Nonchromosomal Heredity

Extrachromosomal Inheritance. John L. Jinks. Prentice-Hall, Englewood Cliffs, N.J., 1964. xiv + 177 pp. Illus. Paper, $2.95; cloth, $4.95.

The Cytoplasm in Heredity. D. Wilkie. Methuen, London; Wiley, New York, 1964. 123 pp. Illus. $3.50.

Two recent books on nonchromosomal heredity provide informative treatments on this subject for biologists. One of these, *Extrachromosomal Inheritance* by John L. Jinks, is a part of the Prentice-Hall series, The Foundations of Modern Genetics. The other, *The Cytoplasm in Heredity* by D. Wilkie, is one of Methuen's Monographs on Biological Subjects. Similar material is treated in both books, but from quite different points of view. Wilkie is primarily concerned with relating various aspects of nonchromosomal heredity with developmental problems but neglects a broad survey of the subject. Thus, the book is less inclusive than might be desired. But such a treatment does provide an opportunity to correlate genetics and embryology from a rather unusual point of view. On the other hand, Jinks writes broadly on the material and reviews a great deal of literature that may not be well known, particularly some recent findings with respect to algae and fungi.

Extrachromosomal Inheritance is primarily designed as a textbook for use in upper division courses. As such it provides a useful review and introduction to both the old and the new literature of the area. The book has four main sections. The first deals with methods of detecting extrachromosomal inheritance and gives numerous examples of such phenomena. In this section the review of Jinks' own work with fungi is particularly commendable. The next section, which is concerned with the nature and physical basis of extrachromosomal systems, is in the author's own view controversial, and I am certain that some workers in this area will disagree with Jinks about some of the material. However, it is a thoughtful treatment of the subject and provides students with a detailed view of extrachromosomal inheritance by one of the foremost workers in the area. The next two sections deal briefly with the relationship between chromosomal and extrachromosomal systems and with the role of extrachromosomal systems in development and evolution. Throughout this book, Jinks has quite compellingly stressed the need for rigor in defining and examining systems suspected of involving extrachromosomal inheritance. This approach should delight anyone using his book as a textbook. The major deficiency, which appears to be quite intentional, is his failure to provide broad alternatives to the proposed models for the nature of less well understood extrachromosomal systems.

Wilkie stresses the genetic and biochemical data on mitochondria and chloroplasts—data suggesting that these carry and use genetic information. He then briefly describes other cytoplasmic factors suspected of having a genetic continuity. In the latter half of his book, he considers enzyme induction, nucleocytoplasmic interactions, and problems of development. But his treatment, in my opinion, covers material well handled by others recently and does not add additional insight.

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Marine Research

Fishes of the Western North Atlantic. pt. 3, Soft-rayed Bony Fishes: Class Osteichthyes, Order Acipenseroidei, Order Lepisostei, Order Isospondyli, Suborder Elopoidea, Suborder Clupeoidea, Suborder Salmonidea (652 pp.), Henry B. Bigelow, Ed.; pt. 4, Soft-rayed Bony Fishes: Order Isospondyli (part), Suborder Argentinoidea, Suborder Stomiatoidea, Suborder Esocoidea, Suborder Bathylaconoidea, Order Giganturoidei (619 pp.), Y. H. Olsen, Ed. Henry B. Bigelow, Editor-in-chief. Sears Foundation for Marine Research, Yale University, New Haven, Conn., 1963 and 1964. Illus. $27.50 each.

The publication of this prestigious set began in 1948 with part 1 ($10), followed by part 2 ($15) in 1953. A fifth part is scheduled for publication. Henry B. Bigelow, professor emeritus of zoology at Harvard University, is the principal author and editor-in-chief. He was assisted by an eminent roster of some 20 well-known American ichthyologists. No previously published work on ichthyology has involved a comparable panoply of professional talent.

Part 1 is devoted to the lancelets, cyclostomes, and sharks. Part 2 tells of the sawfishes, guitarfishes, skates, rays, and chimaeroids. Part 3 discusses the soft-rayed bony fishes of the Orders Acipenseroidei and Lepisostei, and begins consideration of the Order Isospondyli, which is completed in Part 4. (The forthcoming part 5 will deal with the higher groups of the bony fishes.)

The geographic area comprising the Western North Atlantic "extends from Hudson Bay southward to the Amazon and seaward more or less to the mid-Atlantic, with Bermuda and the Caribbean areas." The texts are limited primarily to species inhabiting brackish or salt water.

The account for each species includes synonomy, the number of specimens examined and the museum in which they are deposited, a detailed narrative description, and proportional dimensions, as well as consideration of habits, relationship with other species, geographic range, abundance, and commercial importance. Annotated references and illustrations are also included.

The chief merit of this ambitious work is that it has brought together the detailed information accumulated during the present century, which hitherto has been available mainly in scattered sources including scientific journals, periodicals, and unpublished notes and manuscripts. The extensive fishery biological investigations and systematic studies that have been made on Western North Atlantic fishes since the publication of Jordan and Evermann's *Fishes of North and Middle America* (*Bull. U.S. Nat. Mus. No. 47*, 4 volumes, 1896–1900) are now accessible in one source. The authors do indicate, however, that our knowledge of North Atlantic fishes, particularly of deep-water species, is still incomplete and that there is need for additional exploratory research.

The set will be most valuable to systematic ichthyologists, fishery biologists, and oceanographers. However, the lucid descriptive material will be of great interest to the nonspecialist naturalist and student.

University, museum, and special libraries, as well as the science and technology divisions of metropolitan public libraries, that have not purchased the set are advised to do so promptly. The edition is limited.

HILARY DEASON
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