RAINFALL AND MOISTURE.

In amount of moisture the zones of elevation are still more marked. The lower levels are almost rainless. During the first four months of the year some showers may fall, but completely rainless years are not unknown. The nature of the soil is such that any water which may fall immediately disappears beneath the rock-strewn surface. Some who have visited the islands in unusual seasons have been surprised to find the lower lands green with vegetation; but in normal years there is a very serious lack of moisture.

In contrast with the desert conditions characteristic of the slopes near the sea, the uplands are bountifully supplied with moisture. Besides a well-marked period of frequent convectional showers extending from February to May when the southeast trades are interrupted and equatorial calms prevail, there is a so-called summer, approximately from June to January, when, though the tropical downpours have ceased, the hills are drenched in dense mists (*garúas*) sufficient to keep the roads filled with mud, make books and papers mold in a short time, and quickly rust unpainted iron. Light rains may fall here at any season. On the southeast side of the islands, as on corresponding slopes of the hills, the moist zone extends several hundred feet lower, while the northern exposures, sheltered from the rain-bearing winds, present a striking contrast in their relatively arid character. The effect of abundant moisture on the uplands is evident not only in the ranker growth of vegetation but even upon the lava flows that stretch from near the summits to the sea. The upper sections of these flows are often badly weathered and covered with plants that have found lodgment upon their surfaces, while the lower reaches, that cross the arid zone beneath, show little effect of atmospheric action but lie in solid blocks of black obsidian. But for the constant humidity on the highlands the soil itself would still resemble that of the desert lower grounds.

* * * No storms visit the group during any period of the year.

THE CLIMATE OF SÃO PAULO AND CEARA, BRAZIL.

[Reprinted from Geographical Review, New York, December, 1919, vol.-8, pp. 356-357.]

Mr. R. C. Mossman, who was for some years connected with the Argentine Meteorological Service, is at present devoting attention to the climatology of various portions of South America. Hitherto by far the greater part of all available published data for South America have covered varying periods of time and have not been reduced to a homogeneous system. Hence, these observations have not been directly comparable and have lacked the accuracy which is an absolute essential in all good climatological work. In two recent communications (Quart. Journ. Royal Meteorol. Soc., January, 1919), Mr. Mossman gives the results of compilations which he has completed for the State of São Paulo and for the city of Fortaleza, in the State of Ceara, Brazil. The chief interest of São Paulo centers in its coffee industry, but the region is also becoming more and more a cattle country. Mr. Mossman has now reduced the temperatures and rainfalls of São Paulo, as published, to a homogeneous system. The data were extracted from the Dados Climatologicos of the Servico Meteorologico de São Paulo, issued since 1887, the last volume published dealing with the year ending November, 1912. These bulletins give an abundance of climatic information with a detail "such as is available for no other portion of South America." Mr. Mossman's summary includes all the essential facts:

The special interest of the State of Ceara lies in the fact that this region is periodically visited by severe droughts, and the object of the present study is to summarize the results regarding rainfall obtained from 1849 to 1915, the ultimate end in view being an investigation which it is hoped may lead to a clew concerning the "precise mechanism associated with these droughts." The rainfall data are given in great detail, in convenient and easily accessible form, and will prove of distinct value to all those who are interested in the economic climatology of Brazil.—*R. DeC. Ward.*

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C. FITZHUGH TALMAN, Professor in Charge of Library.

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Bjerknes, J.

On the structure of moving cyclones. Kristiania. 1919. 8 p. 30 cm. [See MONTHLY WEATHER REVIEW, Feb., 1919, **47**: 95-99.]

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C. F. TALMAN, Professor in Charge of Library.

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