a Table of Physical Constants, in an attempt at completeness, requires a preliminary study of the book itself in order to ascertain how to use it. Kaye and Laby's book is free from this defect.

As before, useful mathematical tables are included at the end, and certain useful formulae, such as formulae for the moments of inertia, are to be found in the work.

All in all, this volume is one of the most useful books, for the purpose for which it is intended, with which this reviewer is acquainted.

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SENSATION AND PERCEPTION

Sensation and Perception in the History of Experimental Psychology. By EDWIN G. BORING. xv + 644 pp. New York: D. Appleton-Century Company, 1942.

THIS important book is really the second volume of the distinguished author's "History of Experimental Psychology." The first volume, published in 1929, traced the origin and development of scientific outlook and method in psychology, and dealt with the men and the schools without detailed attention to the results achieved. The present volume traces the growth of scientific knowledge, including the specific methods and theories, in one important part of the subject, as indicated in the title, and we may hope for at least one more volume on other topics similarly treated.

The scope of this volume is not limited to those who have been known as psychologists during the past eighty years. It goes behind them to the days when there was no distinct science of psychology. "The formal distinction between psychology, physiology and physics is but a product of the scientific specialization of the nineteenth century. . . . The first important knowledge of color and its stimulus was contributed by Newton, of visual space perception by Kepler, of the tonal stimulus by Galileo. These problems, which the psychologists now claim, had meaning and importance for the great natural philosophers of the seventeenth century. They were neither physics nor psychology then; they were philosophy" (p. 97). Until well along in the nineteenth century the most important contributions were made by physicists and sense physiologists, and names like Helmholtz, Hering and Wheatstone are bound to appear prominently in the history. Even after the establishment of psychological laboratories, the physiologists and physicists by no means lost their interest in the senses but continued to make important discoveries. A book like this one, in tracing the development of knowledge, could not and does not attempt to separate the contributions of the several sciences. Any one desiring to reach a critical appraisal of the achievements of experimental psychologists as such would therefore have to sift the material rather carefully, as could be done by aid of the excellent annotated bibliographies supplied by the author. He would find, especially in the recent decades (though the author does not usually attempt to bring the story down to the very present), that the psychologists have been doing their share of the work.

The author begins with a brief account of general theories of sensation and perception, in their historical development, and follows with a condensed but informative history of the "physiology of sensation," including the distinction between sensory and motor nerves, the nature of nerve conduction, the all-or-none law and the doctrine of "specific nerve energies." He then takes up the senses in order, giving of necessity most space to vision with its numerous subtopics, including especially color vision and the perception of space and form. The part on hearing makes a neater and better integrated story and is perhaps the most excellent portion of the book. The story of taste and smell is quickly told, but there is much to say on the cutaneous and internal senses, with a chapter also on the perception of time and movement.

There are of course many special topics, such as color blindness, perception of the third dimension, localization of sounds, the upper and lower limits of audible vibrations, the muscle sense, the sensitivity of the viscera and each such topic has its special history. In general theory, psychology is said to have been concerned in the nineteenth century with an attempt to describe conscious experience by analysis into elementary sensations and discovery of their modes of composition, while in the twentieth century it has moved away from such elementarism either toward the behavioristic and positivistic concern with discriminatory reactions and the conditions that make discrimination possible or toward Gestalt psychology with its emphasis on the total field and the dynamics of field forces. Gestalt psychology is conceived rather broadly by the author and so made to include the work of some psychologists who are not exactly adherents of the "Gestalt school." In reading the detailed story of the various problems that have been subjected to experiment, one does not find it easy to see how the shift in theory has had much to do with the course of investigation. One rather gets the impression that those very general theories have been a recreation or hobby of the psychologists and that in their work as experimenters they have been guided by much more specific questions. It may well be true, as the author says, that the old theories have sometimes cramped the investigators and acted as inhibitors of free experi-

mentation. The egoism of old schools who will not admit their sins of omission and commission and the egoism of new schools who dislike to allow any merit to their predecessors are handicaps to progress that may well be removed by thoughtful attention to a broad-minded history such as this one of Boring's.

