th; Creswell, Kansas, 2nd, 5th, 12th, 13th, 18th, 22nd, 24th, 25th, 30th; Independence, Kan., 4th, 5th, 6th, 10th, 11th; Wadena, Minn., 22nd, very heavy forest fires, several farm houses burnt; Los Angeles, Cal., 10th, 11th, (12th, filling the air with smoke, falling cinders and ashes); 13th, much damage to ranches &c; San Diego, Cal., 11th, 12th, extensive on Mountains; Bismarck, Dak., 26th to 29th; Fort Sill, Ind., Ty., 19th, 18th, 21st, 26th; Fort Gibson, Ind., Ty., 14th; Dodge City, Kan., 30th; Breckenridge, Minn., 27th; Pembina, Dak., 27th.

*Earthquakes*.—U. S. Naval Hospital, Yokohama, June 11th, 0:15 p. m., smart shock. July, 15th, 3:45 p. m., smart shock, (this was erroneously reported the 10th, in August Review.) August 9th, San Jose de Costa Rico, 4:15 a. m., feeble shock; 27th, 9:11 a. m., two violent shocks felt at Everfield, Cologne, Osna-bruck, Barmen, Bonn and Dusseldorf, Germany. September 7th, San Francisco; about 9:35 a. m., three well defined shocks, from W to E, less than two seconds apart. 29th, San Francisco, about 6 p. m., shock reported from NE to SW. followed in a few minutes by a milder one; at Oakland it is said to have been the most marked shock since 1875.

*Sunsets*.—The characteristics of the sky at sunset, as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from 117 stations show 3,501 observations to have been made, of which 47 were reported doubtful. Of the remainder 2,958 or 84.5 per cent. were followed by the expected weather.

*Sun Spots*.—The following is a record of observations made by Mr. D. P. Todd, Nautical Almanac Office, Washington, D. C.:

Sept., 1878.	No. of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		Remarks.
	Groups	Spots.	Groups	Spots.	Groups	Spots.	Groups	Spots.	
9th, 4 p. m...	1	1	0	0	0	0	1	1	Faculae.
13th, 4 p. m...	0	0	0	0	0	0	1	1	
14th, 3 p. m...	0	0	1	1	0	0	0	0	
16th, 4 p. m...	0	0	0	0	0	0	0	0	
17th, 4 p. m...	0	0	0	0	0	0	0	0	
18th, 3 p. m...	0	0	0	0	0	0	0	0	
19th, 3 p. m...	0	0	0	0	0	0	0	0	
20th, 4 p. m...	0	0	0	0	0	0	0	0	
22nd, 1 p. m...	0	0	0	0	0	0	0	0	
23rd, 12 m...	0	0	0	0	0	0	0	0	
27th, 3 p. m...	0	0	0	0	0	0	0	0	
5 p. m...	0	0	0	0	0	8	0	0	
28th, 4 p. m...	0	0	0	0	0	0	0	0	
30th, 5 p. m...	0	0	0	0	0	0	0	0	

NOTE.—The observations of sun spots are now made at the Nautical Almanac Office, and are not communicated by Admiral Rodgers, Superintendent Naval Observatory.

Prof. Gustavus Hinrichs, of Iowa City, Iowa, reports: "A very large sunspot was observed from the 4th, until the 13th, when it disappeared by solar rotation; no spot seen since." Observations were also made at Fort Whipple, Va., on the 2nd, 4th, 14th, 15th, 16th, 17th, 18th, 19th, 22nd and 27th, and no spots observed.

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