In *Molecular Genetics: An Introductory Narrative*, Stent has given us a historically precise and highly readable account of how our molecular picture of heredity developed. Molecular genetics is no longer something to do (it seems) but has become something to recount, and Stent's talents as a raconteur combine well with his personal experiences, which cover almost the entire period and touch upon many of the subjects about which he writes. The book is the distillate of six years of teaching to upper-division students at Berkeley, and is intended as an introductory text for similarly prepared students. It will be appreciated by most of its intended audience—it's clear and it's comfortable. In addition, teachers who do not elect to adopt it will find it useful in the preparation of scholarly lectures. Authors at large might study it as an example of effective narration, though I'm not sure that a skill like Stent's can be learned.

The book is beautifully produced and even more beautifully illustrated; at $12 it gives value for money.

FRANK STAHL
Institute of Molecular Biology, University of Oregon, Eugene

Parts of a Famous Biota

Flora of the Galápagos Islands. IRA L. WIGGINS and DUNCAN M. PORTER. Stanford University Press, Stanford, Calif., 1971. xxii, 998 pp. + plates. $37.50.

William Beebe called the Galápagos Islands "World's End." Herman Melville called them "the Enchanted Isles." For biologists this archipelago of volcanic islands 500 miles off the coast of Ecuador has become the shrine of evolutionary theory. Here it was that Darwin observed the remarkable racial differentiation of birds, tortoises, and lizards that planted in his mind the seeds of the theory of natural selection.

For a variety of reasons—remoteness, inhospitable terrain, the great expense of exploration—investigation of the biota of these islands has been slow and spasmodic. In over a century of study, no one has produced either a comprehensive flora or a fauna of this classic biological area.

Television has now discovered the islands, a tourist invasion has begun, a Darwin Research Station on Santa Cruz Island has been established, and ecological research is in full swing. Most of this activity owes its inception to the Galápagos International Scientific Project, a multidisciplinary field trip undertaken in 1964 to focus international attention on the islands, to stimulate serious study of their natural history, and to foster a National Park concept for Ecuador (see R. I. Bowman, Ed., *The Galápagos*; reviewed in *Science* **156**, 55 [1967]).

Ira L. Wiggins, a botanist with this project, decided it was time for a complete review of the flora, and he and Yale Dawson set about the preparation of a full-dress, modern illustrated flora with keys, descriptions, and ecological notes. After Dawson's death the coauthorship was taken up by Duncan Porter, and specialists were enlisted to treat certain families. The result is a prime example of what a modern flora should be—complete and scholarly, a handsome example of the publisher's art, with excellent line illustrations and a selection of small color plates. The taxonomic arrangement is a pleasant compromise for the nonprofessional user, with the families, genera, and species arranged alphabetically within five easily recognized groups—Ferns and Fern Allies; Dicots: Apetalae, Gamopetalae, and Polypetalae; and Monocots. The glossary is correct and meticulous, and there is hardly a typographical error anywhere. The illustrations give an example of almost every genus and are scientifically accurate and realistic.

Unfortunately the large size of the book precludes its use as a field manual. When they planned the book, the authors could not have foreseen the great surge of popular interest in the Galápagos that has taken place. Now it is imperative, in the interests of education and conservation, that an effective small field guide be prepared for the use of serious tourists. The *Flora's* introduction is so useful and so broadly descriptive of all aspects of natural and human history that it should be reprinted for general use. This could be complemented by the abstracted keys and by illustrations of the more conspicuous floristic elements. The cultivars should be treated (only those that survive on their own are listed in the present text), and the index should include their vernacular names. It is a pity that these are not included in the present index or given prominence in the text.

The obvious errors in the *Flora* are few and easily corrected. Plates 3 and 4 are mislabeled; plate 3 shows Academy Bay, Santa Cruz, not Wreck Bay, San Cristóbal, and the legend of plate 4 is a mixture. Plate 31 is printed upside-down, and there are a few errors in the captions of the bird plates, according to local ornithologists. Figure 198(a–c) seems to represent *Oxalis corniculata* rather than *O. cornellii*, and fig. 136a (*Bixa orellana*) is incorrect, the plate having been drawn from the same herbarium specimen as fig. 161 (*Caesalpinia bonduc*).

Controversy concerning the geographical affinities and the endemism of the Galápagos flora abounds, and it is disappointing not to find a review of the situation in the light of our revised understanding of the taxonomy. How much of the flora is thought to have arrived in the historic period, what percentage is Caribbean and Central American, what Andean, and how do the facts square with recent theorizing on migration tracks, continental drift, and land bridges? A statistical table shows a total of 642 species, of which some 30 percent are endemic. Balancing this extraordinary picture of endemism, I calculate roughly that 185 species (about the same percentage) represent widely distributed tropical weeds and 53 (8 percent) are escaped cultivars. And although 642 species, from any viewpoint, looks like a small flora, it is not an easy flora to master if one considers that 236 (67 percent) of the genera are represented by a single species, while only 58 (16 percent) are represented by three or more. The largest genus (excepting *Cyperus*, which contains a number of weedy introductions) is the dominant endemic tree-composite *Scalesia*, with 11 species. This genus along with the tree cacti gives the Galápagos its uniquely exotic forest aspect.

