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203. THE FLORA OF THE
AMERICAN VIRGIN ISLANDS, PP.
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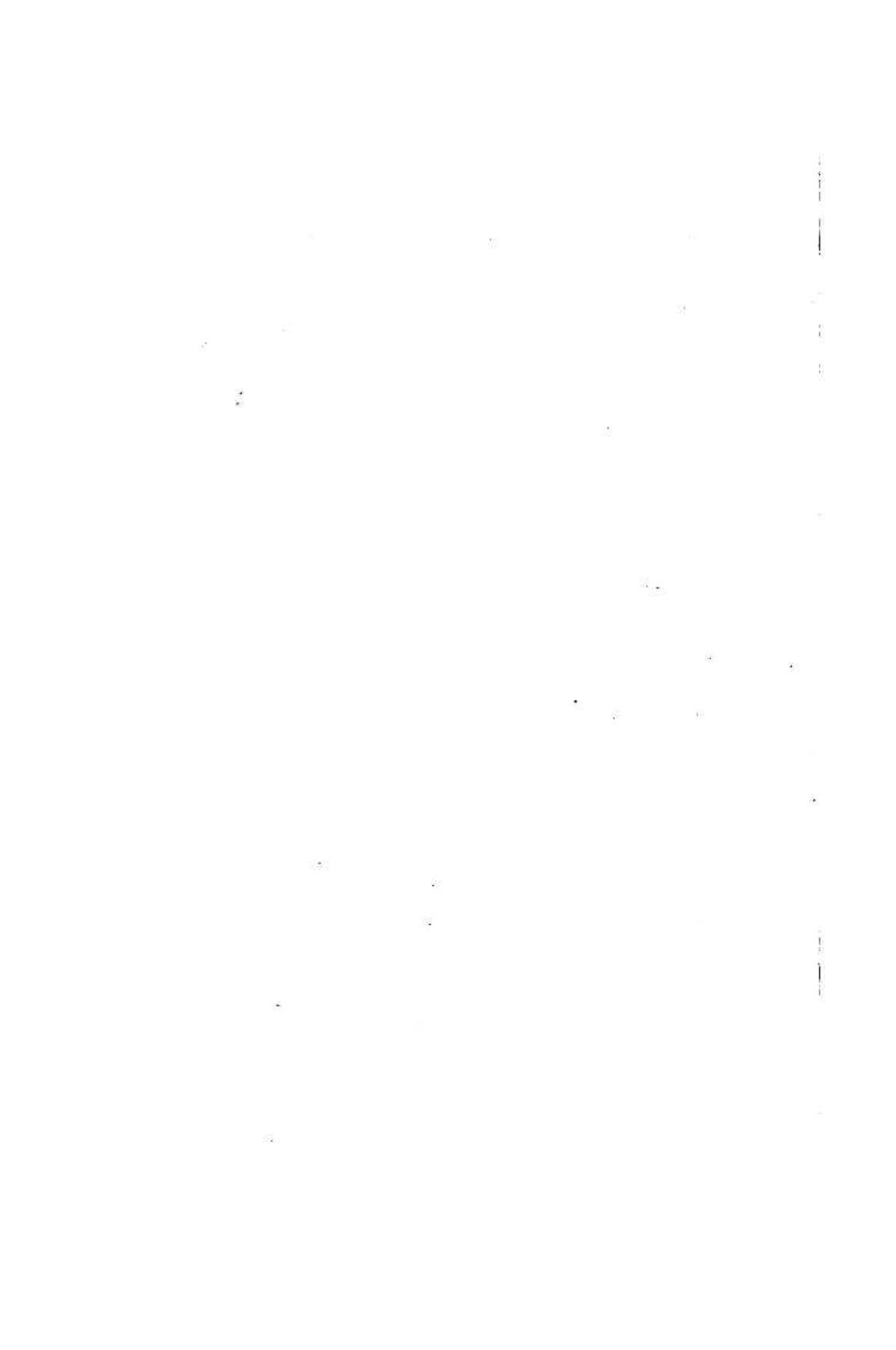
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THE FLORA OF THE AMERICAN
VIRGIN ISLANDS

N. L. BRITTON

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THE FLORA OF THE AMERICAN VIRGIN ISLANDS

