they brought out the broad features of the subject, and to reduce the sources of error he had limited himself to indicating four grades of mean annual humidity, the upper limits of which were, respectively, 50 per cent (very dry), 65 per cent, 80 per cent, and 100 per cent (very damp). The relative humidity over the ocean might exceed 80 per cent, but in certain regions (horse latitudes) it was certainly much less, and in a portion of the Southern Pacific it seemed not to exceed 65 per cent, a feature seemingly confirmed by the salinity of that portion of the ocean which exceeded 3.6 per cent.

His second chart exhibited the annual range of humidity, viz, the difference between the driest and the dampest months of the year. In Britain, as in many other parts of the world, where the moderating influence of the ocean was allowed free scope, this difference did not exceed 16 per cent, but in the interior of the continents it occasionally exceeded 45 per cent, spring or summer being exceedingly dry, whilst the winter was excessively damp, as at Yarkand, where a humidity of 30 per cent in May contrasted strikingly with a humidity of 84 per cent in December.

This great range directed attention to the influence of temperature (and of altitude) upon the amount of relative humidity, for during temperate weather we were able to bear a great humidity with equanimity, whilst the same degree of humidity accompanied by great heat, such as is occasionally experienced during the "heat terms" of New York and recently in London, may prove disastrous to men and beasts. Hence, combining humidity and temperature, the author suggested mapping out the earth according to sixteen *hygrothermal types*, as follows:

1. Hot (temperatures 73° and over) and very damp (humidity 81 per cent or more): Batavia, Camaroons, Mombasa.
2. Hot and moderately damp (66–80 per cent): Havana, Calcutta.
3. Hot and dry (51–65 per cent): Bagdad, Lahore, Khartum.
4. Hot and very dry (50 per cent or less): Disa, Wadi, Halfa, Kuka.
5. Warm (temperature 58° to 72°) and very damp: Walwisch Bay, Arica.
6. Warm and moderately damp: Lisbon, Rome, Damascus, Tokio, New Orleans.
7. Warm and dry: Cairo, Algiers, Kimberley.
8. Warm and very dry: Mexico, Teheran.
9. Cool (temperature 33° to 57°) and very damp: Greenwich, Cochambo.
10. Cool and moderately damp: Vienna, Melbourne, Toronto, Chicago.
11. Cool and dry: Tashkent, Simla, Cheyenne.
12. Cool and very dry: Yarkand, Denver.
13. Cold (temperature 32° or less) and very damp: Ben Nevis.
14. Cold and moderately damp: Tomsk, Pikes Peak, Polaris, House.
15. Cold and dry.
16. Cold and very dry: Pamir.

The actual mean temperature of the earth amounted, according to his computation to 57° F., and this isotherm, which separated types 8 and 9, also divided De Candolle's "Mikrothermes" from the plants requiring a greater amount of warmth.

The author fully illustrated his paper by a number of diagrams giving the curves of the temperature, rainfall, and humidity, and also by a chart of the world exhibiting the number of rainy days.

J. BROWN HICKLIN.

We regret to announce the death of Mr. J. Brown Hicklin on March 21, 1901. Mr. Hicklin entered the Weather Bureau on February 1, 1897, by transfer from the Government Printing Office. His entire service in the Bureau was performed at the Denver, Colo., station. The reports from the official in charge at that point were invariably favorable to Mr. Hicklin. He was industrious, painstaking, and reliable in every respect.—*D. J. C.*

NORMALS FOR MANILA.

The Manila Observatory has lately published, in a convenient pamphlet form, its normal climatological data. The pressure, temperature, and humidity data are based upon the years 1883–1898, during which period hourly observations have been made night and day. The rainfall data represent the longer period, from 1865–1898. The barometric record has been reduced to sea level, but it is not definitely stated that the mean values have been reduced to standard gravity. The latitude of Manila is 14° 35′ N., and the mean height of the barometer is 759.31 millimeters, or 29.89 inches, the correction for gravity is, therefore, —1.77 millimeters, or —0.070 inch, which correction is probably still to be applied to the figures given in the table below in order to conform to the rules of the International Meteorological Congress and Committee.

