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REGISTER OF METEOROLOGICAL OBSERVATIONS UNDER THE DIRECTION OF THE SMITHSONIAN INSTITUTION, ADOPTED BY THE COMMISSIONER OF PATENTS FOR HIS AGRICULTURAL REPORT.

Place of Observation Ruthven County of Prince George State of Virginia For the Month of May 1857.

Latitude 37° 21' Longitude 0° 32' West Height above the sea ________ Name and address of Observer Julian C. Ruffin, Prince George C. H. Va

Day of Month	Barometer: Observed height 7 a.m.	2 p.m.	9 p.m.	Thermometer attached to barometer 7 a.m.	2 p.m.	9 p.m.	Barometer height reduced to freezing point 7 a.m.	2 p.m.	9 p.m.	Mean	Thermometer in the open air 7 a.m.	2 p.m.	9 p.m.	Mean	Rain and snow: Time of beginning of rain or snow	Time of ending of rain or snow	Amount of rain or melted snow in gauge, in inches	Depth of snow, in inches	Clouds: Amount of cloudiness 7 A.M.	Amount of cloudiness 2 P.M.	Amount of cloudiness 9 P.M.
1	30.01	29.96	29.86	49	61	61	29.95	29.89	29.77		50	62	54						1	5	8
2	29.74			64			29.64				64				12½ P.M.	In night	1.86		8	10	10
3	29.70	29.68	29.68	68	72	69	29.60	29.57	29.57		62	72	60		4 P.M.	6 P.M.	2.14		10	8	10
4	29.65		29.48	69		71	29.54		29.37		66		66		In night		0.83		10	9	9
5	29.53		29.61	64		70	29.44		29.50		61		58						0	0	0
6	29.69	29.68	29.68	61	73	70	29.60	29.56	29.57		61	77	60						0	0	0
7	29.78	29.78	29.80	61	69	66	29.69	29.67	29.70		54	68	54						1	0	0
8	29.90		30.00	59		65	29.82	~~29.90~~	29.90		59		53						0	0	0
9	30.10	29.95	29.85	58	72	69	30.02	29.83	29.74		57	74	56						0	0	0
10	29.68	29.53	29.53	65	82	77	29.58	29.39	29.40		65	87	71						1	0	0
11	29.74	29.74	29.80	62	67	61	29.65	29.64	29.71		55	61	50						0	5	5
12	29.87		29.94	57		62	29.79		29.85		49		44						7	4	0
13	29.98	29.90	29.88	53	69	69	29.91	29.79	29.77		53	75	56		8 P.M.	In night	0.13		0	4	10
14	29.63		29.48	65		74	29.53		29.36		60		68						10	5	2
15	29.45	29.35	29.47	69	77	75	29.34	29.22	29.35		62	80	65		7 a.m.	8 a.m.	0.08		10	1	0
16	29.62	29.69	29.70	64	69	67	29.53	29.58	29.60		58	69	56						0	1	0
17	29.75			62			29.66				60				5 P.M.	In night	0.67		7	10	10
18	[illegible]	29.74	29.64	[illegible]	55	54		29.67	29.57		[illegible]	50	48		2 P.M.				10	10	10
19	29.41	29.39	29.46	53	55	52	29.35	29.32	29.40		49	49	43	47.00					10	10	10
20	29.46	29.54	29.62	48	52	52	29.41	29.48	29.56		43	51	47	47.00		7 a.m.	0.8		10	9	1
21	29.68	29.68	29.71	52	59	58	29.62	29.60	29.63		51	60	51						4	0	5
22	29.74		29.74	56		65	29.67		29.64		55		54						3	3	0
23	29.73	29.73	29.74	58	75	72	29.65	29.61	29.63		57	80	62						0	0	3
24																					
25			29.76			79			29.63				70								0
26			29.8			78			29.67				70						0	0	0
27	29.8	29.7	29.69	69	77	75	29.69	29.57	29.57		70	79	65		5 P.M.	6½ P.M.	0.26		2	1	10
28	29.68		29.6	69		77	29.57		29.47		65		63						10	1	1
29	29.6	29.58	29.63	68	76	72	29.50	29.46	29.52		65	74	57						0	1	0
30	29.7	29.74	29.76	63	78	76	29.61	29.61	29.63		62	83	65						0	0	0
31	29.76	29.76	29.74	72	82	79	29.64	29.62	29.61		73	82	73	76.00	2½ P.M.	3 P.M.	0.15		4	8	5
Sums.							79900	56206	82869		1586	1333	1639						40	3.6	3.6
Means.							29.59	29.58	29.60	29.59	58.64	70.16	58.54							3.7	

EXPLANATION OF THE ABOVE COLUMNS.