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The islands St. Thomas, St. Jan and St. Croix recently purchased by the United States from the kingdom of Denmark, are situated to the east and southeast of the island of Porto Rico. My interest in their flora was first aroused by the proximity of the Virgin Islands archipelago to Porto Rico, both the Porto Rican islands Culebra and Vieques being parts of the archipelago. I therefore took occasion in 1913, accompanied by Dr. J. N. Rose and with the help of Mrs. Britton, Miss Delia W. Marble, and Dr. J. A. Shafer, to explore St. Thomas and St. Jan quite thoroughly, and Dr. Rose made collections on St. Croix, while we were engaged in studying the cacti of the West Indies.¹ In 1901, I had made a brief visit to St. Croix, with Mr. John F. Cowell.²

The islands are all hilly, there being very little level land on either St. Thomas or St. Jan, but more on St. Croix. The rocks are mostly of plutonic origin, but there is some limestone on St. Croix and locally other stratified rocks occur. The highest elevation is about 500 meters (1,550 feet), on The Crown of St. Thomas.

There is but little natural forest remaining on any of the islands, and what there is is confined to the hilltops in a few places. Reforestation is the crying need of the new possession, and it will be highly discreditable to the United States if this subject is not immediately taken in hand. Most of the higher parts of all three islands are not available for any but forest products and the supply of wood for fuel needs to be increased and the rainfall conserved by a forest cover, for most of the rain now runs off immediately. This destruction of the forest has doubtless eliminated a good many species from the original flora of the islands.

The principal literature of the botany of the islands is as follows:³

- H. West. "Bidrag til Beskrivelse over Ste Croix, med en kort udsigt over St. Thomas, St. Jean, Tortola, Spanishtown og Crabeneiland." Kiöbenhavn. Pp. 363. 1793. [German edition pp. 274, Copenhagen 1794.]

West enumerates and partly describes 542 species, of which 111 were culti-

¹ Jour. N. Y. Bot. Gard. 14: 99-109.

² Jour. N. Y. Bot. Gard. 2: 166.

³ See also citations in the chapters on Hepaticae, Fungi and Algae.

vated, mainly of St. Croix, a few from St. Thomas and St. Jan. Some of the descriptions are by Vahl. A number of the plants listed have not been observed on St. Croix by subsequent collectors and some of them are obscure. The author was rector of a school at Christiansted. The book is very rare. I am indebted to The New York Public Library for a photostat copy.

- André Pierre Ledru.** "Voyage aux îles de Ténériffe, La Trinité, Saint-Thomas, Sainte Croix et Porto Rico, exécuté par ordre du gouvernement français, depuis le 30 septembre 1796 jusqu'au 7 juin 1798, sous la direction du capitaine Baudin, pour faire des recherches et des collections relatives à l'histoire naturelle; contenant des observations sur le climat, le sol, la population, l'agriculture, les productions de ces îles, le caractère, les moeurs et le commerce de leurs habitants." Ouvrage accompagné de notes et d'additions par M. Sonnini. Avec une très belle carte gravée par J. B. Tardieu d'après Lopez. Paris. 2 vol. - 1810.

Ledru was the botanist and Anselme Riedlé the gardener of an expedition sent out by the Paris Museum of Natural History 1796-1798. Unfortunately, many of the specimens attributed to St. Thomas were in all probability collected on Porto Rico. Many living plants were brought back to the Jardin des Plantes. The botanical parts of the report are general and not extensive.

- D. F. L. de Schlechtendal.** "Florula insulae Sti. Thomae Indiae occidentalis." *Linnaea*, 3: 251-276; 4: 78-93; 5: 177-200, 682-688; 6: 722-772. 1828-1831.

About 400 species are enumerated. The plants were collected by C. A. Ehrenberg, a merchant, in the years 1827 and 1828. The records are annotated and there are some descriptions.

- Henry Krebs.** "Catalogue of plants found on the island of St. Thomas, W. I." 1852. [In John P. Knox: A historical account of St. Thomas, W. I., with its rise and progress in commerce, missions and churches, climate and its adaptation to invalids, geological structure, natural history and botany. New York.]

Over 1,200 plants are enumerated alphabetically, including many in cultivation and some algae. Many of the records can not now be substantiated. Krebs had previously published an account of the geographic distribution of the Flora of St. Thomas.

- J. P. Knox.** "Catalogue des plantes qui naissent spontanément dans l'isle de Saint-Thomas." 1857. [Memorie della r. Acad. di Torino, II, 16: lxxvi-lxxxix.]

This is essentially the same document as the preceding.

- H. F. A. Eggers.** "St. Croix's Flora." *Vidensk. Meddel. Kjøbenhavn*. Pp. 33-158. 1876.

Baron Eggers was a Danish official on St. Croix from 1869 to 1874, and made extensive botanical collections. He records 738 species, with annotations.

