territory, however, to demonstrate homology in animals and humans would require more evidence than Leyhausen or any other behavioral scientist could now present. In the essay on territoriality in animals and the need for space in humans (essay 6), Leyhausen concludes, "*Our individual and social need for space has been laid down by our phylogenetic history and is therefore a basic characteristic of the genus*, i.e. within certain limits it is an *immutable natural right*" (p. 109). He asserts that space utilization in man and territoriality in animals are basically homologous, and therefore the laws applying to the latter apply to the former. To prove the biological homology, Leyhausen goes through the classic steps of developing a logical analogy. First, he postulates certain characteristics of animal territoriality (for example the innate mechanism of its causation and its heritability). Then he must set up the basis of resemblance between the human and the animal case. If he is successful, he can apply the properties derived from the animal situation to the human. In setting up this basis of resemblance, though, Leyhausen uses arguments that are weak and speculative and do not adhere to the standards of rigor and clarity he uses when discussing ethological concepts like displacement movements. The empirical bases for this analogy include the following: "Although the information we have about the life of the anthropoid apes in the wilds is so far only scanty, it does reveal some striking correspondences with the social life of primitive hunting and food-gathering peoples . . . the main social community is the family or a tribe. . . . Relations between neighboring tribes are in general quite friendly. . . . Communal life within the tribes proceeds in circumstances of relatively loose spatial connection" (p. 103). "Especially common is the way that every social community . . . strives to reserve one certain area as its property and to repel any intrusion by others" (p. 104). These are broad, not precise, similarities and are more akin to biological analogs than to homologs.

While Leyhausen's attempts to expand instinct theory to the mammalian (and human) case often require him to use arguments weaker than those used in discussing other aspects of animal ethology, his attempts are always explicit and clear. Whereas other, more popularized books on human ethology often leave the basic theoretical framework unstated, Leyhausen's articles are consistently intellectually forthright—even when he is going beyond his evidence. Whether human ethology will ever blossom (as its parent discipline of animal ethology has) remains to be seen. For anyone interested in exploring the possibilities of this new field, or for those interested in a sampling of classical ethology, this volume is worthwhile. The translation by B. A. Tonkin is good and the material always interesting.

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Comparative Primatology

An Atlas of Primate Gross Anatomy. Baboon, Chimpanzee, and Man. DARIS R. SWINDLER and CHARLES D. WOOD. University of Washington Press, Seattle, 1973. xiv, 370 pp., illus. $30.

Recent years have witnessed a remarkable renaissance and modernization of comparative primate morphological studies, characterized by multivariate statistical approaches to large, diversified osteological data sets and experimentation with electromyographic and cineradiographic techniques on living animals. But no matter how refined the technology or how sophisticated the research strategy, a substantive part of the explanation of morphological complexes, in evolutionary perspective, will depend upon the comparative anatomical expertise of the theorist. Thus, an increasing number of evolutionary anthropology programs now include one or more courses on comparative primate morphology. Unfortunately, more often than not, the prospective primate morphologist must obtain whatever dissection materials are locally available and learn selected aspects of the subject free-lance.

Formal courses and independent study will now be greatly facilitated by Swindler and Wood's atlas of primate anatomy. The book is a generally well-organized comparison of common baboon, common chimpanzee, and human morphology. The approach is regional, beginning with a bone-by-bone survey of osteological features and progressing to head and neck, forelimb (or upper limb), back, thorax, abdomen, pelvis, and hindlimb (or lower limb). Neurological, angiological, and splanchnological features are presented. But most of the nonosteological sections focus on muscles.

The text is brief, useful, and generally accurate. The illustrations vary in quality and detail from good (plate 64, for example) to poor (plate 73). Readers should be informed that the left-hand figure on page 185, looking rather like Lenin during the lean years, is the senior author. The format seems inordinately expansive and the volume is expensive. Some typographical and factual errors occur, so students should be prepared to take their own specimens as the final authority in case of discrepancy. For instance, in plate 108 (p. 229) the distal segment of the penis of *Pan* is labeled "glans penis" when in fact the poor creatures lack this structure (Graham and Bradley in *The Chimpanzee*, G. H. Bourne, Ed., vol. 5, p. 122, University Park Press, 1971).

In brief, though not the Charles Atlas in an ideal realm, this volume should find a ready market among anthropologists, evolutionary biologists, veterinary scientists, and other researchers who employ catarrhine primates.

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Vespoidea

Wasps. An Account of the Biology and Natural History of Solitary and Social Wasps. J. PHILIP SPRADBERY. University of Washington Press, Seattle, 1973. xvi, 408 pp., illus., + plates. $17.50. Biology Series.

Since the first sentence on the dust jacket proclaims this to be the first major book on wasps since 1868, this reviewer may perhaps be forgiven if he begins his review by waspishly pricking this particular assertion. The statement is possibly true if one accepts the author's definition of a wasp as a member of one group, the Vespoidea, which he calls the "true wasps." But one looks in vain here for a review of the extensive literature on the vast majority of wasps, belonging to other groups and therefore by implication "false wasps." Furthermore, one quickly discovers that the book is primarily about British wasps, other faunas being mentioned mainly as they increase understanding of the British species. The British species consist chiefly of hornets and yellow jackets (Vespinae), even the common paper wasps (*Polistes*) being treated lightly since they occur in Bri-

tain only as strays. The publisher is perhaps a bit bold in expecting Americans to invest this much money on a book devoting 15 pages to distribution maps of wasps in Britain, 23 pages to keys and checklists of British species, a plate to intromittent organs of British wasps, and so forth.

