form first near the roots of the grass, while the tops of the blades were still dry, indicating that part of the moisture, at least, came from the ground. Water in the soil, warmed by the sun's rays, continued to evaporate during the evening, but was condensed again upon coming in contact with the cooler grass blades. The next portion of the grass blade to bear dew was the tip end. Here the dewdrop forms before the middle of the blade becomes moistened. Probably this moisture comes almost entirely from the air. Undoubtedly one source of dew-forming moisture is the water exuded from the stomita of the plant. But perspiration by the plant ceases about as soon as the air becomes saturated, therefore the amount from this source can not be great. Just how much each source contributes is impossible to estimate.

Little work was done to determine *the effects of smudging, flooding, and cultivating the ground upon frost formation.* A small area of ground was dug up and raked over, and a thermometer, with bulb encased in a growing onion leaf was exposed over it. Another instrument, similarly mounted, was exposed over soil which had not been cultivated for some time. On several mornings both thermometers were read, and in every case the former instrument registered about 2° higher than the latter. These observations suggest the advisability of thoroly cultivating the soil as a measure tending to protect against the destructive effects of frost. A thoro wetting of the soil seemed to have but little influence on the temperature of the vegetation growing upon it.

In order to determine how far the temperature falls on clear, still nights, below the dew-point recorded late in the afternoon before, the records of the Peoria station were gone over for one year, and the data selected which could be used to investigate this point. The dew-point, as recorded at 7 p. m.,[1] and the minimum temperature registered the following morning on 60 nights, were tabulated and the differences computed. From these it was found that on the average the minimum temperature went 2.9° below the 7 p. m. dew-point. In but three cases did the temperature fall more than 10° below the dew-point recorded at 7 p. m.

By examining thermograph traces made during clear weather with light winds, it will be observed that the temperature decline goes on much more rapidly during the first part of the night before the dew-point is reached. After it has fallen to that point the decline is much less rapid, and in some cases the fall is entirely checked, or changed to a rise. These all point to the same conclusion, that a portion of the heat of condensation in the formation of dew and frost is retained by the lower air.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Librarian.

The following have been selected from among the titles of books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Most of them can be lent for a limited time to officials and employees who make application for them. Anonymous publications are indicated by a ——.

Aachen. Meteorologisches Observatorium.
Deutsches meteorologisches Jahrbuch ... 1906. Aachen. Jahrgang 12. Karlsruhe. 1908. 56 p. f°.

Agra and Oudh. Meteorologist.
Administration report 1907–8. Allahabad. 1908. 4 p. f°.
Brief sketch of meteorology ... 1907. Allahabad. 1908. 7 p. f°.

Australia. Commonwealth meteorologist.
A new form of pressure anemometer. By H. A. Hunt. Melbourne. [1908.] 10 p. 8°.
Rainfall map of the commonwealth of Australia. Bull. no. 2 ... by H. A. Hunt. Melbourne. 1908. 11 p. 8°. 1 map. 56 x 61 cm.

Bargmann, A.
Himmelskunde und Klimakunde. Lehrplan, Beobachtungen und Lektionen. Leipzig. 1908, viii, 215 p. 8°.

[1] This is 7 p. m. local standard time, or ninetieth meridian standard.

Behre, Otto.
Das Klima von Berlin. Berlin. 1908. 158 p. 8°.

Bendel, Johann.
Wetterpropheten ... Regensburg. 1904. 166 p. 8°.

Carnegie institution.
Handbook of learned societies and institutions. America. Washington. 1908. 592 p. 8°.

Crelle, A. L.
Rechentafeln ... Neue Ausgabe. Berlin. 1907. n. p. f°.

Dewar, Daniel.
Atmospheric movements 1908–9. Glasgow. 1908. 3 p. 16°.

Drygalski, Erich von.
Allgemeiner Bericht über den Verlauf der Deutschen Südpolar-Expedition. Mit Vorbemerkungen von Ferdinand Freiherr v. Richthofen und einem Anhang, Bericht über die Arbeiten der Kerguelen-Station, von Karl Luyken. Berlin. 1903. viii, 73 p. 4°.

