

HARVARD UNIVERSITY

BLUE HILL METEOROLOGICAL OBSERVATORY

DIRECTOR: CHARLES F. BROOKS

MILTON, MASSACHUSETTS

Mar. 17, 1944

Mr. Vincent J. Schaefer,
Research Laboratory,
General Electric Co.
1 River Road,
Schenectady, N. Y.

Dear Mr. Schaefer:

Mr. Arenberg and I are pleased to learn that you and Dr. Langmuir are tentatively planning to come to Boston Apr. 3, and shall be glad to see you at Blue Hill Observatory that day. We shall be able to contact Mt. Washington by radio also. Would morning or afternoon best suit your convenience?

I suggest that you phone the Observatory, Blue Hills 2750, from the station so that we can arrange transportation for you, if Mr. Burhoe has not been drafted by that time, or at least advise you whether the spring mud has yet abated sufficiently for a taxi to go to the top (if you should wish to drive up).

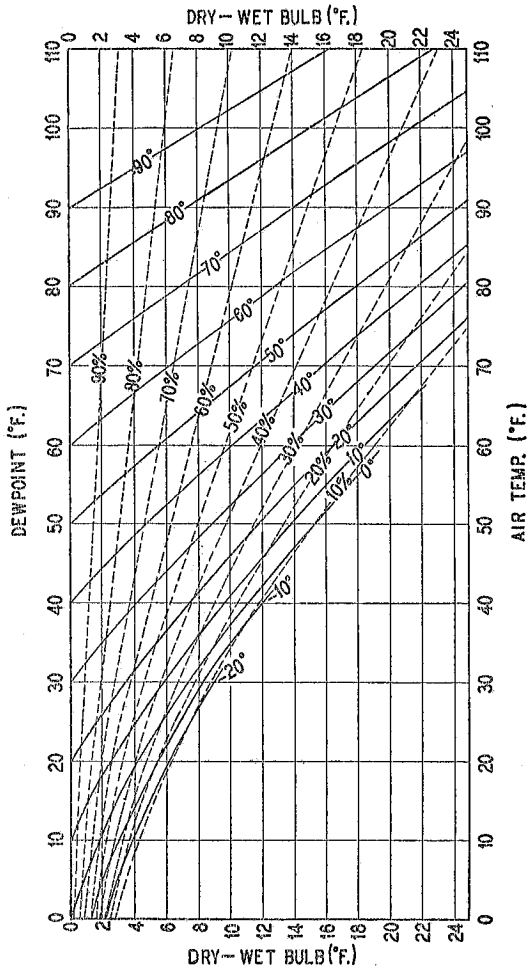
Sincerely yours,

Charles F. Brooks

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BEAUFORT SCALE OF WIND FORCE

No.	Mi/hr.	Description: brief specifications.
0	<0.5	Calm: smoke rises vertically.
1	1-3	Light air: cannot move vanes.
2	4-7	Slight breeze: moves vanes.
3	8-12	Gentle breeze: extends light flags.
4	13-18	Moderate breeze: moves branches.
5	19-24	Fresh breeze: forms small-crested waves.
6	25-31	Strong breeze: whistles in tel. wires.
7	32-38	Moderate gale: sways whole trees.
8	39-46	Fresh gale: impedes walking.
9	47-54	Strong gale: breaks signs.
10	55-63	Whole gale: uproots trees.
11	64-75	Storm: widespread damage.
12	≧75	Hurricane: excessive damage.



DEWPT. FROM TEMP. & REL. HUMIDITY
 (Barom. at 29 in.)

Air temp.	Rel. hum.	Dew point
32° F	75%	26° F
"	50%	17° F
"	25%	3° F
50° F	75%	42° F
"	50%	32° F
"	25%	17° F
68° F	75%	60° F
"	50%	48° F
"	25%	31° F
86° F	75%	77° F
"	50%	65° F
"	25%	46° F

PRESSURE & TEMPERATURE CONVERSIONS
 (See also p. 3)

FAHRENHEIT & CENTIGRADE
 For converting whole degrees:
 1 F° = 5/9 C° = 0.55 C°
 1 C° = 9/5 F° = 1.8 F°

For thermometer readings:
 °C = (°F + 40) × 5/9 - 40
 °F = (°C + 40) × 9/5 - 40

INCHES AND MILLIBARS
 1 inch Hg. = 33.86 mb
 .01 inch Hg. = .34 mb
 10 mb = .295 inch Hg.
 1 mb = .03 inch Hg.

MISCELLANY

Half of the sky is above and half below an altitude of 30°. The distance, d , in statute miles, to which an object h ft high can be seen, with average refraction, is $d = 1.32\sqrt{h}$. The height, h (ft), of an object which can be seen from a distance, d , is $h = 0.574d^2$.

