CLIMATOLOGY OF COSTA RICA.

Communicated by H. PITTIER, Director, Physical Geographic Institute.

TABLE 1.—*Hourly observations at the Observatory, San Jose de Costa Rica, during June*, 1901.

Hours.	Pressure.		Temperature.		Relative humidity.		Rainfall.		
	Observed, 1901.	Normal, 1889-1900.	Observed, 1901.	Normal, 1889-1900.	Observed, 1901.	Normal, 1889-1900.	Observed, 1901.	Normal, 1889-1900.	Duration, 1901.
	660+ *Mm.*	660+ *Mm.*	°*C.*	°*C.*	%	%	*Mm.*	*Mm.*	*Hrs.*
1 a. m.	4.05	3.58	17.70	17.73	94	93	0.3	2.2	0.59
2 a. m.	3.73	3.23	17.89	17.49	93	93	0.2	1.7	0.08
3 a. m.	3.42	2.99	17.88	17.25	94	93	0.1	1.4	0.08
4 a. m.	3.33	2.95	17.87	17.09	94	93	1.1	1.2	0.91
5 a. m.	3.37	3.10	17.20	17.01	93	93	2.2	1.1	1.50
6 a. m.	3.61	3.41	17.16	16.91	92	92	0.8	0.9	2.50
7 a. m.	3.92	3.72	18.63	18.59	88	87	0.2	0.4	1.50
8 a. m.	4.10	3.95	21.12	20.53	74	81	0.0	0.5	0.00
9 a. m.	4.23	4.11	22.71	22.40	67	73	0.0	0.9	0.00
10 a. m.	4.26	4.11	24.53	23.90	64	69	0.0	1.9	0.00
11 a. m.	4.11	3.91	25.56	24.77	62	67	0.0	2.0	0.00
12 m.	3.73	3.62	25.26	25.10	65	68	0.0	4.3	0.00
1 p. m.	3.38	3.21	24.88	24.81	69	70	7.3	10.1	1.16
2 p. m.	3.02	2.88	23.67	23.77	75	74	24.6	27.0	4.08
3 p. m.	2.83	2.57	22.43	22.45	79	79	41.6	28.8	7.34
4 p. m.	2.70	2.54	21.56	21.34	84	84	38.6	53.1	6.33
5 p. m.	2.87	2.83	20.55	20.38	89	87	48.1	41.1	9.11
6 p. m.	3.24	3.15	19.86	19.72	92	89	37.1	48.6	9.46
7 p. m.	3.71	3.57	19.44	19.22	94	91	24.3	24.7	10.25
8 p. m.	4.10	3.90	19.17	18.87	95	92	18.2	18.8	7.46
9 p. m.	4.41	4.10	18.91	18.63	94	92	19.9	10.2	5.57
10 p. m.	4.54	4.24	18.69	18.35	95	93	13.5	4.0	6.28
11 p. m.	4.58	4.23	18.40	18.13	95	93	3.1	3.4	4.41
Midnight	4.36	3.98	18.20	17.83	95	92	2.5	2.3	3.58
Mean	663.73	663.47	20.35	20.12	85	85	.....	.....	.....
Minimum	660.60	660.73	14.6	13.20	38	.....	.....	.....	.....
Maximum	665.70	666.12	29.5	29.50	100	.....	22.1	.....	.....
Total	.....	.....	.....	.....	.....	.....	283.6	290.6	82.19

REMARKS.—The barometer is 1,169 meters above sea level. Readings are corrected for gravity, temperature, and instrumental error. The dry and wet bulb thermometers are 1.5 meters above ground and corrected for instrumental errors. The hourly readings for pressure, wet and dry bulb thermometers, are obtained by means of Richard registering instruments, checked by direct observations every three hours from 7 a. m. to 10 p. m. The hourly rainfall is as given by Hottinger's self-register, checked once a day. The standard rain gage is 1.5 meters above ground. In the Costa Rican system the San Jose local time is used, which is $0^h\ 36^m\ 13^s$ slower than seventy-fifth meridian time.

TABLE 2.

