



III.

CLIMATE.

THE climate of Florida, considered as one, is exceptional. It is, in some important respects, the finest in the world. Dr. Baldwin, a prominent physician of Jacksonville, maintains that the State occupies a most favorable position in regard to climate ; for the many modifying influences in operation have produced, he shows, " a climate that for equability has few if any equals and no superior."

Temperature.—As regards temperature, continued observations in various parts of the State show that it is not excessive in either direction during the entire year, the range between winter and summer temperature being only about 20°. The annual mean is 70° ; that of spring, 71° ; summer, 80° ; autumn, 71° ; and winter, 60°. The following is the Weather Bureau's official statement of the temperature at Jacksonville, for the year 1837:

Annual mean . . . . .	.68'1
Maximum . . . . .	.100'3
Minimum . . . . .	.21'9

This may be accepted as applicable for the northern part of semi-tropical Florida, and approximately for the whole orange belt.

The following table presents results given by the Signal Service. The figures for Florida are presumably those for Jacksonville, for there are parts of the State where 105° has not been felt for a hundred years. The figures are degrees Fahrenheit, and the table shows the one point of comparative equability :

PLACE.	Maximum.	Minimum.	Difference.
Florida	105	10	95
Louisiana	105	0	105
Mississippi	105	— 05	110
Alabama	105	— 10	115
West Virginia	100	- 2 0	120
Georgia	105	- 2 0	125
Ohio	105	- 2.5	ISO
Kansas	110	— 20	130
Connecticut	105	— 3d	135
Oregon	110	- 2 5	135
Illinois	105	— 85	140
Nebraska	110	— 30	140
New York	105	— 35	140
Idaho	115	— 30	145
Colorado	110	— 45	155
Dakota	110	- 4 5	155
California	115	- 4 5	160
Montana	115	— 50	165

As the public mind naturally expects, and as the California press have demanded, a comparison of the two States in the matter of temperature, the fol-

lowing figures are given from the monthly weather review of the Signal-Service Bureau, for August, 1885:

<i>In Florida.</i>		<i>In California.</i>	
	Dsg.		Deg.
Limona	98	Fall Brook . . . . .	.115
Jacksonville	94	College City . . . . .	.114
Sanford	94	Murietta . . . . .	.111
Key West	94	Red Bluff . . . . .	.108
Merritt's Island	94	Los Angeles . . . . .	.106
St. Augustine	93	Sacramento . . . . .	.105

For September, 1885, the figures from the same review are these:

<i>In Florida.</i>		<i>In California.</i>	
	Deg.		Deg.
Limona	97	Fall Brook . . . . .	.110
Key West	92	Los Angeles . . . . .	.109
Merritt's Island	89	Murietta . . . . .	.107
St. Augustine	89	Poway . . . . .	.103
Jacksonville	89		

These two tables answer the question whether California is warmer in midsummer than Florida.

Humidity.—As to the humidity about which so much extravagant nonsense has been written, and which hasty writers have pronounced excessive and therefore objectionable, Dr. Baldwin insists, and with conclusive reasons, that it is one of the fortunate and favorable features, when considered in the light of science. " Let it be remem-

bered," he writes, " that the term relative humidity as used by meteorologists is not the same as absolute humidity " ; and then proceeds to show how this is true, in the following way: Absolute humidity determines the exact amount of vapor in the air when condensed into water; while relative humidity has relation to the amount of vapor in the air when it will be condensed after the point of saturation is reached, and this point of saturation depends on the temperature and tension or force of vapor determined by the barometric pressure at the time of taking the observation. In relative humidity, the point of saturation is marked 100, and the figures in the column below 100 are the percentage of that quantity as existing at the time under a specific degree of temperature and tension of vapor. Therefore, the point of saturation is variable ; as, for instance, when the thermometer is 50° and the barometer marks 30 inches pressure, a cubic foot of air then contains four grains and a fraction of water at the point of saturation, 100. When the temperature is 75° and the barometer the same as before, a cubic foot of the atmosphere then contains nine grains and a fraction where the air is saturated, but still marked 100. At the temperature of 100° , pressure as before, the cubic foot of air at the point

