Dieckhoff, C. von. Note on Clouds at Fort Augustus. Pp. 159-160.
—— Ben Nevis Observatories: Memoranda as to proposed closure. Pp. 161-163.

London, Edinburgh, and Dublin Philosophical Magazine. London. 6th Series. Vol. 6.
Adams, E. P. Water Radioactivity. Pp. 563-569.
Simpson, George. On Charging through Ion Absorption and its Bearing on the Earth's Permanent Negative Charge. Pp. 589-598.
Townsend, John S. The Genesis of Ions by the Motion of Positive Ions in a Gas, and a Theory of the Sparkling Potential. Pp. 598-618.
McClung, R. K. The Relation between the Rate or Recombination of Ions in Air and the Temperature of the Air. Pp. 655-666.
Jeans, J. H. On the Kinetic Theory of Gases. Pp. 720-722.

Philosophical Transactions of the Royal Society of London. London. Series A. Vol. 202.
Chree, Charles. An Analysis of the results from the Kew Magnetographs on "quiet" days during the eleven years 1890 to 1900. Pp. 335-437.
Poynting, J. H. Radiation in the Solar System: its effect on temperature and its pressure on small bodies. Pp. 525-552.

Journal and Proceedings of the Royal Society of New South Wales. Sydney. Vol. 36.
Maiden, J. H. Forests considered in their Relation to Rainfall and the Conservation of Moisture. Pp. 211-240.
Liversidge, A. Meteoric Dusts, New South Wales. Pp. 241-285.

Journal of Geography. Chicago. Vol. 3.
L., E. M. [Influence of forests on local climate.] Pp. 47-50.

Proceedings of the Royal Society. London. Vol. 72.
Timiriazeff, C. The Cosmical Function of the Green Plant. Pp. 424-460.

Physical Review. Lancaster. Vol. 17.
Zahm, A. F. Measurement of Air Velocity and Pressure. Pp. 410-423.

Symons's Meteorological Magazine. London. Vol. 38.
Strachan, Richard. Use of the Rain Gauge on Shipboard. Pp. 196-197.
Smyth, John. Rainfall on the River Bann, County Down, Ireland, at Banbridge and Lough Island Reavy Reservoir, for 40 years, from 1862 to 1901. Pp. 198-201.

Astrophysical Journal. Chicago. Vol. 19.
Day, Arthur L. and Van Orstrand, C. E. The Black Body and Measurement of Extreme Temperatures. Pp. 1-40.

Bulletin of the American Geographical Society. New York. Vol. 35.
Ward, Robert DeC. The Climate of South America. Pp. 353-360.

Comptes Rendus de l'Académie des Sciences. Paris. Tome 137.
Kronecker, —. Le mal des montagnes. Pp. 1282-1283.
Vallot, J. Sur les modifications que subit la respiration par suite de l'ascension et de l'acclimatement à l'altitude du Mont Blanc. Pp. 1283-1285.

Annuaire de la Société Météorologique de France. Paris. 51me année.
Maillet, Ed. Sur divers points d'hydraulique sousterraine et fluviale. Pp. 185-188.
Moureaux, Th. La grande perturbation magnétique. Pp. 189-191.

Ciel et Terre. Bruxelles. 24me année.
—— La perturbation magnétique du 31 octobre 1903. Pp. 417-427.
Dobrowolski, A. Quelques idées sur la forme et sur la structure des cristaux de neige. Pp. 427-438.
Deslandres, H. Relation entre les taches solaires et le magnétisme terrestre. Pp. 478-485.

Bulletin de la Société Belge d'Astronomie. Bruxelles. 7me année.
L., E. La perturbation magnétique, 31 octobre-1er novembre 1903. Pp. 370-377.
Somville, —. La perturbation magnétique du 31 octobre 1903, à Uccle. Pp. 378-380.
Dumas, Léon. Météorologie et agronomie. Pp. 380-388.

Archives des Sciences Physiques et Naturelles. Genève. 4me période. Tome 16.
Dufour, Henri et Bührer, C. L'insolation en Suisse. Deuxième partie: Mesures actinométriques. Pp. 536-540.
Gautier, R. Résumé météorologique de l'année 1902 pour Genève et le Grand Saint-Bernard. Pp. 541-568.

La Nature. Paris. 31me année.
B., D. Poussières et lavage de l'air. Pp. 411-412.

La Nature. Paris. 32me année.
Rabot, Charles. Le recul des glaciers et la houille blanche. Pp. 7-10.

