Table 1. Properties of Dry Air[a]
Barometric Pressure 29.921 In.

Temperature Deg F	Weight per Cu Ft Pounds	Per Cent of Volume at 70 F	Btu Absorbed by One Cu Ft Dry Air per Deg F	Cu Ft Dry Air Warmed One Degree per Btu
0	0.08636	0.8680	0.02080	48.08
10	0.08453	0.8867	0.02039	49.05
20	0.08276	0.9057	0.01998	50.05
30	0.08107	0.9246	0.01957	51.10
40	0.07945	0.9434	0.01919	52.11
50	0.07788	0.9624	0.01881	53.17
60	0.07640	0.9811	0.01846	54.18
70	0.07495	1.0000	0.01812	55.19
80	0.07356	1.0190	0.01779	56.21
90	0.07222	1.0380	0.01747	57.25
100	0.07093	1.0570	0.01716	58.28
110	0.06968	1.0756	0.01687	59.28
120	0.06848	1.0945	0.01659	60.28
130	0.06732	1.1133	0.01631	61.32
140	0.06620	1.1320	0.01605	62.31
150	0.06510	1.1512	0.01578	63.37
160	0.06406	1.1700	0.01554	64.35
180	0.06205	1.2080	0.01506	66.40
200	0.06018	1.2455	0.01462	68.41
220	0.05840	1.2833	0.01419	70.48
240	0.05673	1.3212	0.01380	72.46
260	0.05516	1.3590	0.01343	74.46
280	0.05367	1.3967	0.01308	76.46
300	0.05225	1.4345	0.01274	78.50
350	0.04903	1.5288	0.01197	83.55
400	0.04618	1.6230	0.01130	88.50
450	0.04368	1.7177	0.01070	93.46
500	0.04138	1.8113	0.01018	98.24
550	0.03932	1.9060	0.00967	103.42
600	0.03746	2.0010	0.00923	108.35
700	0.03423	2.1900	0.00847	118.07
800	0.03151	2.3785	0.00782	127.88
900	0.02920	2.5670	0.00728	137.37
1000	0.02720	2.7560	0.00680	147.07

[a]From *Fan Engineering*.

It is usual to assume that dry air, moist air, and the water vapor in the air follow the laws of perfect gases. This assumption while not absolutely true, especially with saturated vapor at temperatures much above 140 F, is sufficiently accurate for practical purposes and it greatly simplifies computations.

Table 2. Properties of Saturated Air[a]
Weights of Air, Vapor of Water, and Saturated Mixture of Air and Vapor at 29.921 Inches of Mercury

Temp. Deg F	Weight in a Cubic Foot of Mixture			Btu Absorbed by One Cubic Foot Sat. Air per Deg F	Cubic Feet Sat. Air Warmed One Degree per Btu	Specific Heat Btu per Pound of Mixture
	Weight of Dry Air Pounds	Weight of Vapor Pounds	Total Weight of the Mixture Pounds			
0	0.08625	0.000068	0.08632	0.02083	48.02	0.2413
10	0.08433	0.000110	0.08444	0.02039	49.05	0.2415
20	0.08246	0.000176	0.08264	0.01998	50.07	0.2418
30	0.08062	0.000277	0.08090	0.01958	51.07	0.2420
40	0.07878	0.000409	0.07919	0.01921	52.06	0.2426
50	0.07694	0.000587	0.07753	0.01885	53.05	0.2431
60	0.07506	0.000828	0.07589	0.01851	54.02	0.2439
70	0.07310	0.001151	0.07425	0.01819	54.97	0.2450
80	0.07103	0.001578	0.07261	0.01790	55.87	0.2465
90	0.06879	0.002134	0.07092	0.01762	56.76	0.2485
100	0.06635	0.002850	0.06920	0.01736	57.59	0.2509
110	0.06364	0.003762	0.06740	0.01714	58.35	0.2543
120	0.06060	0.004914	0.06551	0.01695	59.00	0.2587
130	0.05715	0.006351	0.06350	0.01679	59.56	0.2644
140	0.05319	0.008120	0.06131	0.01668	59.96	0.2721
150	0.04864	0.010295	0.05894	0.01662	60.17	0.2820
160	0.04340	0.012936	0.05634	0.01662	60.17	0.2950
170	0.03734	0.016108	0.05345	0.01668	59.96	0.3121
180	0.03035	0.019896	0.05025	0.01684	59.38	0.3351
190	0.02228	0.024400	0.04668	0.01710	58.49	0.3663
200	0.01300	0.029715	0.04272	0.01749	57.18	0.4094
210	0.00230	0.035938	0.03824	0.01802	55.50	0.4712
212	0.00000	0.037307	0.03731	0.01815	55.10	0.4865

[a]From *Fan Engineering*.

Boyle's Law refers to the relation between the pressure and volume of a gas, and may be stated as follows: *With temperature constant, the volume of a given weight of gas varies inversely as its absolute pressure.* Hence, if P_1 and P_2 represent the initial and final absolute pressures, and V_1 and V_2 represent corresponding volumes of the same mass, say one pound of gas, then $\frac{V_1}{V_2} = \frac{P_2}{P_1}$, or $P_1 V_1 = P_2 V_2$, but since $P_1 V_1$ for any given case is a definite constant quantity, it follows that the product of the absolute