Erman, Adolph.
Reise um die Erde durch Nord-Asien und beiden Oceane in den Jahren 1828, 1829 und 1830. Berlin. 1833–1848. 3 v. 8°.
11 Tafeln des Atlas zu Erman's Reise um die Erde. Ausgegeben mit den dritten Bande der ersten Abtheilung. Berlin. 1848. 11 sheets. 45 x 31 cm.
Verzeichniss von Thieren und Pflanzen, welche auf einer Reise um die Erde gesammelt wurden. Berlin. 1835. 64 p. 17 pl. f°.

Ficker, Heinz von.
Zur Meteorologie von West-Turkestan. Wien. 1908. 35 p. f°.

Findeisen, F.
Praktische Anleitung zur Herstellung einfacher Gebäude-Blitzableiter. Zweite Auflage. Berlin. 1907. vi, 126 p. 8°.

France. Service hydrométrique du bassin de la Seine.
Observations sur les cours d'eau et la pluie centralisées ... 1906. n. p. n. d. 7 sheets. 60 x 46 cm.
Résumé des observations centralisées ... 1906. n. p. n. d. 25 p. f°.

Freybe, Otto.
Klima- und Witterungskunde. Hannover. 1908. iv, 71 p. 12°.

Froc, Louis.
Les tempêtes dans la province maritime du Fou-Kien (Chine). Extrait de la Revue des questions scientifiques, octobre, 1907. 8p. 8°.

Frost, J.
Agrarverfassung und Landwirtschaft in den Niederlanden. Berlin. 1906. vii, 495 p. 4°. (Berichte über Land- und Forstwirtschaft im Auslande. Mitgeteilt vom Auswärtigen Amt. Buchausgabe Stück 12.)

Gerdien, H.
... Untersuchungen über die atmosphärischen radioaktiven Induktionen. Berlin. 1907. 75 p. 4°. (Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Göttingen, mathematisch-physikalische Klasse. Neue Folge. Band 5. Nro. 5.)

Hale, George Ellery.
The study of stellar evolution. Chicago. 1908. xi, 252 p. civ pl. 8°.

Hamburg. Deutsche Seewarte.
Deutsche überseeische meteorologische Beobachtungen. Hamburg. 1908. 129 p. f°.

Hellmann, G[ustav].
Meteorologische Volksbücher. Berlin. 1895. 68 p. 4°.

Hungary. M. kir. orsz. meteorologiai és földmagnességi intézet.
Nagtagyos 1901–7. évi meteorologiai megfigyeléseinek eredményei. Budapest. 1908. 16 p. 8°.

India. Meteorological department.
Memorandum on the meteorological conditions prevailing in the Indian monsoon region before the advance of the southwest monsoon of 1908, with an estimate of the probable distribution of the monsoon rainfall in 1908. Simla. 1908. 3 p. f°.

Kienast, Hermann.
Das Klima von Königsberg i. Pr. Teil 3. Der jährliche Gang der Lufttemperatur, dargestellt auf Grund der Beobachtungen aus den Jahren 1848–1906. Königsberg. 1907. 45 p. f°.

Marangoni, Carlo.
Fantasie sulla grandine. Firenze. 1899. 7 p. 8°. (Estratto dagli Atti della R. accademia dei Georgofili. Anno 1899. v. 22. Dispensa 2.)

Merzifun (Asia Minor). Anatolia college.
Meteorological records. 1907. 1 sheet. 24 x 36 cm. n. p. n. d.

Moncalieri. R. collegio Carlo Alberto. Osservatorio meteorologico.
Riassunto delle osservazioni meteorologiche fatte al Grand Hôtel du Mont Cervin (Giomein-Valtournanche) in Valle d'Aosta durante la stagione estiva (luglio, agosto, settembre 1906). Perugia. 1907. 15 p. 8°.

Naturforschender Verein in Brünn.
25. Bericht der meteorologischen Commission.
Ergebnisse der meteorologischen Beobachtungen ... 1905. 158 p. 8°. Brünn. 1908.
Verhandlungen ... 1906. Brünn. 1907. 246 p. 8°.

Oppokov, E.
...Sur l'accumulation et la consommation de l'humidité dans le sol des bassins des fleuves de plaines. St. Pétersbourg. 24 p. 8°. (11me Congrès-Saint-Pétersbourg, 1908.)
...Variations périodiques de longue durée du débit et des depôts atmosphériques dans les bassins fluviaux. St. Pétersbourg. 39 p. 12°. (11me Congrès-Saint-Pétersbourg, 1908.)

Philippine islands. Weather bureau.
Annual report...Part 2, 1905. Manila. 1908. 386 p. 4°.