Time.	Sunshine.		Cloudiness observed, 1901.	Temperature of the soil at depth of—				
	Observed, 1901.	Normal, 1889-1900.		0.15 *m.*	0.30 *m.*	0.60 *m.*	1.20 *m.*	3.00 *m.*
	Hours.	*Hours.*	%	°*C.*	°*C.*	°*C.*	°*C.*	°*C.*
7 a. m.	7.03	9.79	75	22.05	22.32	22.86	22.05	21.36
8 a. m.	17.92	17.25	.....	.....	.....	.....	.....	.....
9 a. m.	21.25	19.58	.....	.....	.....	.....	.....	.....
10 a. m.	22.32	19.30	68	22.34	22.39	22.88	22.12	.....
11 a. m.	22.12	17.75	.....	.....	.....	.....	.....	.....
12 m.	16.16	14.09	.....	.....	.....	.....	.....	.....
1 p. m.	10.58	11.58	83	22.87	22.60	22.89	22.11	.....
2 p. m.	8.00	10.52	.....	.....	.....	.....	.....	.....
3 p. m.	4.59	7.01	.....	.....	.....	.....	.....	.....
4 p. m.	1.33	4.36	96	22.85	22.59	22.86	22.04	.....
5 p. m.	0.33	1.67	.....	.....	.....	.....	.....	.....
6 p. m.	0.00	0.37	.....	.....	.....	.....	.....	.....
7 p. m.	.....	.....	97	22.76	22.58	22.85	22.03	.....
8 p. m.	.....	.....	.....	.....	.....	.....	.....	.....
9 p. m.	.....	.....	.....	.....	.....	.....	.....	.....
10 p. m.	.....	.....	80	22.61	22.58	22.87	22.04	.....
11 p. m.	.....	.....	.....	.....	.....	.....	.....	.....
Midnight	.....	.....	.....	.....	.....	.....	.....	.....
Mean	.....	.....	84	22.59	22.51	22.88	22.07	21.36
Total	131.68	133.26	.....	.....	.....	.....	.....	.....

Notes on the weather.—On the Pacific slope and at San Jose the general weather was about normal for the season. On the Atlantic side it was very dry on the coastal belt and rather wet in the upper region.

Notes on the earthquakes at San Jose.—During June none were felt.

TABLE 3.—*Rainfall at stations in Costa Rica, June*, 1901.

Stations.	Amount.	No. rainy days.	Stations.	Amount.	No. rainy days.
	Mm.			*Mm.*	
1. Sipurio	255	21	13. Turrialba	266	21
2. Boca Banano	51	13	14. Juan Vinas	276	25
3. Limon	33	7	15. Santiago	227	17
4. Swamp Mouth	24	6	16. Las Concavas	.....	.....
5. Zent	50	20	17. Cartago	.....	.....
6. Gute Hoffnung	98	12	18. Tres Rios	548	23
7. Siquirres	294	17	19. S. Francisco G	301	23
8. Guapiles	270	19	20. San Jose	294	23
9. San Carlos	433	23	21. La Verbena	341	24
10. Sarapiqui	422	28	22. Alajuela	240	14
11. Las Lomas	282	11	23. San Isidro Alajuela	383	28
12. Peralta	236	18	24. Nuestro Amo	309	25

REFORESTATION AND RAINFALL IN THE LEEWARD ISLANDS.

By W. H. ALEXANDER, Observer, Weather Bureau, dated May 28, 1901.

The forestry question has of late years assumed a place of unusual prominence in the Leeward Islands colony, owing to the alarming extent to which the destruction of native forests has been carried.[1] The chief industry, the production of sugar, being paralyzed and poverty being on the increase, the present population has been driven to other means of supplementing scanty wages, and one of these means is the burning of charcoal. Of course, to make the charcoal wood must be had and to get the wood trees must be felled. Hitherto this destruction of trees has been done in a most indiscriminate, not to say wanton, manner. So much so, in fact, that official notice began to be taken of the matter and we find the commissioner for the island of Tortola, in his report for 1899, referring to this matter in the following words, viz:

Charcoal burning constitutes a very important source of income to the people of this island, and is extensively carried on, with a deplorable effect on the soil and agriculture, and laying bare on the hills a naturally shallow soil to the action of rain and wind, and lessening the effect of the rainfall to a marked degree.

In August, 1899, the traveling superintendent of the imperial department of agriculture deals with this subject relative to the Virgin Islands in the following language, viz:

The destruction of forest trees, particularly those growing on the upper ridges, is a very serious matter and deserves careful attention. Indeed it is not too much to say that on the protection of the remaining forest lands the future agricultural development of the island largely depends. Each year witnesses the destruction of fresh areas of forest for the purpose of charcoal burning, and as the lower slopes become cleared, the charcoal burner finds it necessary to extend his work of destruction to the upper ridges. About the center of the island there is a large area of several hundred acres at an elevation of 1,000 feet, from which the forest has entirely disappeared. This district is now a bleak and wind-swept waste, from which the upper layers of soil have been removed by the action of the wind and rain. There is abundant evidence that Tortola once possessed numerous streams of running water. There are few now. * * * There can be little doubt that the continuation of such a system of forest destruction will in time have a very serious effect on the climatic conditions of the island.

These and other representations relative to the subject were laid before the Secretary of State for the Colonies, London, and on October 3, 1899, he addressed a letter to the governor of the Leeward Islands, urging upon him the the impor-

[1] See the following documents filed in the Library of the Weather Bureau as Nos. 22364, 22365, and 22366:

Correspondence relating to the preservation of forests and reforestation in the Leeward Islands. Printed by the Imperial Department of Agriculture for the West Indies. For official use only. By V. Gale, printer to the government of Barbados. 1900.

Report of a Select Committee of the Legislative Council on forest preservation in St. Kitts and Nevis (appointed May 17, 1900).

Circular letter from Charles T. Cox, administrator, dated Government House, St. Kitts, 9th of March, 1901, communicating an ordinance to establish a forestry board.