Annalen der Hydrographie und Maritimen Meteorologie. Berlin. 32 Jahrgang.
—— Erklärung der von der Deutschen Seewarte in den Witterungsberichten und Wettervorhersagen angewandten Ausdrücke. Pp. 5-11.

Das Wetter. Berlin. 20 Jahrgang.
Meinhardus, Wilhelm. Ueber einige bemerkenswerte Staubfälle der letzten Zeit. Pp. 265-278.
Vanderlinden, E. Der Nebel in London. Pp. 280-282.
Schwarz, L. Staubfall. Pp. 281-282.
Knab, Carl. Staubregen. P. 284.
Triebel, Louis. Sturm. P. 284.
Offig, —. Sandnebel. Pp. 284-285.
Schwarz, L. St. Elmsfeuer und Sturm auf der Schneekoppe zu 21 November 1903. Pp. 285-286.

Gaea. Leipzig. 39 Jahrgang.
—— Untersuchungen über vertikale Luftströmungen. Pp. 22-24.
—— Die klimatischen Verhältnisse von Pará. Pp. 33-40.
—— Einfluss der Luftkompression auf den Menschen. [Review of article of Kabrhel.] Pp. 56-57.
—— Die Wirkungen der Luft in grosser Höhe auf den Menschen. [Review of article of A. Masso.] Pp. 57-58.

Physikalische Zeitschrift. Leipzig. 4 Jahrgang.
Gerdien, H. Registrierung der Niederschlags-Elektrizität im Göttinger Geophysikalischen Institut. Pp. 837-842.

Illustrierte Aëronautische Mitteilungen. Strassburg. 7 Jahrgang.
Börnstein, R. Bericht über die Möglichkeit elektrischer Ladung und Entzündung von Luftballons. Pp. 395-399.
Volkmann. Wilhelm. Ueber die Bedingungen, unter denen die elektrische Ladung eines Luftballons zu seiner Zündung führen kann. Pp. 399-405.

Annalen der Hydrographie und Maritimen Meteorologie. Berlin. 31 Jahrgang.
Paulus, A. Schwerer Orkan im Korallenmeer im März 1903. Pp. 521-525.
Buchholz, —. Die Witterung zu Tsingtau im März, April und Mai 1903, nebst einer Zusammenstellung für das frühjahr 1903. Pp. 526-529.

ON THE USE OF SOUNDING BALLOONS FOR METEOROLOGICAL OBSERVATIONS AT GREAT HEIGHTS.

Note by Ch. Renard, translated from Comptes Rendus, Paris, 1892, vol. 115, pp. 1049-54.

I have the honor to present to the academy a memoir on the employment of unmanned balloons for making meteorological observations at great heights; this note is a summary of that memoir.

If we could ignore all anxiety on account of the dangers to which the aeronaut is exposed in the upper regions, it would appear very easy for balloons to attain great heights. This facility is, however, only apparent. In reality, the atmosphere presents itself to us like a mountain whose slopes are at first very gentle, but change rapidly into a perpendicular wall.

For the sake of simplicity let us suppose that the temperature of the air is uniform and equal to 0° C., then by neglecting the feeble variations of g, or gravity, with the altitude, this would give:[1]

$$y = 18400 \log n,$$

where y is the altitude in meters above the plane where the pressure is 1 kilogram per square meter. n is the reciprocal of the pressure, or the denominator of the fraction $1/n$, which expresses the pressure in kilograms per square centimeter.

[1] The fundamental differential equation for barometric hypsometry is:

$$dp = -wdh,$$

where w is the weight of a unit volume of the air at the given pressure p, and absolute temperature (T) and under the constant force of gravity, but the weight of a unit volume is as its density ρ and is connected with the pressure and temperature by the relation

$$pv = p\frac{1}{\rho} = \frac{p}{w} = RT,$$

where R is a constant, whence

$$dp = -\frac{p}{RT}dh,$$

assuming with M. Renard that the temperature of the air is constant and equal to 0° C., the T becomes the constant 273° C. and $RT =$ the constant 273 X (29.2713). The intergation of this equation gives us nap. $\log p = -\frac{h}{RT} +$ constant.

When $p = 1$ kilogram per square centimeter the altitude is hh_1, and the arbitrary constant becomes $\frac{h_1}{RT}$, whence

$$\text{nap. log } p = \frac{1}{RT}[h_1 - h]$$

or

$$h - h_1 = RT \text{ nap. log } \frac{1}{p}.$$

If ordinary or Briggs' logarithms are used, this becomes

$$h - h_1 = \frac{RT}{Mod.} \log \frac{1}{p}.$$