of saturation will contain twenty grains and a fraction. Thus we see that the amount of moisture in the air at different temperatures varies in quantity. Therefore, the percentages given of 100 and the different temperatures must also vary, so that the same figures, although they may be correct percentages of 100, do not indicate to us the absolute amount of moisture in the atmosphere, unless we know the temperature which regulates each point of saturation. Time and space will not permit a more extended exposition of this interesting subject. Professor Henry, of the Smithsonian Institution, in an article on meteorology, says : " It is not upon the actual amount of vapor which the air contains at a given time or place that its humidity depends ; but upon its greater or less degree of saturation. That air is said to be dry in which evaporation takes place rapidly from a surface of water or moistened substance. Hence, if relative humidity shows a small percentage of 100, the point of saturation in a climate where the absolute moisture is great, its effect in producing evaporation is the same as where the absolute humidity is less at the same percentage of 100, indicating saturation there."

Accordingly, so far as Florida is concerned, it, with its so-called excessive humidity, is in that

respect not less favorably conditioned than those places which boast of their dry climates, because their absolute humidity is less, and therefore more conducive to health. But the absolute humidity of this climate is productive of benefit in modifying its temperature. Vapor in the atmosphere regulates radiation of heat from the earth into the voids of space, thus preventing refrigeration and sudden changes of temperature, so inimical to the comfort of mankind, and so destructive to vegetation and the ripening of fruits.

Professor Tyndall says : " The observations of the meteorologists furnish important, though hitherto unconscious, evidence of the influence of vapor on the atmosphere. Whenever the air is dry, we are liable to extremes of temperature. By day in such places, the sun's heat reaches the earth unimpeded, and renders the maximum high ; by night, on the other hand, the earth's heat escapes unimpeded into space, and renders the minimum low. Hence, the difference between the maximum and the minimum is greater where the air is driest. "Wherever drought reigns, we have the heat of the day forcibly contrasted with the chill of the night. In the Sahara itself, when the sun's rays cease to impinge on the burning sands, the temperature runs rapidly

down to freezing, because there is no vapor overhead to check the calorific drain."

Professor Tyndall states the phenomena in question with further illustration, but the above is enough for this purpose. Dr. Baldwin calls attention to the fact that the cool nights of the summers in Florida, so highly appreciated by all that have experienced them, attest the fact that the (so-called excessive) moisture in the air does not prevent radiation. And again, during many winters when excessive cold has characterized the weather of the **North**, and the cold polar waves have been precipitated upon these latitudes, the moisture-bearing breezes from the south meet them, and the moisture overhead is condensed into clouds that prevent severe radiation and protect them and their orange-groves from the intense cold that otherwise they should experience. But if, as has recently been their sad experience, those intensely cold winds, reduced to a temperature below zero, be driven as northers down upon Texas and the Gulf and there reflected across to this State, the passage of them across the warm waters of the Gulf, although modifying their temperature, **will** still leave them cold enough to be destructive in their effects. Bat these pre-refrigerated storms of a foreign origin are rare

visitors to this clime, and do not count as indigenous elements to this enjoyable climate.

To put this matter of relative humidity in yet another light, the following table, taken by Dr. C. J. Kenworthy from official Signal Service sources, compares Florida with several other States, and with two Mediterranean watering-places :

Mean Relative Humidity.

	Tears.	Novem-ber.	Decem-ber.	Janu-ary.	Febru-ary.	March.	Mean for five m'nths.
		Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Mentone & Cannes	3	71-8	74-2	72-0	70-7	73-3	72-4
Nassau, N. P. . . .	1	76-1	72-0	77-0	72-5	68-4	73-2
Atlantic City, N.J.	5	76-9	79-1	80-6	77-3	76-8	78-1
Breck'nridge, Minn	5	76-9	83-2	76-8	81-8	79-5	79-6
Duluth, Minn. . . .	5	74-0	72-1	72-7	73-3	71-0	72-6
St. Paul, Minn. . . .	5	70-3	73-5	75-2	70-7	67-1	71-3
Punta Rassa, Fla.	5	72-7	73-2	74-2	73-7	69-9	72-7
Key West, Fla. . . .	5	77-1	78-7	78-9	77-2	72-2	76-8
Jacksonville, Fla.	5	71-9	69-3	70-2	68-5	63-9	68-8
Augusta, Ga.	5	71-8	72-6	73-0	64-7	62-8	68-9
Bismarck, Dak. . . .	1	76-6	76-4	77-4	81-6	70-6	76-5
Boston, Mass.	1	68-0	61-8	60-6	68-2	63-7	65-6