- H. F. A. Eggers.** "Flora of St. Croix and the Virgin Islands, West Indies." *Bull. U. S. Nat. Mus.* 13. Pp. 133. 1879.

Baron Eggers was in command of Danish troops on St. Thomas during most of the period between 1874 and 1887, and visited St. Jan. In this catalogue he enumerates 881 indigenous or naturalized species, with annotations, and also records many of the plants in cultivation.

- H. F. A. Eggers.** "Supplement til St. Croix's og Jomfrusøernes Flora." *Vidensk. Meddel. Kjøbenhavn*, pp. 11-21. 1889.

This work contains additional records to those previously published by the author.

- Otto Kuntze.** "Um die Erde." Pp. 514. Leipzig. 1881.
Dr. Kuntze visited St. Thomas in 1874, at the beginning of his extensive travels.
- Otto Kuntze.** "Revisio Generum Plantarum" 1: 2: pp. 1009. Leipzig. 1891.
The author records specimens collected by him on St. Thomas in 1874.
- F. Borgesen and Ove Paulsen.** "Om Vegetationen paa de Dansk-Vestindiske Øer." Bot. Tidsskr. Kjøbenhavn, 22: 1-114, f. 1-43. 1898. [Reprint pp. 114.]
Mr. Borgesen visited the islands in 1892, and again in 1895-6, on his second trip accompanied by Mr. Paulsen. They made extensive collections, and listed six Spermatophytes as additions to the known flora. The document is mostly ecologic, and especially detailed as to the composition of the coastal vegetation. It was translated into French by Mlle. S. Eriksson and published in 1900 (Rev. Gen. de Bot. 12: 99-107; 138-153; 224-245; 289-297; 344-354; 434-446; 489-510). [Reprint pp. 108.]
- C. F. Millspaugh.** "Plantae Utowanae." Field Col. Mus. Bot. 2: 1-110; 113-135. pl. 25. 1900.
During the cruise of the yacht *Utowana*, December, 1898, to March, 1899, Dr. Millspaugh, botanist of the expedition, visited St. Thomas on January 17 and 18, 1899, and collected about 200 species, which are enumerated.
- C. F. Millspaugh.** "Flora of the Island of St. Croix." Field Col. Mus. Bot. 1: 441-546. Map. 1902.
Annotated list of 1,029 species, based especially upon the large collections made in 1895, 1896 and 1897 by A. E. Ricksecker and Mrs. J. J. Ricksecker, with records taken from Baron Eggers Flora. Mr. Ricksecker published a list of the species collected by him, pp. 4, not dated [1896]. Dr. Millspaugh has a chapter upon the botanical history of St. Croix.
- F. Borgesen.** "Notes on the Shore Vegetation of the Danish West Indian Islands." Bot. Tidsskr. 29: 201-259. f. 1-140; pl. 3-6. 1909.
Mr. Borgesen made a third trip to the islands during the winter of 1905-1906, especially for algological studies. The paper is ecological, and supplementary to his earlier publications.
- E. G. Britton.** "Mosses of the Danish West Indies and Virgin Islands." Bull. Torr. Club 42: 1-8. 1915.
Mrs. Britton lists, with annotations, 28 species of Mosses, including 3 described as new; four of the plants enumerated were found only on Tortola.
- H. G. Brock, P. S. Smith, W. A. Tucker.** "The Danish West Indies, their Resources and Commercial Importance." 1917.
The United States Department of Commerce has recently published as Special Agents Series 129 (pp. 68, figs. 1-8), a valuable document in which the vegetable products of commercial value are discussed.

There are a very large number of records of plants from the islands in taxonomic monographs and lists of species by many authors.

As a literary curiosity record may be made of a manuscript list of the plants of St. Thomas, undated, arranged upon the Linnæan system of classification, preserved in the library of the New York Botanical Garden, presented some years ago by the late Dr. T. F. Allen.

General comments upon the vegetation are to be found in several books of travel.

The earlier collections of botanical specimens are practically all to be found only in the herbaria of the Old World. Perhaps the oldest

are those of Von Rohr and of Ryan, made about 1780, and preserved for the most part in the herbarium of the Botanical Museum at Copenhagen, where the most complete and extensive collections from these islands are to be found.

Prior to 1800 collections were made by L. C. M. Richard, Isert, West, Pflug, Ledru and Riedlé. During the nineteenth century the principal collectors were Benzon, Bertero, Ravn, Hornbeck, Ehrenberg, Breutel, Krebs, Oersted, Holton, Eggers, Krause, Warming, Borgesen, Paulsen, A. E. Ricksecker, Mrs. J. J. Ricksecker, Otto Kuntze and Millspaugh. Since 1900 collections have been made by N. L. Britton, Mrs. Britton, J. F. Cowell, Miss Marble, J. A. Shafer and J. N. Rose.