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SOCIETIES AND MEETINGS

THE ALABAMA ACADEMY OF SCIENCE

THE nineteenth annual meeting of the Alabama Academy of Science was held at Howard College, Birmingham, on March 20 and 21, President-elect W. M. Mobley presiding. Over one hundred and fifty members and visitors were in attendance. The business and executive meetings were held on Friday. Friday afternoon and Saturday morning were devoted to sectional meetings. Seventy-seven papers were presented.

The following chairmen presided at the section meetings: Biology and Medical Science, Alvin V. Beatty, University; Chemistry, Harold E. Wilcox, Howard College, Birmingham; Geology and Anthropology, E. F. Richards, University; Geography, Conservation and Allied Subjects, Brooks Toler, Division of Forestry, Montgomery; Physics and Mathematics, W. A. Moore, Birmingham-Southern College, Birmingham; Industry and Economics, John Goff, Alabama Polytechnic Institute, Auburn; the Teaching of Science, Miss Clustie E. McTyeire, Hueytown High School, Bessemer.

On Friday members of the academy and visitors were served a delicious complimentary luncheon in Renfro Hall by McKesson-Doster-Northington. The annual banquet was held at the Tutwiler Hotel on Friday evening, with Dean P. P. Burns, of Howard College, as toastmaster. Colonel Theodore Swan, president of the Swan Chemical Company, gave an interesting address on the subject, "Chemistry in Industry." On Saturday morning a geological field trip was conducted by Dr. R. S. Poor, of Birmingham-Southern College, through the Walker Gap section of Red Mountain.

At the annual business meeting it was voted to award the grant-in-aid for 1942 from the American Association for the Advancement of Science to Dr. John Xan, of Howard College, to carry on his work on "The Study of the Reaction of Mercaptans with Oxygen in NAOH (Sodium Hydroxide)."

The academy accepted the invitation of Alabama Polytechnic Institute, Auburn, for the place of meeting for 1943.

The following officers were elected for 1942–43: *President,* W. M. Mobley, Alabama By-Products Corporation, Tarrant; *President-elect,* E. V. Jones, Birmingham-Southern College, Birmingham; *Councilor of the American Association for the Advancement of Science,* Septima C. Smith, University, reelected; *Editor of the Journal,* E. B. Carmichael, University; *Counselors to the Junior Academy,* H. E. Wilcox, Howard College (two years); Miss Swan Ella Owens, Opp High School, Opp (three years). The term of office of the treasurer, John Xan, Howard College, continues for two more years, and that of the secretary, Winnie McGlamery, Alabama Geological Survey, University, one more year. R. M. Harper, Alabama Geological Survey, University, continues in office as academy statistician.

The Junior Academy met at the same time as the Senior Academy at the Woodlawn High School, where they had their exhibits and papers under the direction of P. P. B. Brooks, chairman of counselors to the Junior Academy.

WINNIE MCGLAMERY,
Secretary

REPORTS

THE NEW YORK BOTANICAL GARDEN[1]

As this report is being written, the fourth I have had the privilege of submitting, the United States has become involved in war. War on the scale required by the present struggle will influence the New York Botanical Garden in various ways, and it seems desirable at this time not only to review the past year, but to report briefly on the entire period during which I have served as director of this institution.

No organization remains quiescent, its material facilities, its staff, its activities, its spirit and morale change from year to year. Some changes are for the better, some are for the worse, and any group responsible for the conduct and management of a public institution can feel satisfied if the net of the changes over a period of years indicates progress toward a greater usefulness and a closer approximation of the objectives for which the institution was established. This I believe has been accomplished at the New York Botanical Garden, as demonstrated by the record for the years 1937–1942.

No period since the establishment of the garden, the construction of the museum and administration building and of the main display greenhouse, has witnessed

[1] From the annual report of the director, Dr. William J. Robbins, for 1941.