

## ADDENDA.

1787.

**Saint-Lazare, Bertholon de.**  
De l'électricité des météores. Paris. 1787. 2 vol. 8vo.  
In vol. 2, p. 84-99, he discusses evaporation.

1891.

**Marvin, Charles Frederick.**  
Report of vapor pressure measurements and normal barometer construction. Pt. I.—Maximum pressures of aqueous vapor at low temperatures. Ann. Rpt. Chief Signal Officer for 1891, (App. 10). Washington. 1892. 8vo. p. 351-363.

Special precautions were observed in this work to eliminate errors due to the use of impure water, the presence of air in the space occupied by the vapor, and on account of unequal capillary action. Water previously freed from air by boiling was finally distilled in a vacuum at a temperature but slightly above freezing. The pressure was measured in highly exhausted U-tube mercury manometers 25 to 30 millimeters in diameter. The results brought out the distinct difference between vapor pressures over ice and over water subcooled as much as 20 Fahrenheit degrees below freezing, but yet retaining its liquid state. The observations were carried to  $-60^{\circ}$  F., and a limited number of measurements were made between  $32^{\circ}$  and  $50^{\circ}$  F.

**Juhlin, Julius.**

Bestimning af Vattenångans Maximi-spänstighet öfver is mellan  $0^{\circ}$  och  $-50^{\circ}$  C., samt öfver flytande Vatten mellan  $+20^{\circ}$  och  $-13^{\circ}$  C. Bihang till K. Svenska Vet.-Akad. Handlingar. Band 17, Afd. I, No. 1. Stockholm. 1891. Abstract Met. Zeits., 1894, 11: 98-9.

This investigation into the vapor pressures of water vapor over ice between  $0^{\circ}$  and  $-50^{\circ}$  C., and over water between  $+20^{\circ}$  and  $-13^{\circ}$  C., gave Juhlin results closely concordant with those obtained simultaneously by Marvin, 1891. Juhlin and Marvin worked simultaneously and by very similar methods, but independently and in ignorance of each other. Juhlin presented his results to the Royal Swedish Academy of Sciences on February 11, 1891, and Marvin reported his to the Chief Signal Officer, U. S. A., on June 30, 1891. (See Marvin, 1909, first title.)

## LIST OF ABBREVIATIONS FOR TITLES OF PERIODICALS.

Abh. k. bayer. Akad. Wiss., math.-phys. Kl.	Königlich-bayerische Akademie der Wissenschaften, Mathematisch-physikalische Klasse. Abhandlungen. Munich.
Ann. met. ital.....	Annali della meteorologia Italiana. Modena.
Ann. obs. Montsouris.	Annales de l'observatoire météorologique municipale de Montsouris. Paris.
Ann. soc. met. ital....	Annuario della società meteorologica italiana. Turin.
Atti. r. ist. sci., Naples.	Atti della reale istituto d'incoraggiamento delle scienze naturali, economiche, e tecnologiche. Naples.
Beibl. Ann. Phys. und Chemie.	Beiblätter der Annalen der Physik und Chemie. Leipsic.
Beitr. Geophysik. Leipsic.	Beiträge zur Geophysik. Zeitschrift für physikalische Erdkunde. Zugleich Organ der Kaiserlichen Hauptstation für Erdbeben-forschung zu Strassburg i. E. Leipsic.
Ber. Deut. Naturf.....	Amtliche Berichte über die Versammlungen Deutscher Naturforscher und Aerzte. Leipsic.
Ber. Phys. Med. Soc..	Verhandlungen der physikalisch-medizinischen Societät zu Erlangen. Continued as Sitzungsbericht.
Bot. gaz.....	Botanical Gazette. Chicago.
Bul. Amer. geog. soc.	Bulletin of the American geographical society. New York.
Bul. cent. met. obs. Japan.	Bulletin of the Central meteorological observatory, Tokyo, Japan. Tokyo.
Centbl. Agr. Chem. (Biedermann).	Biedermann's Central-Blatt für Agrikulturchemie und rationellen Landwirtschafts-Betrieb. Leipsic.
Comment. Ateneo, Brescia.	Commentari dell' Ateneo di Brescia. Brescia.
Godichnuï Otchet Ploty. Selsk. Khoz. Oputn. Stantzil.	Godichnuï Otchet Plotyanskoï Selsko-Khozya istvennoï Oputnoï Stantzil. (Annual report of the Ploty agricultural experiment station). Odessa.
Jour. met. soc. Japan.	Journal of the meteorological society of Japan. Tokyo.
Jour. Scot. met. soc...	Journal of the Scottish meteorological society. Edinburgh.
Kulturtechniker.....	Der Kulturtechniker. Breslau.
Landw. Vers. Sta.....	Die Landwirtschaftlichen Versuchs-Stationen. Berlin.
Mém. acad. imp. sci., St. Petersburg, phys.-math. cl.,	Mémoires de l'academie imperiale des sciences de St. Petersburg.
Mem. acad. sci., Bologna.	Accademia delle scienze dell'istituto di Bologna. Memorie. Bologna.
Mém. soc. agric., Bayeux.	Société d'agriculture, sciences, arts, et belles lettres. Mémoires. Bayeux.
Met. council rpt.....	Report of the Meteorological Council to the royal society, for the year ending March 31. London.