Queensland. Water supply department.
Annual rainfall, 1906. Brisbane. [1908.] 1 sheet. 69 x 102 cm.

Réthly, Anton von.
Die meteorologischen Beobachtungen auf der Bablagóra und in Arvapolhora...1906. Bielitz. n. d. 12 p. 8°.

San Fernando. Instituto y observatorio de marina.
Anales. Seccion 2. Observaciones meteorológicas, magnéticas y séismicas. 1907. San Fernando. 1908. viii, 157 p. f°.

Scheiner, J[ulius].
Populäre Astrophysik. Leipzig. 1908. vi, 718 p. 8°.

Supan, Alexander.
Grundzüge der physischen Erdkunde. Vierte, umgearbeitete und verbesserte Auflage. Leipzig. 1908. ix, 934 p. 8°.

Taylor instrument company.
Weather and weather instruments. Rochester. 1908. 175 p. 12°.

Trieste. I. r. osservatorio marittimo.
Rapport annuale...1904. 21 v. Trieste. 1908. 115 p. f°.

Uruguay. Instituto nacional para la prediccion del tiempo.
Promedios mensuales. Año 1907. Montevideo. 1907. 1 sheet. 43 x 81 cm.

Zöppritz, August.
Prognosen aus den Gestirnstellungen für das Jahr 1908. Stuttgart. [1907. 34 p.] 8°.

RECENT PAPERS BEARING ON METEOROLOGY AND SEISMOLOGY.

C. FITZHUGH TALMAN, Librarian.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a ——

Aeronautics. New York. v. 3. August, 1908.
Blair, W. R. Kite manipulation and the record flight. p. 26-28.

Geographical journal. London. v. 32. August, 1908.
Rawson, H. E. The southern cyclonic belt. p. 178-179.

Meteorological society of Japan. Journal. Tokio. v. 27. July, 1908.
Ishida, M. On the characteristic conditions of rainfall over the back Japan in winter. p. 17-19.
Ogawa, T. Climate of Fusan. p. 19-20.

Nature. London. v. 78. 1908.
Backhouse, T. W. The "sky-coloured clouds" or twilight glows. (August 20.) p. 367.
Shaw, William N[apier]. [Presidential address, Section A, British Association, Dublin, 1908.] (September 3.) p. 425-431.
—— The late M. Mascart. (September 10.) p. 446-448.

Popular astronomy. Northfield, Minn. v. 16. August-September, 1908.
Roe, E. D., jr. Wind pressure on an observatory dome. p. 424-426.

Royal society. Proceedings. London. ser. A. v. 81. A. 546.
Watson, Herbert Edmeston. The spectrum of the lighter constituents of the air. p. 181-194.
Moore, Richard B. An investigation of the heavy constituents of the atmosphere. p. 195-209.

Science. New York. New series. v. 28. 1908.
Livingston, Burton Edward. A simple atmometer. (September 4.) p. 319-320.
Barrell, Joseph. Schaeberle and geological climates. (September 18.) p. 371-373.
Schaeberle, J. M. An explanation of the cause of the eastward circulation of our atmosphere. (September 25.) p. 415-416.

Scientific American supplement. New York. v. 66. 1908.
Berg, H. A short account of "lightning tubes." (August 15.) p. 109.
—— Strange forms of the setting sun. (September 12.) p. 175.

Symons's meteorological magazine. London. vol. 43. August, 1908.
Bates, D. C. Report upon dry period and rain-making experiments at Oamaru, New Zealand. p. 137-138.

Annales de géographie. Paris. 17 année. 15 juillet 1908.
Denis, Pierre. L'état de Saint Paul, d'après les travaux de la commission géographique. p. 328-343. [Le climat et la végétation, p. 335-339.]

Ciel et terre. Bruxelles. 29me année. 1908.
P[hilippot], H. Lueur crépusculaire. [June 30.] (16 juillet.) p. 252-254.
V., J. La mesure de la neige. [Abstract of paper by Angot describing a new snow gage.] (1 septembre.) p. 325-327.

France. Académie des sciences. Comptes rendus. Paris. Tome 147. 1908.
Durande-Gréville, E. Le premier crépuscule du matin et le second crépuscule du soir. (3 août.) p. 318-320.
Deslandres, H. Sur la recherche d'une classe particulière de rayons qui peuvent etre émis par le soliel. (17 août.) p. 373-375.
Violle, J. Sur un orage à grêle ayant suivi le parcours d'une ligne d'énergie électrique. (17 août). p. 375-377.
Esclangon, Ernest. Sur les illuminations crépusculaires. (24 août.) p. 408-411.

