for his friend George III, and who presided over the Royal Society for 42 years surely deserves more press.

The latest attempt, by Charles Lyte, a British journalist, is a visually gorgeous production, sporting two dozen top-quality photographs (eight in color). Its frequent, well-chosen quotations from Banks's letters and journals make it a delight to read as well, notwithstanding the author's propensity for short, one-sentence (newspaperlike?) paragraphs. Over a third of the book is devoted to the career-making *Endeavour* voyage with Cook, particular emphasis being given to Banks's ethnographic interests and talents for dealing with Pacific Islanders. Lyte also provides previously scarce details of Banks's private life and his adventures with the opposite sex.

Indeed, this is a social, not scientific, biography. Precious little is said of the results of all Banks's "botanizing." If we admit that he was more an entrepreneur of science than a scientist, then we ought to expect more than a mere two chapters (totaling 30 pages) on his superintendence of Kew and the Royal Society. Lyte does stress Banks's generosity in subsidizing younger scientists, but he does not refer even once to the most famous of his assistants, Robert Brown. Other prominent scientific personalities who had Banks associations, such as the Forsters of Cook's second voyage, are also missing. The author seems eager to display his protagonist as more the enlightened member of 18th-century England's aristocracy than the leader of her scientific community (an assessment of Banks perhaps generally extant since the professionalization and mathematization of British science in the 19th century). A clearly articulated argument to this effect (or its reverse) would have given additional direction to the narrative.

Historians are likely to be disappointed by the absence of citations for the multitudinous quotations used, the minimal (half-page) bibliography, and the incomplete index, largely of names. A map of the track of the *Endeavour* would also have aided the reader materially. In short, for a chatty, splendidly illustrated introduction to Banks the man, Lyte's book is fine. For an analysis of Banks the pivotal promoter of Georgian science, we must return to Cameron's earlier study or wait until the materials are assembled for the definitive biography.

PHILIP F. REHBOCK
Departments of History and
General Science,
University of Hawaii,
Honolulu 96822

Neuroendocrinology

Peptides. Integrators of Cell and Tissue Function. Papers from a symposium, Woods Hole, Mass., Sept. 1979. FLOYD E. BLOOM, Ed. Raven, New York, 1980. xiv, 258 pp., illus. $23. Society of General Physiologists Series.

In organizing a symposium for the Society of General Physiologists on the general topic of peptides, Floyd Bloom wanted to "avoid generating yet another meeting on the same topical molecules with the same group of speakers." This volume is a series of essays written by the people who participated in Bloom's symposium. Their contributions reflect the diverse regulatory roles played by biologically active peptides, and to the extent that Bloom successfully met his goal this is a unique and interesting book. Among the papers that it contains, a few should be singled out for special mention.

Gospodarowicz and his colleagues present their work on fibroblast growth factor. They describe its two most prominent actions on vascular endothelial cells: its mitogenic effect and its effect on the phenotypic expression of cells once they grow to confluence. In a subsequent essay Scher and his co-workers talk about the mechanism of action of fibroblast growth factor and platelet-derived growth factor in initiating cell replication. The two papers complement one another nicely and provide an excellent introduction to studies of cationic polypeptide growth factors.

Truman and Schwartz outline their investigations of eclosion hormone, a peptide hormone secreted by brain neurosecretory cells just prior to the time when the adult insect emerges from the pupal cuticle. In addition to altering the insect's behavior and the composition of its epidermis, the hormone initiates degeneration of a specific set of muscles and their associated neurons, and it is the latter action that is the focus of the review. The story that has evolved from this work is fascinating and well worth reading.

Greenberg and Price have for some years been interested in substances (including peptides) that regulate cardiac function in mollusks. A total of six cardioactive neuropeptides have been found in mollusks to date. Only one of these has been identified: phenylalanyl-methionyl-arginyl-phenylalanine amide. The actions of this peptide are discussed lucidly and in detail, and the information that is available on the other cardioregulatory neurohormones is summarized.