Min. proc. intercol. met. conf.	Minutes of the proceedings of the intercolonial meteorological conference at Melbourne.
Mitt. Landw. Institut..	Mitteilungen der Landwirtschaftlichen Institut der königlichen Universität Breslau. Berlin.
Mitt. Verein. Erdk., Leipsic.	Mitteilungen des Vereins für Erdkunde zu Leipzig. Leipsic.
Naturw. Runds.....	Naturwissenschaftliche Rundschau. Brunswick.
Nebr. exp. sta. bul. . .	Bulletin of the Nebraska experiment station.
Natkdg. tidjsh. Ned. Ind.	Naturkundig Tijdschrift voor Nederlandsch Indie. Batavia.
Naturforscher, Berlin.	Der Naturforscher. Wochenblatt zur Verbreitung der Fortschritte in der Naturwissenschaften, Berlin.
Petermann's Mittheil.	Petermann's Mittheilungen aus Justus Perthes' Geographischer Anstalt. (Supan). Gotha.
Plant World.....	The Plant World. Tucson, Ariz., and Washington, D. C.
Rend. accad. sci., fis. math. sez., Naples.	Rendiconti dell' academia delle scienze fisiche e matematiche sezione della Società Reale di Napoli. Naples.
Rpt. Australasian assoc. adv. sci.	Reports of the Australasian association for the advancement of science.
Rpt. So. African assoc. adv. sci.	Reports of the South African association for the advancement of science.
Selsk. Khoz. i Lyesov.	Sel'skoe Khoz'yaistvo i Lyesovodstvo (Rural Economy and Forestry). St. Petersburg.
Sta. agron. Mauritius, Bul.	Colony of Mauritius Station agronomique. Bulletin. Mauritius.
Trans. roy. soc. arts, sci, Mauritius.	Société royale des arts et des sciences de l'île Maurice. Transactions. Port Louis, Mauritius.
U. S. Bur. Soils, Bul. . .	U. S. Department of Agriculture. Bulletins of the Bureau of soils.
Verhdl. Deut. phys. Gesellsch.	Verhandlungen der Deutschen physikalischen Gesellschaft. Berlin.
Versuchsstat. Org. . . .	Die Landwirtschaftlichen Versuchs-Stationen. Berlin.
Zap. Imp. Obshch. Selsk. Khoz. Yuzh. Ross.	Zapiskī Imperatorskagho Obshchestva Selskagho Khoz'yaistva Yuzhnoi Rossii. (Memoirs of the imperial society of rural economy of southern Russia.) Odessa.
Zeits. Kolonialpol., Berlin.	Zeitschrift für Kolonialpolitik, Kolonialrecht und Kolonialwirtschaft. Berlin.

## CORRIGENDUM.

1896.

Schierbeck, N. P.