Revue néphologique. Mons. Juillet 1908.
—— Lueurs crépusculaires du 30 juin et du 1 juillet. p. 244-245.

Société belge d'astronomie. Bulletin. Bruxelles. 13 année. Juillet-août. 1908.
Gheury, M. E. J. La variation diurne de la pression atmosphérique. p. 254-258.

Société météorologique de France. Annuaire. Paris. 56 année. Mai 1908.
Angot, Alfred. Sur le calcul des observations pluviométriques. p. 125-128.
Brunhes, B. Sur la mesure directe de la composante verticale du magnétisme terrestre. Application à la chaine des Puys. p. 129-131.
Garrigou-Lagrange, M. P. La pluie et le régime des cours d'eau. p. 132-134.
Mémery, H. Le refroidissement de la deuxième quinzaine du mois d'avril. (Relation probable avec les phénomènes solaires.) p. 140-142.

Annalen der Hydrographie und maritimen Meteorologie. Berlin. 36. Jahrgang. Juli 1908.
Grossman. Die Beziehung zwischen den Temperaturen des nordatlantischen Ozeans und von Nordwest- und Mitteleuropa. p. 333-348.

Annalen der Physik. Leipzig. Band 26. 1908.
Holborn, L. & Henning, F. Ueber das Platinthermometer und den Sättigungsdruck des Wasserdampfes zwischen 50° und 200°. p. 833-883.

Gaea. Leipzig. 44. Jahrgang. Oktober, 1908.
—— Die Beziehung zwischen den Eisverhältnissen bei Island und der nordatlantischen Zirkulation. p. 578-582.
Meyer, G. Ueber die periodischen Klimaschwankungen. p. 588-591.
—— Zur Meteorologie der Adria. p. 591-592. [Abstract of article by Hann.]
—— Der am 6. und 7. Januar 1908 in Norddeutschland beobachtete Staubfall. p. 593-594.
—— Der Einfluss der Grossstädte auf die Luftfeuchtigkeit. p. 607-610.

Meteorologische Zeitschrift. Braunschweig. 25. Band. Juli, 1908.
Kähler, Karl. Registrierungen des luftelektrischen Potentialgefälles an nahe benachbarten Stationen. p. 289-299.
Smirnow, D. Ueber das Aktinometer Violle-Savélief. p. 299-312.
Rudzki, M. P. Nordschein am 30. Juni in Krakau. p. 313.
Kramer, Jan. Zum Klima von Sitka. p. 315-320.
Woeikow, A. Regenfall und Abfluss in den Tropen nach: Dr. A. Merz: Beiträge zur Klimatologie und Hydrographie Mittelamerikas. H. L. Abbot, Rainfall and outflow in the valley of the Chagres. p. 326-330.
McAdie, Alexander G. Die wahre Mitteltemperatur von San Francisco, Kalifornien. p. 330-331.

Prometheus. Berlin. 19. Jahrgang. 13 Mai 1908.
Kleinschmidt, Ernst. Die Drachenstation am Bodensee. [Illustrated.] p. 516-522.

Wiener Luftschiffer-Zeitung. Wien. 7. Jahrgang. August, 1908.
—— Die Drachenstation am Bodensee. p. 181-183.

Hemel en Dampkring. Den Haag. 6. Jaargang. Augustus 1908.
Hartman, Ch. M. A. De talrikheid von stortbulen. p. 52-54.
Monné, A. J. Meteorologishe waarnemingen in West-Indie. p. 54-56.
De Veer, C. L. Een eenvoudig middel, om barometers te controleeren met behulp van de dagelijks in de dagbladen gepubliceerde luchtdruk-waarnemingen van de Nederlandsche stations. p. 56-60.

Reale accademia dei Lincei. Atti. Roma. v. 17. 2. sem. Fasc. 3. 1908.
Allesandri, G. La radiazione attinica del sole al Monte Rosa. Osservazione eseguite alla Capanna Regina Margherita coll'attinometro fotoelettrico di Elster e Geitel. p. 113-118.

Società aeronautica Italiana. Bollettino. Roma. Anno 5. Giugno 1908.
Gamba. La deviazione del vento coll'altezza. p. 150-151.