Finally, Strumwasser and his colleagues describe their elegant studies of reproductive behavior in the mollusk *Aplysia*. They have isolated an egg-laying hormone from neuroendocrine cells in the animal's nervous system and two other peptide hormones secreted by cells of the animal's reproductive tract. They consider the role of these peptides in depth in their well-written paper.

Several of the other reviews in the book are quite good, but they are more general, devoted to "the same topical molecules" that have already received so much attention, and written by authors whose work and ideas have been in the limelight. Despite this criticism, I enjoyed reading the entire volume and recommend it to graduate students and workers in the field.

MICHAEL J. BROWNSTEIN
National Institutes of Health,
Bethesda, Maryland 20205

Population Genetics

The Mathematical Theory of Quantitative Genetics. M. G. BULMER. Clarendon (Oxford University Press), New York, 1980. x, 256 pp. $74.

Population genetics theory has, almost since its origin, been beset by a schism between those concerned with quantitative or continuously variable characters and those concerned with Mendelian characters. The two ways of modeling the inheritance of phenotypic characters were reconciled by Wright and Fisher, but there is still too little contact among the two parts of what should be a single subject. Quantitative geneticists have been concerned largely with the statistical description of populations and the prediction of short-term changes. Population geneticists modeling Mendelian characters have concentrated on characters controlled by one or only a few genetic loci and have been concerned with the evolutionary implications of their models on long time scales. These models, the use of which was characterized as "beanbag" genetics by Ernst Mayr, formed part of the basis for the neo-Darwinian synthesis that was developed in the 1930's and 1940's. Quantitative genetics, by contrast, has had so little effect on evolutionary theory that some evolutionary biologists have seemed unaware of its relevance. For example, S. Løvtrup has written, "The first postulate [of neo-Darwinism] asserts that in an organism all relevant

properties are determined by Mendelian particulate genes" (*Epigenetics*, Academic Press, 1974, p. 395), as if there were no genetic models incorporating environmental variance, genotype-environment interactions, or maternal effects.

Bulmer's book partly bridges the gap between the two ways of approaching population genetics. The book is written in the quantitative genetics tradition, with appropriate coverage of the major topics. But there are several sections of interest to evolutionists, including a review of Bulmer's own work on selection theory, the balance of mutation and selection pressures, and population subdivision. Though there is not as much discussion of evolutionary topics as I would have liked, there is enough to provide a passage between the two parts of population genetics.

The book is written primarily for persons with a clear understanding of statistics, particularly the theory of regression and of the analysis of variance. It does not assume much knowledge of genetics and introduces the reader to the necessary genetic principles in the first few chapters. The first half of the book is on the statistical description of populations under panmixia and under various forms of inbreeding. The second half is on the effects of natural and artificial selection, including frequency-dependent selection and selection operating on correlated characters. An important feature of Bulmer's treatment of this material is his presentation of normal distribution theory, showing the great simplifications possible when normality can be assumed but also the difficulties encountered when it cannot.

For a person with the appropriate statistical background, Bulmer's book provides an excellent introduction to quantitative genetics. In using the condensed notation of mathematical statistics, he can efficiently introduce a variety of topics and develop them in some detail. There are numerous well-chosen examples that both illustrate the main points and introduce the reader to many of the classic studies in the subject. Although the mathematical development of the topics is not always easy to follow, a careful reading and working through of the examples would provide the reader with a sophisticated understanding of the material.

For a person without a strong statistical background, I think the book would be much more difficult. The meaning of the notation and terminology used in the mathematical sections is not always transparent and cannot usually be understood from the context. It would probably be easier for such a reader to begin with a more elementary book like Falconer's *Quantitative Genetics*. Afterwards, Bulmer's book would provide more extensive information about the subject and at the same time greater understanding of the underlying statistical principles, which were after all first developed by quantitative geneticists.

Bulmer's book is an essential reference for anyone concerned with quantitative genetics and provides the only review available of the parts of quantitative genetics relevant to evolutionary theory. It would be a useful textbook for courses that could assume the necessary statistical background if it were not priced beyond the reach of most students.

MONTGOMERY SLATKIN
Department of Zoology,
University of Washington,
Seattle 98195

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