This reviewer brought the first copies of this book to the Galápagos in June 1971 with the first study tour for university credit, so had an opportunity to test it on location. I can report that the keys work beautifully. The strongest impression I have from the experience is that the book is still a preliminary treatment. The islands will not be adequately known until there are resident botanists studying the flora and until the Darwin Research Station is equipped for the handling, drying, and proper storage of botanical materials. The microcosm of high endemism, casual and intentional introduction of weeds and cultivars, and tropical agriculture on a small scale in such an isolated and neatly circumscribed area is a situation that cries out for students. A thorough

study of the alien flora and its impact on the indigenous one is a prime research topic for the immediate future. The older European farmers who know the history of agriculture here are rapidly disappearing, and time is of the essence. The new *Flora* will be indispensable for such a study.

For Wiggins, this work is the culmination of a decade of extraordinary accomplishment in which he has guided three monumental floras to completion. That much of this work has been done since his academic retirement is a tribute to his remarkable energy and decisiveness. The high standard set by these works is a challenge and example for the Flora North America Project now gaining momentum.

WILLIAM A. WEBER
University of Colorado Museum, Boulder

Blood Constituent

The Circulating Platelet. SHIRLEY A. JOHNSON, Ed. Academic Press, New York, 1971. xx, 602 pp., illus. $29.50.

The blood platelet was first visualized in the 1840's and shortly thereafter was recognized as important in clotting. It is largely over the last two decades, however, that detailed understanding of its various functions, its status as a metabolically active celi, albeit one of inevitable rapid senescence, its clinical importance, and its therapeutic uses has developed.

Two books, both edited by Shirley Johnson, summarize the work of these decades, the first (*Blood Platelets*, Little, Brown, 1961) covering the exciting decade of the 1950's, when the significance of the platelet in many fields was first appreciated, and the volume under review here covering a decade during which earlier knowledge was consolidated and further progress made. Comparison of the volumes demonstrates that both notable refinement in platelet investigative technique—for example, the exquisite electron micrographs illustrating White's chapter on platelet morphology—and a subtle change in approach have occurred. Formerly regarded as primarily concerned with hemostasis, the platelet is now recognized also as a nidus for thrombus formation. This subject is ably considered by Johnson in the new volume.

The role of the platelet in blood clotting, as distinct from thrombosis, is described by Walter Seegers in his usual trenchant and nevertheless eloquent style. Seegers also takes up the important matters of nomenclature of the platelet coagulation factors. Although, as Seegers admits, a better classification is needed, his original nomenclature has yet to be supplanted. The purely clinical aspects of platelet disorders are described in an excellent chapter by Bowie and Owen. Advances in the clinical field have been relatively modest over the last decade. Similarly, while the use of platelet concentrates for therapeutic purposes has greatly increased recently, advances (described here by Perry and Yankee) have been mainly at the practical level.

The writing of a monograph in a specialized field of interest to a wide audience inevitably involves substantial compromise. The compromise in this instance has been emphasis on platelet morphology and the present state of the art at the expense of platelet biochemistry and the future. Nevertheless, the book serves as a good introduction to the platelet for the hematologist and constitutes a useful reference source for others with expertise in the field.

Shirley Johnson did not live to see the publication of her book, and the reviewer, together with many in the platelet field, lost a close friend. Seegers, Johnson's long-time colleague, contributes a graceful preface eulogizing her many attainments.

NORMA ALKJAERSIG
Department of Medicine, Washington University School of Medicine, St. Louis, Missouri

Trends in Fertility

Reproduction in the United States, 1965. NORMAN B. RYDER and CHARLES F. WESTOFF. Published for the Office of Population Research, Princeton University, by Princeton University Press, Princeton, N.J., 1971. iv, 420 pp., illus. $13.50.

The National Fertility Study of 1965, on which this book reports, is the third in the Growth of American Families series started by P. K. Whelpton and his colleagues at the Scripps Foundation in 1955. The volumes resulting from the 1955 and 1960 surveys were *Family Planning, Sterility, and Population Growth*, by R. Freedman, Whelpton, and A. A. Campbell (McGraw-Hill, 1959), and *Fertility and Family Planning in the United States*, by Whelpton, Campbell, and J. E. Patterson (Princeton University Press, 1966). After the death of Whelpton in 1964 the Scripps Foundation turned its attention to aspects of population other than fertility, and the continuation of the series was undertaken by Ryder and Westoff, of Princeton's Office of Population Research, under the aegis of the National Institute of Child Health and Human Development.

Their study is based on interviews with a national sample of 5617 white and Negro women under 55 years of age, in which were collected—as in the two preceding GAF studies—detailed pregnancy and contraceptive histories, attitudes toward family size and family planning, and a range of descriptive data of demographic, social, and economic nature. There was, however, some change of objective. As described by Ryder and Westoff (p. 37), "The primary purpose of the first [GAF study] was to find a better way of making fertility forecasts, specifically to develop ways of using survey data to estimate the completed fertility of married women still in the childbearing ages. The method was daring in its simplicity: ask each woman to make her own forecast of her future fertility." Even before they began the 1965 study Ryder and Westoff had challenged the trustworthiness of "expectation" data for the estimation of future fertility and population trends, and they adopted the somewhat more modest objective of trying to learn more about the trends and differentials in fertility and the cultural determinants of reproductive behavior.

In preparing the interview schedules the authors constantly had to decide between making the data as comparable as possible with those of the preceding surveys, on the one hand, and improving the data, on the other. Rightly, they generally gave more weight to the latter possibility, but in several instances they were able to provide for both comparability and improvement.

The authors are disarmingly honest in their reporting of findings. In fact one frequently gets the impression that they conceived their task to be that of explaining the complexities of fertility trends and differentials, of warning readers about concealed biases and selections, and of pointing out the limitations of data resulting from respondents' misinterpretation of questions, lack of recall, and deliberate falsification. As a result, any disappointment the reader may have over the apparent