

present. Indeed some of the useful side comments could be picked on for slight inexactitude: Beddoes's son was not a famous poet, however he may now be rated, nor was Büchner's brother a famous playwright—both had a long wait after death before recognition. Again, Bergson did not “influence” William James; the two worked on converging lines, as did Samuel Butler and Nietzsche. And I may add that it is a pity Butler was omitted. He belongs to the history of science as much as Alexander Bain, who is included.

One final bit of carping: it is too bad that no indication is given of a man's functional first name when he is blessed with several. One has to know that it is Ludwig Büchner, and not Friedrich, Karl, or Christian. Italics or parentheses would easily make the point for those who go to the work without earlier preparation.

The publishers have done their part in fitting fashion: design, print, paper, and binding are all to be commended. They might, however, reconsider that part of the blurb which says of “the narrative” that it is at once “accurate and sophisticated.” That last word has a scientific meaning they do not seem to suspect.

In any event, I await the next installment with lively expectation of renewed pleasure, and hope indeed to live long enough for the volume “Uexküll to Zwicky,” to say nothing of the Supplement, where Boucher de Perthes, nicely done here, will mysteriously occur again.

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## Peasant Economics

**Subsistence Agriculture and Economic Development.** An outgrowth of a seminar on Subsistence and Peasant Economics, Honolulu, Feb.–March 1965. CLIFTON R. WHARTON, JR., Ed. Aldine, Chicago, 1969. xiv, 482 pp. \$12.50.

Subsistence agriculture, as opposed to commercial agriculture, occupies 40 percent of the total land area under cultivation and supports over half the world's population. The importance of this very substantial portion of the agricultural sector is obvious, but for equally obvious reasons relatively little is known about it. The interrelatedness of subsistence production and family consumption, the mixture of social and agricultural sciences required to under-

stand peasant societies, and the recency of interest in the modernization process have combined to limit severely what is known about how the other half lives.

*Subsistence Agriculture and Economic Development* is an important step toward filling this gap. Based mainly on a conference held in Hawaii in 1965, the volume contains contributions from 40 leading specialists of 11 countries and a half-dozen disciplines. As a result of the interdisciplinary approach, the book provides a broad base for all those concerned with the development of poor countries. Unavoidably, the volume also underscores the communication difficulties that still remain between the different branches of the social and agricultural sciences. For, as a colleague of mine has suggested, in interdisciplinary gatherings such as these someone must learn to dance backwards, and in some sections it is not altogether clear who is leading.

As is often the case with conference compendia, there is some unevenness among essays, and there is no easy way of summarizing the main conclusions. Indeed, one of the most useful aspects of this collection is the diverse opinions that it brings together on such issues as the role of tradition versus economic rationality in the decision making of peasants, and on the productivity of labor in subsistence agriculture. The book's major strength is its rich detail on how peasant societies are organized and operate at the farm and village level. It is less good on sectoral and intersectoral issues and on the specific development policies needed to modernize peasant societies within an economy-wide framework. In each of the volume's five sections—social organization, the economics of production, theories of change, execution of development programs, and research—there are two or three major papers, supplemented by thoughtful comments from other contributors. In terms of regional focus, there is a relative concentration on Asia; however, the judicious combination of case studies, expository essays, and analytical models provides a scope that should prove helpful for understanding subsistence agriculture in most parts of the world.

A number of interesting features derive from the fact that nearly five years elapsed between the conference and publication of the volume. Few specialists in the field of agricultural development will find much that is new in the book, several of the more important

essays having been published elsewhere. The intervening five years have also seen several of the articles and ideas, such as those of Jorgenson and Nicholls on the role of the agricultural sector in economic development, become near classics. Moreover, the development profession has now generally agreed upon answers to some of the questions which were open in 1965. For example, the issue of economic rationality and the response of peasant farmers to economic stimuli now seems largely to be settled: most subsistence farmers trade a portion of their output and appear to be able to count, even if they cannot read.

The time lag has also shown that some of the fears expressed in 1965 were exaggerated, and that some facets of modernization untouched at the conference were more important than they were then thought to be. In the former category, the overriding concern with lagging agricultural production has been eased somewhat. Largely because of advances in the biological sciences—in particular the development of fertilizer-responsive seed varieties—there is currently less concern about imminent world famine. This green revolution, which occupied only a few thousand acres in 1965, had covered some 30 million acres by 1969. The rapidity with which many peasant farmers accepted the new technology, and the renewed hope that these developments have given a number of countries, particularly in Asia, are hardly touched upon in the volume.

Largely as the result of the green revolution, the same group of authors meeting today would undoubtedly also spend much more time on questions of income distribution and the broader political-economy aspects of agricultural organization. Whereas the earlier focus was on growth and on moving subsistence farmers into the commercial sector, the recent production successes have shown that development, stability, and economic growth are hardly synonymous terms. Of particular concern now (as it was to V. M. Dandekar even then) is the employment question, and the policies required to keep people productively occupied in rural areas in the face of population growth rates that are often in excess of 3 percent a year. This population expansion, plus the possibilities of borrowing agricultural technology that is labor displacing, such as the tractor, are creating enormous strains on the countryside. It is not surprising that more than one author

has recently noted that the green revolution may be turning red.

