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The Protura. A revision of the species of the world, with keys for determination. S. L. Tuxen. Hermann, Paris, 1964. 360 pp. Illus. F. 54.

The Protura are a group of primitive apterous insects (?) comprising some 208 species. Some students think that they should not be considered insects but, whatever they may be, very little is known about these creatures, which are most usually encountered in the bottle at the bottom of a Berlese funnel. Tuxen, one of the few students of Protura, has attempted here a monographic treatment of all the known species. He has seen all the types, and provides a complete synonymy. In the prefatory chapters he discusses the anatomy of the proturans, with special reference to characters useful in taxonomy.

This work is obviously intended to be the master work of a thorough student, and a point of departure for future work. As such it will be useful, but, unfortunately, its usefulness is seriously impaired by the reduction of many of the illustrations to miniscule size. Many drawings that should be at least 3 inches in size have been reduced to 1 inch, and sometimes six-tenths of an inch. The publishers have not only failed the author, they have betrayed the potential user of the book. They should print a new set of figures.

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General and Experimental Zoology

International Review of General and Experimental Zoology. vol. 1. William J. L. Felts and Richard J. Harrison, Eds. Academic Press, New York, 1964. xiv + 445 pp. Illus. $14.50.

In this era of burgeoning literature few would question the desirability of having, or even the desperate need for, review articles, but any new outlet must nevertheless be assessed for quality and communicative efficiency. In competence, scope, and aim of individual contributions, volume 1 of *International Review of General and Experimental Zoology*, a well-manufactured book, is already a very mixed bag, but in addition it juxtaposes papers on (i) the biology of Foraminifera, (ii) longevity in biting insects, (iii) equilibrium orientation in fish, (iv) environmental effects on reproduction in domesticated mammals, (v) the evolution of mammalian leg muscles, (vi) mammalian pituitary histochemistry, (vii), reproduction in the bush baby, (viii) the evolution of calcified tissue, and (ix) the chronic effects of gravity on animals. Even allowing that all these subjects are appropriate to the series title (although paper number 7 is primarily an able, individual research contribution), and that the editors' aim to enlighten "both general and specialist readers" is realistic, one wonders (a) whether an annual collection of solicited papers is the best way to get timely reviews, (b) whether the somewhat greater length and fuller illustration allowed in book publication vis-a-vis the treatment available in review periodicals offsets the greater publication delay, deadline haste, and extra cost, and (c) whether the individual papers in so diversified an aggregation are likely to become known to many of their proper potential readership.

The reviews vary in length from 21 to 85 pages (mean 45) and have 28 to 350 literature citations. Bibliographies are alphabetized, titles being given in two of them, and indicate that five of the authors have been publishing for six or fewer years in their respective fields.

The first paper is an interesting and critical account of cell structure in shelled rhizopods, featuring a unique multilayered lattice-membrane ultrastructure, two-way streaming in filamentous pseudopods, and life cycles in which meiosis does not form the gametes. Papers 2 and 4, which would probably have been more easily retrieved from review journals concerned with entomology or parasitology, and physiology are lucid, data-filled, and comprehensive summaries of well-mined fields, in which numerous solid conclusions are possible. These contrast with the state of knowledge in pituitary cytology (as covered in the rather poorly illustrated paper number 6) from which I gather that almost nothing really definite can be said about the histochemistry of cell contents, the location of the various hormones and enzymes, or the ultrastructural criteria for the different cell types.

The third paper is devoted mostly to a detailed, and at times opaque, paraphrasing of a single important paper by von Holst, which shows that overall orientation to gravity involves a continuous nonadapting input to the central nervous system from sensory epithelium, modulated by signals from eyes and utricles, the paired latter acting synergistically rather than antagonistically, and being minimally active in the fully oriented state. Paper number 5 involves critical reinterpretation of myology and tendon attachments, leading to the conclusion that a prehensile great toe is a mammalian characteristic long antedating the origin of the primates. The eighth paper is a comprehensive formalistic account of presumed evolutionary trends in collagen, bone, cartilage, and teeth in relation to mechanism of calcification, homeostasis of calcium, phosphate and citrate ions, and parathyroid function. Paper number 9 is an excessively verbose and labored account of the effects of prolonged centrifuging on whole animals, a field apparently burdened with unnecessary algebra, unclear objectives, and intellectual poverty, though doubtless of practical importance.

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Hemic Cells

Blood and Bone Marrow Cell Culture. H. Jackson Woodliff. Lippincott, Philadelphia, 1964. xiv + 141 pp. Illus. $6.

To those who have experienced the disappointment and frustrations attendant on attempts to culture normal hemic cells, this monograph will be of some solace because it confirms the fact that other investigators have been equally unsuccessful. But no matter how difficult the problems are, the fundamental and practical potentialities