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CURRENT LITERATURE

BOOK REVIEWS

Vegetation of Paraguay

Chodat¹ has issued the first of a series of bulletins upon the plants of Paraguay. The work on which the series is based includes investigation continued at intervals since 1889 and culminating in an expedition made in 1914 by Chodat and his former pupil Vischer, and authorized by the Federal Department of the Interior of Switzerland. Sketches, water colors, and photographs were made in the field, as were also some chemical tests. A large quantity of material was brought home for later study.

The first chapter treats of the climatology and physiography of the country. The discussion of climate is based upon records covering 30 years, made by Bertoni at Asuncion on the Paraguay River and at Puerto-Bertoni on the Alto-Parana. The eastern part of Paraguay has a subtropical climate of the Chinese type; the western part is more like the Mediterranean region. Topographically, the state may be divided into the depressions along the Paraguay River and the mountains of the east. A lower highland of about 300 m. elevation separates the 2 main depressions, that about Lake Ypacarai and the lowland around the Ypoa lagoon. This cordillera extends nearly east and west between the Rio Salado and Rio Manduvira, and these 2 depressions are the regions under discussion in this paper.

Chodat then takes up the Solanaceae, a group of intermediate importance, which compose several distinct formations, and gives somewhat in detail the variations in adaptation for climbing found in the liana forms, and the anatomical changes which occur during curvature. Only a few species are insect pollinated, those having large tubular flowers being visited by lepidopterous insects and humming birds. The genera Sessea and Grabowskia are here reported for the first time for the Paraguay flora. Indigo was found present in 2 species not previously known to contain the pigment. A few species of the family find in Paraguay their southern limit, while a somewhat larger number reach here their most northern extension. Several are mentioned as endemic and some of these are extremely local. In the third chapter the author discusses the Hydnoraceae, largely from a morphological standpoint. The one genus given (Prosopanche) is reported as parasitic on the roots of Prosopis and some of the Solanaceae.

The last chapter deals with the dominant group of the region, the Bromeliaceae. The 2 main divisions considered are the cistern plants and the epiphytic Tillandsias. The latter are divided into those which lean against the support and those having some means of attachment to it. The different adaptations for climbing are illustrated. The structure and function of the hairs of Tillandsia and of the hairs on the submerged leaf bases of the cistern species are given particular attention. The presence of cortical roots in the attached lianas is also noted and their value to the plant discussed. Here, as in the Solanaceae, insect pollination is not very common, but the humming bird is a regular visitor to some large-flowered species. A few of the Bromeliaceae, as Tillandsia usneoides and T. recurvata, have a range from southern United States or Mexico to the southern part of South America. Most of the species mentioned, however, are limited to South America, 9 being given as endemic. The author also includes in this chapter a very interesting description of the xerophytic rupicole species belonging to various families which are found on the rocks of Cerro San Tomas and Sierra d’Acahay.—Aravilla Taylor.

NOTES FOR STUDENTS

Puget Sound algae.—A fascicle of papers2 from the Puget Sound Marine Station at Friday Harbor, Washington, gives the results of work done on algae at the station, largely during the summer of 1916.

Miss Hurd finds that young bladder kelps (Nereocystis) can adapt themselves to 55 per cent of fresh water in their environment if the change is made gradually. She concludes that rapid elongation of this plant is due to low light intensity in the water, and that growth of the stipe is greatly retarded by strong light when the bulb approaches the surface of the water. The fact that this does not act as a very exact determiner of length is readily understood, when we remember that the variation from extreme high tide to extreme low tide during the growing season in this region is more than 12 ft. She reaches the conclusion that there is no relation between rate of growth and mechanical stretching in the stipe of the plant. The experimental evidence given seems to justify this conclusion, providing that nothing else (for example, light) was a limiting factor in both experiment and control.

In another paper Miss Hurd decides that the Codium adhaerens (Cabr.) Agardh reported from San Juan Islands and probably that from all of Puget Sound is C. dimorphum Sved., since it has no utricle hairs and has two types of utricles, the one with unmodified end wall and the other with thickened, striated end wall. She believes that the variation in the predominance of thick or of thin end walls in the utricles is probably due to differences in environment. The thick-walled type sometimes predominates over the whole

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