Although some of the policy issues and implications have changed since 1965, *Subsistence Agriculture and Economic Development* must still be regarded as one of the two or three outstanding volumes for understanding peasant societies. Its strong micro focus and its interdisciplinary character provide an excellent starting point for further work on individual countries and on specific policy techniques. In addition, the editor's perceptive concluding chapter, "The issues and a research agenda," helps to chart a plan of work that is useful and relevant for all those concerned with the social and economic development of poor countries.

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## Herpetology

**The Life of Reptiles.** ANGUS BELLAIRS. Universe, New York, 1970. 2 vols. xx, 590 pp., illus. \$25. Universe Natural History Series.

One thing should be said clearly: there is nothing as good as these two slim volumes elsewhere in print nor is there soon likely to be. Nevertheless, it is necessary to make three complaints: (i) the books are overpriced; (ii) they are in several respects defective or out of date; (iii) they all but ignore some topics that are today an especially thriving part of the study of "the life of reptiles."

It is a pity that these complaints must be made. There is a very considerable wealth of information in these volumes and there is nowhere else to turn for simple summaries of so many topics. The competing *Biology of the Reptilia* edited by Carl Gans is a multi-volume series of erudite reviews by specialists of specialized topics. It will be some years before the series is completed and even then it will not replace Bellairs. The handsomely illustrated volumes by Mertens (now unfortunately out of print) and by Schmidt and Inger aim below the level of Bellairs, as the Gans volumes aim above it.

However, Bellairs, while filling a need, fills it not quite so well as he might. Thus, although his book is pleasantly written and what is said, especially about morphology and physiology, is often well said, there is much

that would be as lucid in half the words, and there are paragraphs and pages and occasional illustrations that could happily have been omitted. It would be possible to consider the "chatty" untechnical style a legitimate device to reach a wider audience did not the price assure a reverse effect and aggrieve those who look for higher content of information on each expensive page.

Again, for all that Bellairs in his preface endeavors to disarm his readers by hoping "that I shall be forgiven for numerous sins of superficiality and omission that I have certainly perpetrated," he does provide "addenda" to the second volume which purport to add more recent (1968, 1969) references or further data. These additions, however, are as casual in their coverage and as surprising in what they leave out as much of the text. One feels that Bellairs has relied too heavily on books and articles that he personally has received and very little on even the better-known journals. Two examples will serve. That sex chromosomes occur in lizards was reported in 1966 in two almost simultaneous articles in *American Naturalist* and in *Science*. Bellairs is as unaware of these as of further reports since then. A very important review by Fred White on blood circulation in reptiles in 1968 in the *American Zoologist* was perhaps too late for inclusion, but a first paper on crocodilian circulation by White appeared in the *Anatomical Record* in 1956. Bellairs does not mention it.

A major defect for a book entitled *The Life of Reptiles* is the lack of any serious consideration of ecology. A few references receive bare citation in the very first chapter ("The growth of knowledge," a chapter itself too much an insufficiently selective list of books), but there is no mention of Milstead's 1967 symposium volume *Lizard Ecology*. In the body of the text only those aspects of ecology are mentioned that have a strongly physiological flavor (thermoregulation or water balance, for example), and there is nothing at all of those aspects (competition, colonization, niche) that have begun to have important theoretical implications.

Though ethology is mentioned, it too is scant and mentioned primarily under reproductive physiology. Zoogeography as "geographic distribution" is given a page and a half. The fossil history of reptiles is given most of a chapter, but even so the account is rather lacking in substance.

The study of reptiles is currently a very active area in which much impressive work is being done. To be acquainted with all is surely too much to ask of any one man, but it is possible to know some of the men who work in the many subareas and to consult them. Bellairs has clearly not done enough of this. However, the greatest defect of Bellairs's volumes is that they give no hint of the liveliness of the field or of the fact that, as with better-advertised areas, there is intense pressure to keep up with the pace of discovery. In consequence he who buys these books may be misled into believing that he has in hand a summary of current knowledge and a way of entrance into ongoing research. As an antidote he had best procure the *Herpetological Review* published by the Society for the Study of Amphibians and Reptiles and confront there the list of "Current Herpetological Titles."

Were Bellairs one volume and half the price it would be possible to be kinder. As matters stand, it is necessary to recommend the English edition at 70 shillings the volume as far more acceptable value for price paid.

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## Biological Substances

**Chemistry of Sphingolipids.** DAVID SHAPIRO. Hermann, Paris, 1969. 122 pp. Paper, 30 F. Chemistry of Natural Products (Original Series), vol. 9; *Actualités Scientifiques et Industrielles*, No. 1338.

This book is a most welcome publication for those working in the field of lipids and in related fields such as membrane biochemistry, which is quickly becoming one of the major fronts of modern biochemistry.

The book is concisely and clearly written with abundant illustrations showing structural formulas. References, many of them from the author's own laboratory, are up to date, and notably few typographical or other mistakes can be found.

The basic approach of this book is that of organic chemistry, understandably, because of the author's interests. Almost every chapter begins with a short histological background of the compounds under discussion. These not only place current information in a proper perspective, but are also an ex-