the less evolved Smilium group, a question which can be settled when specimens are found with plates in place. I propose to restrict *Scalpellum gabbi* Wade to the carina represented in his plate 62, figs. 3 and 4. The figures are inverted.

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STREAM DOUBLE REFRACTION EXHIBITED BY JUICE FROM BOTH HEALTHY AND MOSAIC TOBACCO PLANTS

IN previous papers[1,2] we reported that juice from tobacco plants infected with tobacco mosaic virus exhibits a stream double refraction characteristic of sols containing rod-shaped particles. Juice from healthy tobacco plants did not show double refraction. The juice was always obtained by freezing the tissues, followed by thawing, pressing and centrifuging.

Since the publication of these results we have found that centrifuged juice from unfrozen, macerated, healthy leaves regularly exhibits stream double refraction, and juice pressed from healthy tissues which have been frozen, thawed and pressed may sometimes show stream double refraction if uncentrifuged.

After juice from unfrozen, macerated, healthy tobacco leaves was subjected to Vinson's[3] safranin—Lloyd's reagent treatment for purifying tobacco mosaic virus—the purified preparation failed to show stream double refraction; however, purified virus from unfrozen mosaic leaves exhibited strong stream double refraction and, like the unpurified virus, could usually be diluted with 200 parts of water before double refraction disappeared. These results apparently indicate that all the detectable doubly refractive material was removed from the healthy juice, but that none was removed from the infective juice by the purification treatment, and suggest the possibility that much or all of the doubly refractive material in the juice from diseased plants may be different from that in juice from healthy plants. However, the present evidence is insufficient to warrant conclusions as to whether the virus particles are or are not responsible for all or part of the double refraction exhibited by juice from diseased plants.

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SCIENTIFIC BOOKS

Principles of Genetics; A Text-book, with Problems. By E. W. SINNOTT and L. C. DUNN. McGraw-Hill Book Company, New York. Second edition, xvi + 441. 1932. $3.50.

Recent Advances in Plant Genetics. By F. W. SANSOME and J. PHILP, with foreword by SIR DANIEL HALL. P. Blakiston's Son and Company, Philadelphia. x + 414. 1932. $4.00.

THE two publications cited above are of interest from the light they throw upon the rapid evolution of genetics within recent years, entirely apart from the information which they may lay before the student. It was not so long ago that genetics was concerned chiefly with 3:1 ratios or modifications of such ratios. The original concept of the gene was independent of its location in the chromosome and the intimate behavior of chromosomes was of relatively little interest to geneticists. Cytologists seemingly had tired of working out the alteration of generations in lower forms and the relatively few who remained in the field of cytology appeared interested in the structure of chromosomes and their behavior in nuclear division without much concern as to what differences in structure and behavior mean to the organism and its offspring. A change has taken place in the attitude of geneticists toward cytology which has been especially marked within the last half dozen years. Chromosomal behavior has become the foundation upon which modern genetics is now being built as is shown by the two texts under review.

The American text by Sinnott and Dunn is a revised edition of their 1925 publication. Two new chapters have been added, one on the contribution of genetics to evolutionary theory, and one on the relation between genetics and development. The chapters on the application of genetics in plant and animal breeding, on inheritance in man and on the problems of eugenics have been eliminated. The treatment of biometric methods has been rewritten by D. R. Charles and placed in an appendix. Among the topics which have received new or extended treatment may be mentioned the induction of mutations by radiation; recent analysis of chromosomal changes; segmental interchange between chromosomes; the cytological demonstration of crossing-over; mapping of genes in chromosomes by cytological methods; chromosomal and genic balance; and the physiological interpretation of the facts of heredity. At the end of each chapter are given a dozen or more reference problems aimed to stimulate the student in extending his grasp of the subject under discussion by study of original sources

[1] *Proc. Soc. Exper. Biol. Med.*, 30: 155–157, 1932.
[2] SCIENCE, 77: 26–27, 1933.
[3] *Phytopath.*, 22: 29, 1932.