Sur la vitesse de l'évaporation au point de vue spécial des relations physiologiques. Overs. k. Danske Forhandl., 1896, No. 1, 30 p. Abstract in Fortsch. der Phys., 1896, 25, pt. II: 308-9.

Investigates the relation between rate of evaporation and the condition of the atmosphere, using the formulas of Dalton and Stefan; his experiments confirm the Stefan formula. He finds the coefficient of evaporation directly proportional to the absolute temperature. The volume of vapor passing through a cross section of unit area in a unit of time at a temperature of  $0^{\circ}$  C. and pressure of 760 millimeters is expressed by the equation

$$v = K/h \cdot \log \frac{B-f}{B-f_1}$$

where  $B$ =air pressure,  $h$ =height of the pan's rim above the water surface,  $f$ =vapor pressure at temperature of the air,  $f_1$ =vapor pressure at the temperature of evaporation,  $K$ =constant.

Also finds that the evaporation is proportional to the square root of the rate of boiling; and that the difference  $f-f_1$  is not a measure of the rate of evaporation. The drying power of a climate is expressed by

$$\log \frac{B-f}{B-f_1} (1 + a/v) w^{\frac{1}{2}}$$

$f_1$  to be measured by the highest grade thermometers,  $w$ =wind velocity.

## ADDENDA.

## CHRONOLOGICAL OUTLINE OF METEOROLOGY IN THE UNITED STATES.

1881. January. Gen. W. B. Hazen (b. 1830, d. 1887), succeeded Generals Myer and Drum, as Chief Signal Officer.

1898. July 7. The United States Congress enacted the act appropriating money for the West Indies storm-warning service. Its headquarters were first established at Kingston, Jamaica, W. I., and the first reports from the newly established stations were received on August 9 of this year. The headquarters of this service were removed to Habana, Cuba, on February 1, 1899.

1900. Early in this year Father José Algué and Prof. W. L. Moore arranged with the Secretary of Agriculture, the President of the United States, and the President of the first Phil-

lipine Commission (Schurmann), for the establishment of the Philippine Weather Bureau, with its headquarters at Manila.

1901. May 22. The Philippine Weather Bureau was established by the act of the second United States Philippine Commission (W. H. Taft, Chairman). See MONTHLY WEATHER REVIEW, 1901, 29:372-4.

#### CORRIGENDA.

In the MONTHLY WEATHER REVIEW for April, 1909, p. 148, column 2, paragraph 5 from the bottom change the date of founding of Blue Hill Observatory from 1880 to 1885; in the MONTHLY WEATHER REVIEW for May, 1909, p. 178, column 1, at the bottom of the page, insert "1885. Blue Hill Observatory founded by A. L. Rotch."

In MONTHLY WEATHER REVIEW, May, 1909, p. 196, column 1, under "1903," second title, for "Paserocean" read "Pasuruan."

#### THE ZODIACAL LIGHT.

The MONTHLY WEATHER REVIEW has several times published notes and articles bearing on the nature of the zodiacal light. The latest researches on this phenomenon may still have some interest for our readers.

The University of California<sup>1</sup> has just published the results

<sup>1</sup>Lick Observatory Bulletin, No. 165. [Dated October, 1909.]

### THE WEATHER OF THE MONTH.

By Mr. P. C. DAY, Acting Chief, Climatological Division.

#### PRESSURE AND WINDS.

The distribution of the mean atmospheric pressure for June, 1909, over the United States and Canada is graphically shown on Chart VI, and the average values and departures from the normal are shown for each station in Tables I and III.

The general distribution of the mean atmospheric pressure for the month compared favorably with the normal. Pressure slightly above normal prevailed over the more northerly districts of the United States and the western portions of Canada, the maximum excess, about 0.10 inch, occurring in the upper Missouri Valley, and pressure slightly below normal obtained over the Canadian Maritime Provinces and portions of New England.

From May to June there was a general and rather uniform increase in pressure over all districts of the United States, except along the Pacific coast and also over the whole of Canada, except in parts of the St. Lawrence Valley. Over the interior districts the increase ranged from 0.05 to 0.10 inch, with maximum values over the upper Mississippi and middle Mississippi valleys.

