

*Über den Geschmackssinn der Biene: ein Beitrag zur vergleichenden Physiologie des Geschmacks.* Von K. v. Frisch. (Zeitschrift für vergleichende Physiologie, herausgegeben von K. v. Frisch und A. Kühn, Band 21, Heft 1.) Pp. 156. (Berlin: Julius Springer, 1934.) 19.80 gold marks.

PROF. VON FRISCH'S studies on the senses of sight and smell in bees and on the means of communication between bee and bee in the hive are well known. His earlier reports on the sense of taste are here presented in greater detail.

The method used was to determine the 'threshold value' of solutions of sugars which were attractive to bees. This value varied with the age of the bee and the availability of other sources of booty.

The number of sugars and allied compounds tested which are sweet to bees, is less than in the case of vertebrates. Such substances as saccharin are either neutral or repellent. An attempt was made to correlate chemical constitution with taste but without marked success. The high concentration of sugars in their natural food has made bees relatively insensitive to sweet taste. Conversely, those plants which have afforded the more profitable nectar of higher concentration have been more thoroughly pollinated, giving a bigger yield of seed.

Substances distasteful to bees were tested in a solution of cane sugar of known attractiveness. The repellent action of acids did not depend solely on the titration acidity. The theory is advanced that weak acids, not being fully dissociated, have a reserve of hydrogen ions, which replace those used up in the taste process. This makes them appear more effective than strong acids of the same hydrogen ion concentration. This phenomenon is more marked with higher concentrations of acid.

The author concludes that bees can distinguish the four flavours, sweet, salt, acid and bitter. D. M.

*Modern Acoustics.* By Dr. A. H. Davis. Pp. xi+345. (London: G. Bell and Sons, Ltd., 1934.) 26s. net.

DR. DAVIS'S treatise on modern acoustics has more than fulfilled the expectations aroused by the announcement of its early appearance. The author has, very wisely, interpreted the title of the book strictly and, by saving space which might otherwise have been devoted to fundamental dynamical theory and to such classical problems as the vibrations of bars and strings, has been able to provide us with very full, lucid and well-documented accounts of the remarkable advances in acoustics made in the present generation. Modern methods of measurement of intensity, frequency and reverberation, the development of the notion of acoustical impedance, the ear and hearing, the acoustics of auditoriums, noise, its measurement and its suppression—this list by no means exhausts the topics treated in a volume which no advanced student of the science can afford to ignore.

The book, so far as the mathematical side is concerned, deals with results rather than with mathematical developments, and such matters as a detailed consideration of recent extensions of Rayleigh's principle scarcely fall within its purview. A. F.

*The Flow of Water in Pipes, Sewers and Channels, over Weirs and off Catchments.* By G. B. Williams. Pp. 76. (London: Chapman and Hall, Ltd., 1934.) 10s. 6d. net.

THE author of this publication, who was formerly Chief Engineer in the Public Health Department of the Government of Bengal, has embodied the results of his Indian experience and practice in diagrammatic form, using the coefficients which he has found most suitable for adoption with the classical formulæ of Manning and Kutter for discharges and velocity of flow in pipes and open channels, and the Francis formula for weirs. There are 41 full-page diagrams, approximately 9 in. by 6 in., dealing with this part of the subject, and thereafter five more diagrams relating to rainfall intensity, the relationship between rainfall and run-off and to flood discharges from catchment areas in India up to 1,000 square miles in extent.

It is impracticable within the limits at disposal to describe in greater detail the information obtainable from the tables; they will undoubtedly be of service to the practising civil engineer who has to deal with questions of water supply, land drainage and sewage disposal, especially in circumstances similar to those in the author's experience. The graphs are easy of interpretation and will save a great deal of calculation, being capable of supplying results for a wide range of conditions. It has been the author's object to supply a need which he has felt for a tabular reference compilation of this kind not to be found in technical treatises on the subject generally. B. C.

*Das Brillenglas als optisches Instrument von den wissenschaftlichen Mitarbeitern an der Optischen Werkstätte von Carl Zeiss, Jena.* Von Prof. Dr. Moritz von Rohr und Dr. Hans Boegehold. Mit einem Beitrage von Dr. Hans Hartinger. Völlige Neubearbeitung des Buches "Die Brille als optisches Instrument". Pp. x+281. (Berlin: Julius Springer, 1934.) 25.80 gold marks.

PROF. VON ROHR has directed the Jena school of opticians for many years, and the treatise now before us is a completely revised edition of his book, "Die Brille als optisches Instrument". It is therefore of great interest to all interested in ophthalmic optics. Apart from some introductory remarks on spectacle lenses for special purposes, the book is divided into four main parts. The first deals with anastigmatic lenses, some attention being paid to toric and to prismatic lenses. The second portion treats the problems of astigmatic lenses, and the third those of chromatic aberration. The mathematical treatment is easy to follow and graphs are effectively used. The last main section discusses problems of the alterations in field conditions produced by lenses.

Throughout the book the authors add delightful short sections on the historical aspects of the problems treated, and they fittingly conclude this excellent work with an account of the development of our knowledge of the spectacle lens and some notes on the training of opticians.