LINEAR EQUIVALENTS: ENGLISH & METRIC

1 inch = 2.54 cm	1 cm = 0.394 inches
1 ft = 30.5 cm = 0.305 m	1 m = 39.37 in = 3.28 ft
1 statute mile = 5280 ft	1 km = 5/8 mi = 0.6214 statute mi
= 0.8676 naut. mi	1 m/sec = 2.24 mi/hr
= 1.61 km	" = 3.6 km/hr
1 nautical mi = 6080 ft	" = 3.28 ft/sec
= 1.1516 statute mi	" = 1.94 knots
= 1.85 km	
1 knot = 1 naut. mi/hr	
10 ft/sec = 6.8 mi/hr	
1 mi/hr = 1.5 ft/sec	
" = 0.45 m/sec	

VOLUME AND WEIGHT EQUIVALENTS

1 lb = 0.454 kg	1 in. precip. = 113 tons per acre
1 cu in = 16.4 cc	1 kg = 2.2 lbs
1 qt = 0.95 liter = 57.75 cu in	1 cc = 0.061 cu in
1 lb of water in gage 8 inches in diam. = 0.55 inches precip.	1 liter = 1.06 qt = 61.0 cu in

ADIABATIC LAPSE RATES (APPROX.)

Dry: 1 C° per 100 m	Wet: for saturation at
1 F° per 180 ft	32° F = 3.8 F° per 1000 ft
3 C° per 1000 ft	50° F = 3.3 F° " " "
5.4 F° per 1000 ft	68° F = 2.8 F° " " "

HEIGHT OF CONVECTIVE CLOUD BASE (APPROX.)

H (feet) = 225 (t - t')	H (meters) = 68 (t - t')
t = air temp. (°F)	t' = dewpoint (°F)

BAROMETRIC HEIGHT EQUIVALENTS (NEAR SEA LEVEL)

Diff. of 0.1 inch (bar. press.) at	32° F: 88 ft (26.7 m)
	50° F: 91 ft (27.8 m)
	70° F: 95 ft (29.1 m)
Diff. of 1 mb at	32° F: 26 ft (7.9 m)
	50° F: 27 ft (8.2 m)
	70° F: 28 ft (8.6 m)

THERMOMETER SCALES	°F		°C	
	°F	°C	°C	°F
	104	40	54.4	40
	95	35	48.9	35
	86	30	43.3	30
	77	25	37.8	25
	68	20	32.2	20
	59	15	26.7	15
	50	10	21.1	10
	41	5	15.6	5
	32	0	10.0	0
	23	-5	4.4	-5
	14	-10	-1.1	-10
	5	-15	-6.7	-15
	-4	-20	-12.2	-20
	-13	-25	-17.8	-25
	-22	-30	-23.3	-30
	-31	-35	-28.9	-35
	-40	-40	-34.4	-40
	-49	-45	-40.0	-45
	-58	-50	-45.6	-50
	-67	-55	-51.1	-55
	-76	-60	-56.7	-60
	-85	-65	-62.2	-65
	-94	-70	-67.8	-70

FOR INTER-MEDIATE NUMBERS	°F	°C	°F	°C
	1	0.6	2	1.1
	3	1.7	4	2.2
	5	2.8	6	3.3
	1.8	1	3.6	2
	3.6	2	5.4	3
	5.4	3	7.2	4
	9.0	5		

INCHES MB.	BAROMETRIC INCHES	ES. MILLIBARS
28.6	968.5	
7	971.9	
8	975.3	
9	978.7	
29.0	982.1	
1	985.4	
2	988.8	
3	992.2	
4	995.6	
5	999.0	
6	1002.4	
7	1005.8	
8	1009.1	
9	1012.5	
30.0	1015.9	
1	1019.3	
2	1022.7	
3	1026.1	
4	1029.5	
5	1032.9	
6	1036.2	
7	1039.6	
8	1043.0	
9	1046.4	
31.0	1049.8	

	MEAN HEIGHT LIMITS OF CLOUDS	
High	{ Cirrus Cirrocumulus Cirrostratus	{ 6,000-12,000 m or 20,000-40,000 ft
Middle	{ Alto cumulus Altostratus	{ 2,000-6,000 m 6,500-20,000 ft
Low	{ Stratocumulus Stratus Nimbostratus	{ ground-2,000 m " -6,500 ft
Vertical development	{ Cumulus Cumulonimbus	{ 500-12,000 m 1,500-40,000 ft

DEWPOINT AND RELATIVE HUMIDITY FROM DRY AND WET BULB TEMPERATURES

The nomogram on the following page is based on U. S. Weather Bureau humidity tables for an atmospheric pressure of 982 mb (29 in). When the pressure is 30 mb lower subtract 1/10 F° from the difference air temp. minus wet bulb ("dry-wet bulb" on diagram) before using the nomogram. When the pressure is 30 mb higher add 1/10 F°.