But having discharged my venom sac, let me hasten to add that within its limited scope this book is excellent, making up in depth for what it lacks in breadth. Spradbery reviews in detail his own work on ecology and population structure as well as the work of Brian and others in Britain, including the previously unpublished studies of N. B. Potter. The recent work of several Continental, Israeli, and Japanese workers is also not neglected. Americans can learn much from this review, since in fact most of the research has been done in the Eastern Hemisphere. In the United States, these insects evidently have too little relevance to "national needs" to be worth much effort—and because of their covered nests and ability to defend themselves, vespine wasps do require a good deal of effort. That yellow jackets are often major pests of campers and picnickers, especially in the Pacific states, or that several persons die each year from the effects of wasp stings is doubtless scarcely worth mentioning, considering the many problems we face. Nevertheless, persons who are unaware of the life histories and behavior of these unique organisms are missing a good deal.

It is interesting to learn that Aristotle had a fairly good understanding of social wasps but scarcely anything new was learned for over 2000 years. In fact, it is only in the last decade or two that some of the factors that coordinate behavior in populous wasp colonies have come to light—and clearly there is a great deal still to be learned. Some of the more exciting recent work has been done on the Oriental hornet, and it remains to be seen to what extent the results of this research can be applied to other species. Spradbery has covered just about every question one might ask about vespine wasps, but one may be sure, from the pace of recent research, that in a few years there will be more and different answers as well as different questions to be asked.

Perhaps in their zeal to bring this book to press before it was out of date, the author and publisher have been careless about some details. It will be a shock to librarians to find a slightly different subtitle on the book from the one on the jacket; it is irritating to find William Morton Wheeler consistently referred to as William Mortimer Wheeler; and it is puzzling to come upon completely meaningless expressions such as "3-labial palpi" (what is meant is palpi with three terminal sensilla). But the reader should not be put off by these blemishes. This is a valuable addition to the literature of entomology and of animal sociality, even though less monumental than the title, dust jacket, and price might lead one to believe.

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Plants in Archeology

Palaeoethnobotany. The Prehistoric Food Plants of the Near East and Europe. JANE M. RENFREW. Figures drawn by Alan Eade. Columbia University Press, New York, 1973. xviii, 248 pp. + plates. $20.

Much of what we know about man's long association with plants is scattered and hidden in reports of research on a limited group of plants or people. Renfrew has assembled from the literature and her research a readable compendium of materials, methods, and ideas for the study of plants found in archeological sites of the Near East and Europe.

Introductory chapters survey the accidents which preserve some plant parts in sites, methods used to recover this material, and processes of interpretation. Flotation with water is recommended for extraction of small plant parts, and various techniques and problems are discussed. Examples are given of changes in plants from the time of their earliest known use to recent periods of intensive agriculture. Some of the changes in the plants are shown to be associated with man's activities.

Of 21 short chapters, 15 cover the identification, origin, and development of the major cultivated plants of the Near East and Europe. Another chapter covers 51 edible wild plant seeds that have been found in archeological sites in the same region. Clear explanations, line drawings, and photographs make this a good identification manual, simple enough that anyone can use it with little practice. Correct identification and the ability to recognize and compare significant variations within the species are essential before useful comparisons of collections can be made.

Summaries of genetic and archeological evidence for the origins and dispersal of the cultivated plants cite the important literature. Short sections on conditions required for the cultivation and on the uses of the plants will encourage speculation on the role of plants in various cultures.

Renfrew concludes that agriculture may have arisen independently at a number of places in the Near East and was well established before 6000 B.C. The number of cultivated plants increased as agriculture developed and spread. Agriculture reached the North Sea before 4000 B.C. and Great Britain before 3500 B.C. Plants found in archeological sites are evidence of the environment and activities of the people who lived there. Patterns of relationships of man and his plants are persistent. The varying patterns found in the Near East and Europe today are the result of the more than 8000 years of development which Renfrew outlines.

There has long been a need for a text like this which provides basic materials for someone who knows little about plants and at the same time suggests approaches and ideas which experienced archeologists and botanists can use.

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Hormone Research

Structure-Activity Relationships of Protein and Polypeptide Hormones. Proceedings of a symposium, Liège, Belgium, Sept. 1971. M. MARGOULIES and F. C. GREENWOOD, Eds. Excerpta Medica, Amsterdam, 1973 (U.S. distributor, Elsevier, New York). xvi, 566 pp., illus. $53.70. International Congress Series No. 241.

This work presents the output of the second in what we may hope will be a continuing series of symposia of refreshing design (the first in the series being the Liège meeting of 1968). In this design the actual meetings are devoted to discussions based on invited reports which have been transmitted to the participants prior to their confabulation. The organizers have wisely chosen to focus this current effort even more tightly on the overall problem of hormone research by limiting the discus-