

BOOK REVIEWS

OF PUBLICATIONS RELATED TO BOTANICAL WORK IN THE NETHERLANDS

SCHULZ, J. P.: Ecological studies on rain forest in northern Suriname. Verh. Kon. Ned. Akad. Wet. Afd. Natuurk. 2e reeks, 53 (1).1-267. 1960, Guilders 17.50, also as: Vegetation of Suriname Vol. II, and: Med. Bot. Mus. & Herb. Utrecht no. 163.

This book, submitted as thesis in 1959, is the result of intensive field work during three years in the forests of Suriname. A general description of the investigated areas is given in the introduction. Part one deals with the results of numerous microclimatological observations made at various levels in parallel series in the mesophytic or rain forest and in large openings; besides a number of readings were taken in an adjacent drier vegetation type, the savanna forest. After a survey of the general climate the following factors are treated in their daily and seasonal variation: light intensity measured with a spherical electric photometer, atmospheric humidity recorded with hygrographs with psychrometer readings as controls, evaporation by Piche evaporimeters, air temperature recorded with thermographs and checked by standard and max-min. thermometer readings, and soil temperature by soil thermometers. As a result of the lucky circumstance that the main dry season of 1957 was exceptionally long and severe the measurements cover almost the whole range of climatic conditions in the investigated region.

The author has paid much attention to the ways of both physical and mathematical treatment of his observations and to the value which can be attributed to the calculated figures. Also comparisons have been drawn with data published from other tropical countries.

In part two the soils of the investigated areas are discussed. Along selected transects pits have been dug and additional auger borings made up to 4.5 m deep. Descriptions of the soil profiles are given. Samples of representative profiles have been analysed for mechanical composition in subfractions, acidity, humus content, amount of nutritive ions, and spectre of heavy minerals.

In general a close correlation exists between soil and vegetation, and in some cases the distribution of a tree species appeared to correlate with certain soil characters.

In the dry and wet season a number of constant-volume samples were taken to determine the variation in the percentages of free air space and water at various depths, as aeration and available moisture are of prime importance for the vegetation.

Part three gives a survey of the floristic composition of various types of mesophytic forest in the lowland and in the hills. To this end 17 sample plots of 0.3-1 ha were studied by recording per quadrat of 10 by 10 m all trees of 5 cm diam. and over. Undergrowth of 2-4½ cm was enumerated in 10 percent of the quadrats. For one sample plot of 1 ha in the area of main activity the complete list of species is published with numbers and quadrat frequency in upper, middle, and lower storey, and in the undergrowth. For the other plots only the figures of the more

frequent species are given. At the end comparisons have been made with rain forests in neighbouring countries.

In part four preliminary results of regeneration experiments in the forest are offered. First the diameter-class representation of a number of important timber trees has been determined in various stands and germination and distribution of their seedlings studied. Periodic measurements of the girth of marked trees are still going on, but the first data about girth increment could be inserted. Also attention has been paid to the horizontal distribution of timber trees and to succession in natural and artificial openings in the forest. Remarks on a mixed-forest refining experiment which is under way conclude this part.

The work ends with summaries in English and Spanish. It is well illustrated with maps, diagrams, and 4 full-page photographs.

J. C. LINDEMAN

CHAPMAN, V. J.: Salt marshes and salt deserts of the world. Plant Science Monographs, edited by N. Polunin; London, Leonard Hill (Books) Ltd.; New York, Interscience Publ. Inc., 1960, XVI + 392 pp., 102 fig., 46 Pl., 95 S. net.

CHAPMAN is the first who gives a worldwide survey of the vegetation of salt marshes and salt deserts. No other author would be able to give a better survey. Chapman, professor of botany at Auckland University, is an acknowledged and respected authority on salt marshes, having spent over thirty years in their study and research in many parts of the world. Most of his work has centred on the salt marshes of Great Britain; further studies have been carried out on American salt marshes on both the Atlantic and Pacific coasts. Scandinavian and Dutch salt marshes, and tropical haline flats of Ceylon have also been visited. Since 1946 the writer has been working on salt marshes and mangrove swamps of New Zealand. Finally we must not forget his work on the ecology of marine algae. Therefore CHAPMAN's book is not only a compilation of the results of other workers but presents many of the writer's own results and experiences.

The author divides his subject-matter into 12 chapters: (1) Distribution and characteristics; (2) Physiography and development; (3) Tides and water table; (4) The soil factor; (5) British salt marshes I; (6) British salt marshes II; (7) Arctic and continental European salt marshes; (8) Mediterranean and Australasian salt marshes; (9) Eurasian salt deserts; (10) New World salt marshes; (11) Salt marsh survey and marsh fucoids; (12) Physiology of halophytes and (13) Economic uses.

In our opinion, however, the chapters dealing with environment (2, 3 and 4) are not properly balanced. Chapter 3 includes a great deal of data on the genesis and the mechanical analysis of the soil which might better have been placed in the chapters two and four, respectively. The brief discussion on climatic influences (in chapter 4) suggests a gap in our knowledge of salt-marsh ecology. It is striking that not a single ecologist cited dealing with the rate of sedimentation and the age of the marshes has taken into account the process recently known as maturation of the soil or initial soil formation, which, a.o., results in loss of water and shrinking of the soil-layers. This process which begins soon after the depositing of the silt and mainly depends on the granular composition, on the level on which the soil-layer is situated with respect to tidal fluctuations, and on the drainage, may have a considerable influence upon the writer's results.

