

writers believe that this behavior of the chromatin in *Polytrichum* supports the theory of the individuality of the chromosomes.

Commenting upon the above results from the standpoint of one not personally familiar with mitotic figures in mosses, abundant confirmation is needed before the account as a whole can be accepted. We are inclined to believe that the observations are largely correct and that the situation is extremely interesting, but that the final interpretation will not be so widely divergent from current notions of reduction and fertilization as the one proposed.—CHARLES J. CHAMBERLAIN.

Ginkgo.—Under the broad title *Ginkgo biloba* SPRECHER⁷ gives a rather full account of the genus, arranged according to the following outline: embryo, young plant, leaf, secondary structure, flowers, pollen and fertilization, geographical distribution, uses and culture, fossils, and conclusions. Instead of giving a historical résumé followed by his own investigations, he has simply followed the above outline, using the available accounts and illustrations, and then filling in the gaps from his own investigations. With so large a subject and so many gaps to fill, an exhaustive investigation of any particular feature could hardly be expected. Most of the original work deals with floral development, leaf development, and anatomy. While the author has studied the gametophyte, it is in this field that he is most indebted to previous investigators. A large number of abnormalities in ovules, stamens, and sporophylls are recorded.

Of course there must be a guess at the phylogeny. While the sperms and certain characters of the ovules resemble those of cycads, in most respects *Ginkgo* is nearer the *Taxaceae*. Both *Ginkgo* and the *Taxaceae* have come from a *Filicales* stock which has given rise to the *Cycadophytes* and also to the *Cordaitales* and *Ginkgoales*, the point of departure being in the neighborhood of the fossil *Botryopteridaceae*.

The book will be useful for reference. It should be regarded as a compilation, supplemented by extensive personal observations, rather than as a work in which research is the predominant feature.—CHARLES J. CHAMBERLAIN.

SHAW⁸ has investigated the vascular anatomy of the ovulate strobilus of *Ginkgo*, chiefly with reference to the morphological nature of the "collar." From aberrant material, which seems to appear abundantly enough under Japanese cultivation, it has been inferred that this collar is a much reduced megasporophyll. From this current view SHAW dissents, on the basis of testimony obtained from the vascular anatomy. The vascular tissue of the collar is "inverted," and a comparison with *Lagenostoma* shows a similar situation in that seed. The author therefore suggests that the collar of the *Ginkgo* ovule is a vestige of the well-developed cupule found investing the seeds of many of the *Cycadofilicales*.—J. M. C.

⁷ SPRECHER, ANDREAS, *Le Ginkgo biloba* L. pp. 208. figs. 225. Genève. 1907.

⁸ SHAW, F. J. F., A contribution to the anatomy of *Ginkgo biloba*. *New Phytol.* 7:85-92. figs. 16-18. 1908.



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