able contribution by America's foremost student of Cenozoic invertebrate paleontology.

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Text-book of Physiological Chemistry. By Olof Hammarsten. Translation by John A. Mandel. Seventh edition. Wiley and Sons, New York.

Another edition of Hammarsten's "Text-book of Physiological Chemistry" is now available in English (translation by Mandel).

Outside of the material contained in the first two chapters of the last edition which now have been combined into one, the arrangement of the older editions has been retained. Chapter for chapter, almost every subject treated occupies very nearly the same number of pages as before. Nevertheless, this edition is far from being a mere reprint. The newer observations and references are usually to be found—sometimes in place of older observations (and references), but more frequently as additions. In the field of metabolism, a field always somewhat scattered and submerged in "Hammarsten," the new edition will prove disappointing to American students just as the older editions have been. Most of the facts are there, but it takes a brave and diligent student to find them.

The index is very full, but its usefulness to students is not so great as it might be because it still lacks expert systematization. The first subject that the reviewer happened to look up in the index was mucin; sixteen references are given, the first is entirely misleading and the most essential references are tucked away in the middle of the long list.

Index and all, however, American biochemists are always pleased to see one more edition of the book which more than any other is kept within reach for daily consultation.

Otto Folin

NOTES ON ENTOMOLOGY

Two recent parts of Das Tierreich treating of the hymenopterous superfamily Proctotrypoidea[1] are almost monographic in character. Both are by the Abbey J. J. Kieffer and treat of almost 1,800 species in over 130 genera. An illustration is given of nearly every genus, and there is an introductory portion treating of the external morphology. Many of the species are from our country.

India is sufficiently distant from both Europe and America and its fauna has been sufficiently unknown to have been selected as the probable place of origin of many types of animals. Its insect fauna, however, is now becoming better known through numerous books; three have come to hand recently. One by T. B. Fletcher[2] deals with the insects of southern India. There is an introductory account of insects, and life histories of many species representing most of the families. A second large work is by E. P. Stebbing[3] and is devoted to accounts of the life history of and the damage wrought by the forest beetles of India. Unfortunately it contains the descriptions of various new species. The third work is purely economic and treats of the pests of various crops.[4] It consists of 84 leaflets with plates, mostly colored, of insect and fungous enemies of field crops.

Several microlepidopterists had shown that certain Tineid larvæ are of different shape and habit at different stages of development. Trågärdh[5] has investigated these forms and arranges them in two sections, the tissue eaters that bite and eat the parenchyma of the leaf, and the sap-feeders, that take only liquid. The former method is the more primitive, the

[1] Lief. 41, Bethylidæ, 595 pp., 205 figs.; Lief. 42, Serphidæ and Calliceratidæ, 254 pp., 103 figs., 1914.

[2] "Some South Indian Insects," Madras, 1914, 565 pp., 440 figs., 50 pls.

[3] "Indian Forest Insects of Economic Importance—Coleoptera," London, 1914; 648 pp., many pls. and text figures.

[4] "Crop Pest Handbook for Behar and Orissa," Calcutta, 1913. Issued by Dept. of Agric. of these provinces.

[5] "Contributions Towards the Comparative Morphology of the Trophi of the Lepiodopterous Leaf-miners," *Arkiv Zoologi*, VIII., No. 9, 48 pp., 62 figs., 1915.

latter requiring special modifications of the mouth parts. Several species are sap-feeders when young, and in later stages become tissue feeders.

The first impulse, upon finding some strange new form of insect, seems expressible only in a new ordinal name. Dr. Silvestri has found some small forms (2 mm. long) in Africa and Malasia representing the newest order of insects, Zoraptera.[6] The genus *Zorotypus* is based upon several species resembling young Gryllidæ. They have enlarged hind femora, two jointed tarsi, head with distinct Y mark, no eyes, last joint of palpi enlarged, nine-jointed antennæ, and short one-jointed cerci.

It is indeed refreshing to find a paper on the systematics of Culicidæ that contains no new generic names. Mr. E. Brunnetti[7] has studied the proposed genera of mosquitoes from the standpoint of the dipterologist and comes to the conclusion of Dr. Williston that most of these names are based on characters of no generic value in Diptera, and are therefore synonyms. Under *Culex* he places no less than 72 such names. The value of the various characters is considered, and tables are given to the vaild genera; some names, however, still left in doubt. *Corethra* is regarded as forming a subfamily in the Culicidæ.

We all know that an insect "bite" is not simply a puncture, but our first interest has been to find a remedy. Dr. J. H. Stokes[8] however, has investigated the pathological and histological features of a "bite" and concludes, that, irrespective of pathogenic organisms, the insect introduces a toxic agent which produces considerable changes in the tissues near the "bite." This toxic agent is not injured by alcohol nor by dry heat, but is inert after treatment with hydrochloric acid. The history of a "bite" is divided into four stages; the papular, the pseudovesicular, the vesicular or oozing stage, and the involution or subsidence.

N. BANKS

6 "Descrizione di un nuovo ordine di insetti," *Bol. Lab. Zool. Gen. Agrar.*, VII., pp. 193–209, 1914.

7 "Critical Review of 'Genera' in Culicidæ," *Rec. Ind. Mus.*, X., pp. 15–79, 1914.

8 "A Clinical, Pathological and Experimental Study of Lesions Produced by the Bite of the Black Fly (*Simulium venustum*)," *Jour. Cutan Diseases*, November and December, 1914, pp. 46.

SPECIAL ARTICLES

A CASE OF ASSUMPTION OF MALE SECONDARY SEX CHARACTERS BY A COW[1]

A PURE-BRED registered Ayrshire cow, named Dorothy of Orono (23010), belonging to the University of Maine, produced three calves, on dates as follows: September 17, 1909, September 10, 1910, February 24, 1912. On the lactation following the birth of the second calf she made a record of 12,426.4 lbs of milk and 450.75 lbs. of fat, and was admitted as No. 426 to the Ayrshire Advanced Registry.

After March 24, 1913, the cow never gave any milk. The udder rapidly shrunk to a very small size and the animal began to show the external characteristics of a bull. This change was very slight at first, but soon became much more marked. *After a lapse of 8 months the general external facies and the behavior of the cow were like those of a bull to a remarkable degree.* The neck had become thickened in its posterior parts, and had developed a well-marked crest, as is characteristic of a bull. If the cow had been so screened that only her fore-quarters and neck were visible, any observer would have unquestionably pronounced her a male. The assumption of male characters in these regions was complete and perfect. In the hind-quarters the change from characteristic female conformation in the male direction, while less striking than in the anterior parts, was still clearly evident. The udder shrunk away to a very small size. The hips and rump took on the smooth, rounded, filled-out appearance which is characteristic of the bull, but not of the cow.

The cow was slaughtered on February 18, 1914. Autopsy showed as the only gross ab-

1 This is a preliminary abstract of a paper having the title "Sex Studies. VII. On the Assumption of Male Secondary Characters by a Cow Affected with Cystic Degeneration of the Ovaries," shortly to be published in the Annual Report of the Maine Agr. Expt. Sta. for 1915.