From the North and West European salt marshes the list of cited sources might have been extended with papers by REGEL (Kola Peninsula), LIBBERT, PREUSS, VODERBERG and KORNAS (Baltic coasts of Germany and Poland), STERNER and ENGLUND (east coast of Sweden), LEIVISKÄ (coasts of the Botnic Gulf), WESTHOFF (Dutch Wadden Isles), HOCQUETTE and DE LITARDIÈRE & MALCUIT (Belgium and North West France), LEMÉE (Normandy), CORILLON (Brittany), GUINEA and FONTES (west coast of Spain and Portugal).

Classifying the communities, Chapman attempts to bridge the gap between Anglo-American and French-Swiss conceptions by proposing a new system based upon (1) the dominance of species and genera, (2) the Anglo-American concepts of dynamic and stable status of the community belonging to seral or to climax vegetation respectively, and (3) a distinction in relatively extensive communities from those occupying smaller areas.

However commendable Chapman's efforts may be, needless to say that this proposal will not satisfy the phytocoenologists of the French-Swiss School of BRAUN-BLANQUET. With TÜXEN we must draw a distinction between typification and classification. Vegetation types can be described and characterized but not entirely defined and delimited. Classification should be based on that typification and we should bear in mind that each taxon has a syntaxonomic as well as an ecological value. The traditional principle of Braun-Blanquet, the fidelity of taxa, may be, if necessary, supplemented by other criteria, e.g. dominance and vitality.

However, the above remarks will not be able to devalue this book and are not intended to do so. The work has been written with ardour and great affection for the subject. The phytocoenologist and ecologist will find in it many valuable data and suggestions for both environmental, ecologic, and floristic research. The book includes numerous tables, figures, and photographs. A circumstantial subject and author index makes it handy for reference. Writer, editor and printer have cooperated willingly in making it pleasant and easy to read. The volumes which the writer announces dealing with the mangrove swamps and with the sand dune vegetation of the world are eagerly awaited.

W. G. BEEFTINK

FOTT, Prof. Dr. Bohuslav: *Algenkunde*, 1959. VII + 482 pp., 17 × 24 cm, 255 fig. in the text and 1 frontispiece. VEB Gustav Fischer Verlag. Half cloth. 48,90 DM.

Again a handbook on algae has appeared, and this time in the German language. The author, who is Director of the Botanical Institute of the Biological Faculty of the "Karls-Universität" at Prague, explains that the book, though primarily written for the use of university students, has been extended to a handbook for the use of scientists working in research and industry. It is essential for those who are working with freshwater algae in all fields. It grips the reader with many original thoughts, as well as compiling thoroughly which is also desirable in a work like this. After each chapter references are given, restricted to the titles of hand- and textbooks (where further references are to be found), and of the articles by those authors who are mentioned in the text.

The book is amply illustrated. Among the numerous figures taken from other authors, there are a number of fine original drawings. The photographs of J. FIALA are of a high quality.

The reason which makes the book of so much interest to students of freshwater algae is that the author, having worked with unicellular freshwater algae so much himself, has given a large place to those groups in all chapters.

In the longest chapter the phyla belonging to the algae are enumerated: *Cyanophyta*, *Chrysophyta*, *Phaeophyta*, *Rhodophyta*, *Chlorophyta*, *Euglenophyta* and *Pyrrhophyta*. Flagellates of doubtful affinity conclude the enumeration. We learn about the cytology, the morphology, the reproduction, the nutrition, the ecology and the geographical distribution of all these phyla. These data are well explained and up to date. Usually one or some of the species belonging to the genera mentioned are enumerated together with morphological, biological or ecological details of interest. Fossil finds are mentioned. Phylogenetical conclusions and remarks are to be found all through the book, which gives room to many individual views. The author regrets that the delineation of the taxa are highly subjective, and that it is not at all defined in the International Code of Nomenclature (this book may be praised for that !). May we not expect that, after thorough monographical investigations, this delineation, at least for the species, may become less subjective? Though mentioned in the references the latest monograph on part of the *Cyanophyta* has not been taken into consideration. For this reason the author could state concerning *Coelosphaerium* Nägeli 1849: "Eine Revision der 9 bisher beschriebenen Arten ist sehr notwendig" (21 species of *Coelosphaerium* have been described and 5 species were transferred to that genus from other genera). *Chaetomorpha linum* (Müll.) Kütz. and *Ch. ærea* Kütz. are considered by the author two separate species, though T. CHRISTENSEN (Bot. Tidsskr. 53, 1957, 311-316) has proved that both belong to one and the same species.

In another chapter the ecology and habitats of the algae are amply treated. This chapter is a most interesting, very complete and skilfully composed account of the subjects mentioned, containing many individual finds and thoughts. It deals with: plankton, neuston, benthos, aerophytic, soil and thermal algae, algae living on snow and ice, in salt water, on plants and animals, and with symbiosis and parasitism.

There is a chapter dealing with the use of algae, which is only possible in the case of large quantities. The fresh water algae are well considered also here. Valuable information can be obtained about the relation between fishes and algae (food, poisoning), which is important for pisciculture, about the quality (cleanness) of the water, about algae as indicators in biological analyses of waters, algae as manure and as food for men. However, it seems amazing to find *Ulva lactuca* mentioned sought after for salad everywhere where it occurs, and especially in the Mediterranean region. The industrial and medical uses of algae are amply dealt with.

J. TH. K.