Pre-Mendelian Genetics

Genetik: Grundlagen, Ergebnisse, und Probleme in Einzeldarstellungen. Hans Stubbe. Fischer, Jena, 1963. xii + 232 pp. Illus. Paper, DM. 18.10.

This short history of pre-Mendelian genetics, which also includes a description of the rediscovery of Mendel's own paper, is by far the best account of the subject that we have. It is published as a preliminary contribution to a much larger work, one that will be designed to cover the entire field of genetics. The history thus is relatively brief and condensed, selective rather than exhaustive. The selection, however, seems to have been done with care and, I believe, with excellent judgment. The bibliography of some 500 items makes it easy for the reader to pursue further any phase of the history that interests him.

The work opens with a very brief account of the domestication of animals and plants, and with the changes made in them by our prehistoric forebears. The author next describes, in somewhat more detail, the ideas of heredity held by the Grecian philosophers and by the Roman agriculturists. Next, he quickly traverses the early Middle Ages, but he pauses long enough to call attention to the biological writings of St. Albert the Great, St. Thomas Aquinas, Roger Bacon, and Paracelsus. In the history of the next few centuries, he found, of course, much more that was pertinent to genetics, and he records in adequate detail the contributions made during the 17th century by the early naturalists, physiologists, and microscopists.

The author begins his "modern times" with the 18th century. Here he describes the preformation-epigenesis controversy, and here he includes the many accounts of the naturally occurring and experimentally created plant hybrids. The greater part of the history is devoted, however, to the 19th century and its many plant hybridizers and animal breeders. Here Mendel's own contribution is included. The ideas of heredity held by Charles Darwin and the other evolutionists are important, of course, to any history of genetics, and the author recounts them clearly and in sufficient detail. The narrative ends with an account of the late 19th- and early 20th-century discoveries in cytology and of their bearings on genetics. In this section the author describes how the Mendelian factors, or genes, were located in the chromosomes.

There is but one minor adverse criticism which I feel that I must make. George Sarton [*Isis* **30**, 222 (1939)] has deplored our routine carelessness in our iconography and has insisted that historians of science must be as careful in authenticating their illustrations as they are in checking their quotations. This short history is well illustrated with 35 portrait plates. Those from the classical world, however, can most charitably be described as "traditional." It is true, for example, that the portrait bust labeled "Demokritos" would enliven almost any page, but it was hardly kind to Demokritos to attach his name to it.

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Marriage Patterns

Marriage in Tribal Societies. Meyer Fortes, Ed. Cambridge University Press, New York, 1962. vii + 157 pp. $4.75.

This volume, the third in a new series of studies published by the Department of Anthropology of the University of Cambridge, consists of an introduction by Meyer Fortes and four essays, each written by one of Fortes's former students. With one exception, an essay which consists of a reanalysis of some of Malinowski's older Trobriand material from the Oceanic region, supplemented by data subsequently gathered by Powell, the essays are concerned with contemporary marriage patterns among specific African peoples; Esther Goody writes about the Gonja of Ghana, Grace Harris about the Taita of Kenya, while Jean La Fontaine is concerned with the Gisu who live on the slopes of Mount Elgon in Uganda.

As Fortes says, it might seem that, in view of what we know about marriage in various societies, little could be added to our understanding of these matters. But these essays show that this is by no means the case; instead they indicate the great possibilities for further research on a comparative basis in this realm.

One of the virtues of these essays is that marriage is not discussed in general terms; rather it is linked to the life cycles of the individuals concerned. Thus Goody in a fascinating article (fascinating because she deals with a society with a cognatic kinship system not unlike our own), by distinguishing between divorces initiated by younger and older women, is able to argue that divorce is not a symptom of social disorganization but rather a normal process in certain types of social systems in which married life is an intermediate stage in an individual's life and not a permanent and terminal condition as we tend to view it. Again, the authors, and this is particularly noticeable in the essays by Harris and La Fontaine who appear to have been strongly influenced by the work of Edmund Leach, demonstrate how one can discover and interpret implicit norms in the choice of marriage partners, given the goals of the individuals and the rules of the society.

The essays by Goody, Harris, and La Fontaine are of the highest quality and can be read by the nonspecialist with profit, since they are clearly written and free of jargon and terms in the local languages. They demonstrate the standards of field observation demanded by modern social anthropology, and they show how data so collected are utilized to raise and answer problems which transcend those of the particular societies under consideration.

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Linear Systems Theory

The Mathematical Theory of Linear Systems. B. M. Brown. Wiley, New York, 1961. xi + 267 pp. Illus. $8.

Linear system theory is the most trivial and the most important subject taught to engineers. Many mathematicians find the subject uninteresting because systems described by linear, constant-coefficient, and differential-difference equations have closed-form solutions with well-known mathematical properties—most mathematicians cannot understand why a major part of a modern engineer's education is devoted to this area. The engineering educator knows, however, that linear models are the only models whose outputs can be