Gorgas, Dr. Holmes and Dr. Woodward have been added to the executive committee. The conflict in time does not extend to the second week of the Pan-American Congress, and it is probable that after the adjournment of the Columbus meeting a special meeting of the American Association will be held at Washington. Under existing conditions, it is extremely desirable that friendly relations and cooperation in science should be maintained among the American republics.—*The Scientific Monthly.*

SCIENTIFIC BOOKS

Elemente der exakten Erblichkeit mit Grundzügen der biologischen Variationsstatistik. By W. JOHANNSEN. Zweite deutsche, neue bearbeitet und sehr erweiterte Ausgabe. Jena, G. Fischer. 1913. 724 pp.; 35 figs. in text.

The second edition of Johannsen's epoch-making work which follows the first by only four years has added nearly 200 pages, or 40 per cent., to the first edition. The number of lectures has been increased from 25 to 30, by the division of one to which much material has been added, by wholly new lectures (Nos. 12, 13) and by five final lectures instead of three.

The significance of Johannsen's book can now, after the lapse of years, be better evaluated than before. It had long been a truism in biology that the hereditary substance—the stirp or germ—must be carefully distinguished from the person or soma, and Galton was one of the earliest to make this distinction. It was, therefore, a great step backward when Galton announced his law of ancestral heredity according to which an individual inherits from his two parents together 50 per cent. of his whole heritage; from his four grandparents 25 per cent., and so on. It only testifies to the depth of the darkness in which we were groping that any of us should have seized upon *that* as a solution of the mystery of heredity.

The rediscovery of Mendel's law wiped away that fog and brought us again to germ cells. Still we did not fully sense the bearings of that law. We still clung fondly to the idea that the soma was so important an index to the hidden germ plasm that we could make progress by somatic *selection.* And it required the first edition of Johannsen's "Elemente" to set us straight there. Ever since we have recognized that even if one can make progress by somatic selection it is more or less by accident and by rule-of-thumb. For what we are selecting is truly the germ plasm, even though we think we are selecting somas; and we are successful only in those cases in which there happens to be a considerable correlation between the two. Ever since Johannsen's book appeared somatic selection merely—as such—has been realized to be futile for evolution, although somatic selection as a means of eliminating or preserving certain kinds of germ plasm may be, and in some cases is, of great theoretical and practical importance.

In the new edition, new, original experimental material on pure lines in beans is afforded with results quite the same as before. More space is given to a critical examination of the later studies on selection such as the favorable ones of Jennings, East, Pearl, Tower and Gates and the unfavorable ones of Castle, Lutz and Harris among American investigators. The unfavorable investigators Johannsen finds to fall into two groups; those whose experiments have yielded results opposed to Johannsen's and those who, without contradicting his results, have opposed their general validity. The opposing experiments rest either on the fact that the original material was not homogeneous or result from a "secondary selection" such as the selection of the best nourished individuals whose young start life in each generation on a higher nutrition-plane even though no genotypic change has occurred. There seems to the reviewer a certain weakness in the author's explanation of the discordant results of some workers (*e. g.,* Lutz). It would seem more probable that some of the favorable results of selection are due to unexpectedly abundant mutation. The last 90 pages of the book contain the most new material. Here are recorded, with evidence of great research into the literature, the results of the newer experiments in hered-

ity; the various deviations from simple Mendelian proportions, hypostasis and latency, sterility and inbreeding. The author also treats of coupling and "repulsion" without being able to make use of the flood of light that Morgan and his pupils have thrown upon these ideas. Indeed, Johannsen at the time of writing the book was not inclined to ascribe to the chromosomes the importance in heredity that is commonly conceded to them in this country.

In his final chapter Johannsen considers certain relations of the results of heredity to man and to evolution. He thinks the fact that culture (euthenics) has no effect on the race makes it not less but the more significant; for the momentary position of the race is the summation of personal qualities. In a sense it is true that the worse the breeding the greater the need for cultivation if any sort of a crop is to be harvested. As for the bearing of the new facts of heredity on evolution Johannsen has little to say and he states that we miss today the genius of a Darwin to establish a theory of evolution in harmony with modern knowledge.

C. B. Davenport

Einführung in die Tierpsychologie. Erster Band, Die Sinne der Wirbellosen. Von Gustav Kafka. J. A. Barth, Leipzig. Pp. xii + 593. 8vo. 362 text illustrations.

Animal psychology, according to Kafka, takes its departure from the same body of facts that sensory physiology does, but differs from this subject in the problems it sets itself for solution. That most of these problems are still unsolved justified the author in his opinion that a good text-book on animal psychology should concern itself with the facts of animal reactions rather than with theoretic matter. The book holds consistently to this view. It contains, after a very brief introduction, an account of the rapidly accumulating material on the sense of touch, the static sense, the sense of hearing, the temperature sense, the chemical sense, the light sense, and the very questionable senses of space and of time, all in invertebrates. The volume is well illustrated and is concluded by a bibliography of over five hundred titles in a well-ordered arrangement. As an introduction to the newly discovered facts in animal reactions the volume is in every way serviceable, though from the rate at which the subject is growing the book is bound soon to fall behind the times. As a means of quickening in the student a sense of the general problems in this field of research, it is disappointing. This fault may be excused on the grounds that it is just this side of the subject that the author has intentionally avoided, but it is an open question whether this avoidance is really a virtue. While the volume from its clearness and directness of statement will be found of much use to the student of animal psychology and allied subjects, its failure to deal with the more obvious general problems of this field of science must be regarded as a real defect. Possibly this may be remedied in the companion volume on the vertebrate senses which is said to be in preparation by the same author.

G. H. Parker

SPECIAL ARTICLES

HEREDITY AND INTERNAL SECRETION IN THE SPONTANEOUS DEVELOPMENT OF CANCER IN MICE

After preliminary studies in 1901 and 1902, and subsequent observations in 1907 suggesting the significance of heredity in the spontaneous development of cancer in rats and mice, we undertook an analysis of the hereditary factors on a larger scale in 1910 in conjunction with Miss A. E. C. Lathrop in Granby, Mass.[1]

[1] Loeb, L., *Medicine*, 1900, VI., 286; *Centralbl. f. Bakteriol.*, I., Abt., Orig., 1904, XXXVII., 235; *Univ. Penn. Med. Bull.*, 1907–08, XX., 2; *Centralblatt. f. allg. Pathol.*, 1911, XXII., 993. Lathrop, A. E. C., and Loeb, L., *Proc. Soc. Exp. Biol. and Med.*, 1913, XI., 34. Loeb, L., *Lancet-Clinic*, 1913, CX., 664. Lathrop, A. E. C., and Loeb, L., *Journal Exp. Med.*, XXII., Nov., 1915, 646, and Dec., 1915, 713. The credit for the first investigations on a somewhat larger scale into the possible influence of heredity on the tumor incidence in mice belongs to E. E. Tyzzer (*Jour. Med. Research*, 1907–08, XVII., 155). The procedure