TABLE 1.—*Normal atmospheric pressures at Manila*, 1883–1898.

Month.	Mean.	Highest mean.	Lowest mean.	Absolute maximum.	Absolute minimum.
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*
January	29.97	30.06	29.91	30.21	29.71
February	29.98	30.04	29.89	30.19	29.66
March	29.95	30.02	29.85	30.15	29.65
April	29.90	29.95	29.88	30.06	29.67
May	29.86	29.92	29.82	30.08	29.88
June	29.85	29.88	29.81	30.02	29.59
July	29.82	29.87	29.76	30.00	29.48
August	29.83	29.87	29.80	30.02	29.58
September	29.83	29.90	29.77	30.03	29.28
October	29.88	29.93	29.82	30.05	29.45
November	29.90	29.96	29.81	30.16	29.27
December	29.96	30.02	29.88	30.16	29.54
Annual	29.89	30.06	29.76	30.21	29.28

TABLE 2.—*Normal temperatures at Manila*, 1883–1898.

Month.	Mean.	Highest mean.	Lowest mean	Absolute maximum.	Absolute minimum.
	°*F.*	°*F*	°*F.*	°*F.*	°*F.*
January	77.0	78.4	74.5	93.0	62.1
February	77.7	79.5	75.9	95.7	61.0
March	80.4	81.9	79.0	95.9	63.3
April	82.9	84.9	81.1	99.0	66.0
May	83.3	86.5	81.7	100.0	71.1
June	82.0	85.1	80.6	97.0	70.9
July	80.8	81.5	79.0	94.8	70.0
August	80.8	81.9	79.5	94.3	69.1
September	80.4	81.7	79.3	93.7	70.5
October	80.4	81.5	79.0	94.8	68.7
November	79.0	80.2	77.7	92.1	64.9
December	77.4	78.8	75.4	91.9	60.8
Annual	80.2	86.5	74.5	100.0	60.8

TABLE 3.—*Normal atmospheric moisture at Manila*, 1883–1898.

Month.	Relative humidity.			Vapor pressure		
	Mean.	Maximum	Minimum.	Mean.	Absolute maximum.	Absolute minimum.
	Per ct.	*Per cent.*	*Per cent.*	*Inches.*	*Inches.*	*Inches.*
January	77.7	100.0	40.0	0.718	1.024	0.469
February	74.1	100.0	33.0	0.697	0.992	0.382
March	71.7	100.0	31.5	0.736	1.142	0.390
April	70.9	100.0	33.0	0.784	1.138	0.472
May	76.9	100.0	32.0	0.866	1.122	0.508
June	81.5	100.0	36.0	0.886	1.067	0.587
July	84.9	100.0	52.5	0.882	1.075	0.677
August	84.4	100.0	52.0	0.882	1.083	0.689
September	85.6	100.0	51.0	0.886	1.071	0.614
October	82.6	100.0	46.0	0.850	1.051	0.559
November	81.6	100.0	39.0	0.799	1.016	0.441
December	80.7	100.0	39.5	0.762	1.055	0.453
Annual	79.4	100.0	31.5	0.811	1.142	0.382

TABLE 4.—*Normal rainfall at Manila*, 1865–1898.

Month.	Mean.	Highest mean.	Lowest mean.	Greatest Daily.
	Inches.	*Inches.*	*Inches.*	*Inches.*
January	1.198	7.685	0.020	7.327
February	0.418	1.559	0.000	1.496
March	0.736	3.945	0.000	2.362
April	1.142	5.370	0.000	1.724
May	4.197	10.114	0.000	6.567
June	9.622	25.807	0.976	9.949
July	14.567	31.882	5.276	11.421
August	13.866	43.184	5.150	8.917
September	14.925	57.862	2.000	13.228
October	7.586	23.217	1.555	6.772
November	5.126	15.662	1.178	7.110
December	2.134	13.638	0.008	3.543
Annual	75.457	57.862	0.000	13.228