The storm tracks were somewhat erratic in their direction of movement and were as a rule but shallow depressions having their origin in most cases over the eastern slopes of the Rocky Mountains. West of the mountains the month was unusually free from decided atmospheric pressure variations.

Warm southerly winds occurred at frequent intervals over nearly all districts east of the Rocky Mountains and the prevailing direction of the winds for the month over those districts was from some southerly point.

On the Pacific coast northwesterly winds predominated, and the prevailing winds were from the north along the northern border as far east as the Great Lakes. Over the greater portion of the region from the Great Lakes and lower Mississippi Valley westward, the wind movement was decidedly sluggish, especially over portions of the Great Plains where the average velocity ranged from 20 to as much as 50 per cent less than the normal. Over the Atlantic coast and Gulf States there was a general but not large increase of wind velocity, the excess ranging from 10 to 30 per cent.

of a careful photospectroscopic study by E. A. Fath, made during the autumns of 1907 and 1908 on Mount Hamilton, and under very favorable conditions during September, 1909, on Mount Wilson. The observations on Mount Hamilton yielded negatives of fairly good quality, using a slit-width of 0.38 millimeter and securing a spectrum on the plate of about 2.2 millimeters between  $\lambda = 5,000$  and  $\lambda = 3,900$ . The spectrum negatives were not strong enough to definitely prove the presence or absence of the suspected absorption lines at about  $\lambda = 4,300$  and  $\lambda = 3,950$ .

The Mount Wilson negatives, obtained with a slit-width of 0.41 millimeter which did not resolve the *H* and *K* lines of the solar spectrum, exactly resembled the solar spectrum and were much stronger than those obtained in 1907 on Mount Hamilton, but not sufficiently so for reproduction. However, they showed with certainty the two absorption lines.

Mr. Fath says:

A comparison of this plate with one of the sky spectrum taken with the same slit-width [0.41 millimeter] shows these lines to be *G* and the blend of *H* and *K* of the solar spectrum. These are the only lines shown on the sky comparison plate within the limits of the spectrum obtained on the Zodiacal Light plate. There is no indication of bright lines on any of the spectrograms of the Zodiacal Light. Thus, in so far as spectra of such low dispersion and resolving power can be trusted, we would seem to have good evidence to support the claim that the Zodiacal Light is reflected sunlight.—C. A., jr.

#### TEMPERATURE.

The mean temperature for the month as a whole was close to the normal, although during several periods there were decided variations both above and below the usual seasonal temperature.

During the first week the temperature averaged well above the normal in all districts, except over portions of the lower Mississippi Valley and in northern New England. The week was decidedly warm over the central and southern portions of the Plateau and Pacific coast districts, the excess above the normal ranging from 6° to 9° per day. The day temperatures were high also in the above districts, the maximum temperatures exceeding 100° over large portions of the southwest and exceeding by several degrees any previous record for the same season of the year at a number of points.

The second week was generally cool over all northern and western districts, the mean temperature over the Missouri and upper Mississippi valleys, and northern Rocky Mountain regions, ranging from 6° to 9° below the normal.

Over the South Atlantic and Gulf States it was somewhat warmer than the normal, and there was a slight excess along the north Pacific coast. No unusual extremes of temperature occurred except over northern New England, where temperatures close to freezing occurred and also at exposed points in the mountain regions of the West.

During the third week there was a considerable warming up over the northern districts from the Great Lakes westward to the Pacific, and in the Great Plains region, and it continued warm over the greater part of the Gulf States. The weather continued cool over the southwest and portions of the Lake region and New England.

There was a marked increase in temperature during the last week of the month over all districts east of the Rocky Mountains, the mean temperatures for the week ranging from 6° to 9° above the normal over the Lake region, New England and Middle Atlantic States, and somewhat less over the remaining districts. High day temperatures prevailed during most of the week, and the night temperatures were frequently oppressive. There was a decided warming up also over the South-