A collection made by Kirkman Finley in Trinidad was erroneously labeled as from St. Thomas, and many errors have been made in citing these specimens. A few plants collected by Kuntze in Porto Rico have been erroneously recorded as from St. Thomas, and many collected by Riedlé on Porto Rico have been similarly erroneously recorded. Conversely, some plants collected by Purdie on St. Thomas have been cited as Jamaican.

For the purposes of the following list of plants I have examined the literature and have studied the following series of specimens:

1. Duplicates of plants collected by Benzon, Hornbeck, Eggers and Paulsen, received by the New York Botanical Garden in exchange with the Copenhagen Botanical Museum.

2. The collection made by I. F. Holton on St. Thomas, preserved in the herbarium of Columbia University.

3. Dr. Otto Kuntze's St. Thomas plants, which came to the New York Botanical Garden as a part of his herbarium, presented by Mr. Andrew Carnegie.

4. The St. Croix collections made by Mr. Ricksecker and a portion of that made by Mrs. Ricksecker in the herbarium of the New York Botanical Garden and parts of the complete sets preserved in the herbarium of The Field Museum of Natural History.

5. Part of the St. Thomas collection made by Dr. Millspaugh.

6. The St. Croix collection made by Mr. Cowell and myself in 1900.

7. The collections made by Dr. Rose, assisted by Mr. Fitch and Mr. Russell on St. Croix in 1913.

8. The collection made on St. Thomas by Mrs. Britton and Miss Marble in 1913.

9. The collection made by Dr. Shafer and myself on St. Thomas, St. Jan and small adjacent islands in 1913.

Mrs. Britton has contributed the catalogue of the mosses, Dr. Evans that of the hepatics, and Professor Riddle that of the lichens.

Our knowledge of the fungi of the islands is but fragmentary and it is therefore deemed wise not to attempt an enumeration of them at this time; a mycological survey would doubtless reveal the presence of several hundred species. Dr. Howe has contributed a note on the algological collections and researches of Mr. Borgesen.

St. Thomas and St. Jan are two of the Virgin Islands, discovered by Columbus in 1493, and were so called to commemorate the young women who are fabled as having accompanied St. Ursula.

The Virgin Island group is usually regarded as composed of the following islands, proceeding from the west eastward, (1) Culebra, or Snake Island (Porto Rican); (2) St. Thomas, or San Thomé, and (3) St. John or San Jan; (4) Tortola, (5) Virgin Gorda, and (6) Anagada (British). Throughout this archipelago there are many islets and keys, and the marine views from the hills are among the most charming in America. If to the above mentioned larger islands we add (7) Jost Van Dyck, the next largest, a British island near Tortola, we have seven major Virgin Islands, eight if we include Vieques.

Tortola (British) is separated from St. Jan by little over a mile of water. The purchase from the Danish government thus brings our frontier close to that of the British Empire at another point.

Vieques, or Crab Island (Porto Rican), lies south of the axis of the archipelago, and is perhaps not properly a member of the Virgin Island group, although it is sometimes so considered.

These islands were originally inhabited by Arawak and Carib Indians. St. Thomas was colonized by the Dutch in 1657, passed to the British about 1667, and to the Danes in 1671, who have since held it, except for short occupations by the British. St. Jan was colonized by the Danes in 1684, and their occupancy has since been continuous. St. Croix, or Santa Cruz, was also discovered by Columbus in 1493 or early in 1494, colonized by both Dutch and English in 1625, passed soon to the Spanish, and next to the French in 1651. The Danish ownership dates from 1733. It is isolated in the sea, and not properly of the Virgin Island group; in clear weather, it can be seen from the hills of Porto Rico and from those of St. Thomas and St. Jan.

All three islands are oblong in shape, with the longer axes nearly east and west, the coast lines irregular. The hills of St. Thomas rise to about 1,500 feet; those of St. Jan are somewhat lower (about 1,260 feet), while the highest point on St. Croix (Mt. Eagle) is 1,164 feet. St. Croix is about 21 miles long, 6 miles wide, and has an area of about 84 square miles, being thus about one seventh larger than Staten Island, New York (72½ square miles). St. Thomas is 13 miles long, 4 miles wide, with an area, including its islets, of some 32 square miles; St. Jan is 9 miles long, about 5 miles wide, with an area, in-