seems admirably adapted. It is hoped that it will secure the widest possible circulation.

C. B. DAVENPORT

ENTOMOLOGY

General Entomology. By S. W. FROST. 9 × 6 inches. x + 524 pp. Frontis., 406 illus. New York: McGraw-Hill Book Company, Inc. 1942. $4.00.

THIS book, which is a text for elementary college entomology, covers a wide field in a general manner, and stresses the study of insects in their native habitats. Its 23 chapters are devoted to the position of insects in the animal world; the origin and distribution of insects, using Wallace's 1876 figures to show distribution trends; the abundance and reproductive capacity of insects, as indicated by the prolificness of aphids, flies and some scale insects; beneficial and injurious insects, including poisonous ones and those transmitting human diseases; the different orders, with keys for their separation; metamorphosis; immature insects, with special consideration of various types of eggs, nymphs and pupae and their adaptations; insect morphology; color, including color changes, sexual coloration, varietal coloration, insect color perception, photogenic insects, etc.; sonification, using the cicada, crickets and grasshoppers as examples; insect behavior mostly from the view-point of tropotaxes; insect associations, including hibernating, protective, migrating, swarming and sleeping aggregations as well as social aggregations; solitary insects, their food and nesting habits; scavengers, predators and parasites; associations of plants and insects, including mutual associations, adaptations of flowers and insects, and insectivorous plants; leaf-mining insects; leaf-rolling insects; gall insects; boring insects; subterranean insects; aquatic insects; case-making insects; and cessation of activity, including diapause, suppressed development, sleep, death feigning and factors causing the death of insects.

Each chapter, which is a complete essay in itself, is accompanied by a bibliography of the more important papers in that field. In addition there is an appendix consisting of field keys to the immature forms (except eggs and pupae) of the Orders, keys to common groups of Coleopterous and Lepidopterous larvae, a table of the synonymy of Order names, a table showing schemes of the classification of orders from 1735 to 1937 and a summary of the important groups of leaf-mining and subterranean insects. An adequate index ends the volume. The illustrations are numerous and uniformly good.

Because of the enormous field covered by Professor Frost, the discussions are, of necessity, brief. Nevertheless, his summaries are adequate and sound and represent the matured and extensive knowledge of many years of experience and research. In addition, Professor Frost has incorporated in his book various topics not usually found in our text-books, such as Bryson's table for the identification of soil insects by characteristics of their burrows, discussions of the food habits of large groups of insects, of the fecula of insects, of the amounts of foliage consumed by certain species and of other important discoveries by entomologists. These facts, together with his presentation, make this volume an extremely interesting one and an ideal and stimulating introduction of the subject for college students.

HARRY B. WEISS

SPECIAL ARTICLES

CLOSE RELATION BETWEEN RUSSIAN SPRING-SUMMER ENCEPHALITIS AND LOUPING-ILL VIRUSES[1]

IN 1938 Russian scientists isolated and described a virus obtained from the brain tissue of fatal cases of encephalitis occurring in Russian woodsmen.[2] They placed their virus in the St. Louis-Japanese B encephalitis group on the basis of reactions in laboratory animals but then differentiated it sharply from St. Louis and related it slightly to Japanese B virus as a result of immunological tests.

The Russian virus sent to Dr. R. R. Parker in this country[3] was made available to us for study through the agency of the Commission on Neurotropic Virus Diseases of the United States Army and the cooperation of Drs. Dyer, Parker and Cox, of the U. S. Public Health Service.

We have found this strain of Russian virus to be similar to a strain of louping-ill virus, the causative agent of an encephalitis of sheep in Scotland[4] and possibly of Australian X disease of children.[5] The strain of louping-ill virus in our laboratory was obtained from Dr. T. M. Rivers in 1932, shortly after he had received it from Scotland.

Our observations on the Russian virus are briefly

[1] These investigations were aided through the Commission on Neurotropic Virus Diseases, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, Preventive Medicine Division, Office of the Surgeon General, United States Army.

[2] E. N. Levkovich, A. K. Shubladze, M. P. Chumakov and V. D. Soloviev, *Arch. sc. biol.*, 52 (1): 162, 1938; A. A. Smorodintseff, *Arch. ges. Virusforsch.*, 1: 468, 1939–40.

[3] R. R. Parker, *Public Health Rep.*, 57: 1963, 1942.

[4] J. M. Alston and H. J. Gibson, *Brit. Jour. Exp. Path.*, 12: 82, 1931.

[5] J. B. Cleland, *Proc. Roy. Soc. Med.*, 12 (Sec. Path.): 33, 1918–19; A. Breinl, *Med. Jour. Australia*, 4: 454, 1917.