BAROMETER.

Observed Height.—Under this head are entered the records of observations made on the barometer at three hours daily—7 a. m., 2 p. m. and 9 p. m.

Thermometer attached to Barometer.—Under this head are the records of the thermometer attached to the barometer, observations of which are necessary to correct the barometer for variations in height of the mercury on account of difference of temperature.

Barometer reduced to freezing point.—In this space are placed the figures which indicate the observations on the barometer reduced to the height at 32° Fahrenheit, by means of a table; and also the mean or average of the three reduced daily observations.

THERMOMETER IN THE OPEN AIR.

This is intended for the register of the standard thermometer, and for the daily mean or average of the three observations.

PSYCHROMETER, OR HYGROMETER.

Under this head are entered the records of the dry and wet bulb thermometers, from which the "Force of Vapor" and "Relative Humidity" are obtained by means of tables.—(*See Smithsonian Collection of Tables.*)

RAIN AND SNOW.

Under this head are entered the time of beginning and ending of the fall of rain or snow, and the amount, in inches and hundredths, of rain or melted snow collected in a gauge at the surface of the ground; also the depth of the snow.

CLOUDS.

Under this general head are entered three daily observations on the aspect of the sky, &c. 1st. The "Amount of Cloudiness," designated by figures, 10 being entire cloudiness; 5 half cloudiness; and 0 entire clearness. 2d. "Course of the higher clouds," which pass directly over the head of the observer, as given to eight points of the compass. This observation is important, as the course of the *higher clouds* is sometimes different from that of the *surface wind*, which is given in another column. 3d. The "Velocity" or rate of motion, 10 being the highest and 0 being apparent rest. 4th. The description or "Kind of clouds," to be entered by means of the following abbreviations: *St.* Stratus; *Cu.* Cumulus; *Cir.* Cirrus; *Nim.* Nimbus; *Cir. st.* Cirro-stratus; *Cu. st.* Cumulo-stratus; *Cir. cu.* Cirro-cumulus.—(See *Smithsonian Drawing of Clouds.*)

WINDS.

This is for the record of the direction of the wind as indicated by a vane, and its force, by estimation. The direction is entered in eight points of the compass: N., N.E., E., S.E., S. S.W., W., N.W. The force is to be estimated and registered by the following table, in figures, from 1 to 10:

1. Very light breeze .... 2 miles per hour.
2. Gentle breeze .... 4 " "
3. Fresh breeze .... 12 " "
4. Strong wind .... 25 " "
5. High wind .... 35 " "
6. Gale .... 45 " "
7. Strong gale .... 60 " "
8. Violent gale .... 75 " "
9. Hurricane .... 90 " "
10. Most violent hurricane .... 100 " "

FORCE OR PRESSURE OF VAPOR.

In this space are entered the numbers which indicate the inches of mercury of a barometer which the force of vapor of the atmosphere alone will sustain. The whole pressure of the atmosphere, as given under the head of "Barometer," is due, conjointly, to the weight of the air and the moisture which it contains. The figures under this table indicate the separate pressure of the moisture, and are obtained from the records of the wet and dry bulb thermometers by means of a table based on experiment.—(*See Smithsonian Collection of Tables.*)

RELATIVE HUMIDITY OR FRACTION OF SATURATION.

The quantity of water in a state of vapor which a given space can contain, depends on the temperature. When a given space has as much water as it can hold at a given temperature, it is said to be saturated with vapor. If the temperature be lowered, a portion of the vapor will be condensed into water, but the space will still be saturated. If the temperature be raised and no more vapor be admitted, the space will only be partially saturated. The numbers under the head of "Relative Humidity" therefore denote the per-centage of saturation; full saturation being indicated by 1. and half saturation by .50. These figures are deduced from the corresponding forces of vapor by means of a table in the Smithsonian Collection.

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