

It is to be regretted that fuller credit for most of the apparently new ideas is not assigned. One looks in vain for acknowledgment of the works of FRÜH and SCHRÖTER, GANONG, and TRANSEAU, whose studies have partially covered the significant results of DAVIS. The mention of these works in their proper places would relieve the book of much that might appear to be an original contribution. The greatest value of the book to the ecologist lies in its careful descriptions of various types of swamps and the detailed record of the distribution of peat-forming species. A complete index makes this material readily available. —LEROY H. HARVEY.

Endodermis of ferns.—The sporadic occurrence of the endodermis and the modifications it shows have been frequently remarked. A comprehensive study of this layer in the fern stem and leaf has been made by BÄSECKE,²⁹ whose contribution may be considered a companion paper to that of RUMPF³⁰ on the fern root.

Following this writer, BÄSECKE distinguishes (1) the primary endodermis, characterized by Caspary's band, and (2) the secondary endodermis, in which the cell walls are more or less thickened and suberized. The leaves of the eusporangiate ferns lack an endodermis, while those of Osmundaceae show only a primary layer; but most of the leptosporangiate ferns are well provided throughout the length of the leaf with a secondary layer. Anatomical and physiological studies show that food manufactured in a fertile leaf first supplies the sporangia, and any excess passes out through the vascular bundles. In rhizomes devoted to storage, only a primary endodermis is found, and in those which are active in propagating the plant a more or less impenetrable layer extends nearly to the growing point; hence the view is maintained that the secondary endodermis serves to prevent the escape of food from the vascular bundles while it is in process of transport.

The second part of the paper describes a reinvestigation of the question as to the occurrence of cork in the ferns, and the conclusion is reached that true cork is never present, but that substitutes are frequent, such as "metacutinized" walls of the outer cell layers. In this respect the ferns are less differentiated than the angiosperms. As to shedding of leaves, the author distinguishes three sorts of absciss layers, in contrast to earlier workers who were unable to find special structures connected with leaf fall. A classification of the various mechanical tissues of ferns concludes the paper.—M. A. CHRYSLER.

Protection from light.—BAUMERT reviews very fully³¹ the many suggestions that appear in literature as to the function of various structures in protecting

²⁹ BÄSECKE, PAUL, Beiträge zur Kenntniss der physiologischen Scheiden der Achsen und Wedel der Filicinae, sowie über den Ersatz des Korkes bei dieser Pflanzengruppe. Bot. Zeit. 66:25-87. pls. 2-4. 1908.

³⁰ RUMPF, G., Rhizodermis, Hypodermis, und Endodermis der Farnwurzel. Bibl. Botan. 62:1904.

³¹ BAUMERT, K., Experimentelle Untersuchungen über Lichtschutzeinrichtungen an grünen Blättern. Beitr. Biol. Pfl. 9:83-162. figs. 6. 1907.