novel idea. It was expressed, for example, by Carl Gustav Jung in his Tavistock Lectures, delivered in 1935: "The so-called unity of consciousness is an illusion. . . . We like to think that we are one but we are not." Hilgard traces the idea back to the earlier work of Pierre Janet, who sought to explain by it a variety of hysterical manifestations, including those that are artificially produced through hypnosis. Hilgard revives the approach under the label neodissociationism, which in essentials is the old doctrine in new analogic garb, with information-processing metaphors ("systems," "subsystems," "controls," "monitors") tending to supplant the older mentalist concepts ("complexes," "egos," "ideas").

Dissociation theory, new or old, is remarkably elastic, capable of explaining, or at least dealing with, a vast range of psychological phenomena. In some cases, for example multiple personality, the application is obvious. A particular subsystem of personality, or a set of subsystems, takes control over behavior and thought from other subsystems of personality. The dominant subsystem, as in the case of "Eve White" in the famous *Three Faces of Eve*, may not even be aware of the existence and past activities of other subsystems, such as "Eve Black." Amnesia and repression may also be articulated in dissociationistic terms: information available in the system as a whole may be inaccessible, for whatever reason, to a particular subsystem, consciousness.

Hilgard expends considerable effort in examining hypnosis from a dissociationistic perspective. Hypnosis is viewed in part as a "readiness to fractionate the central executive and monitoring system" (p. 227), resulting in an internal dissociation from normal planning and reality-testing routines. "The modification of controls can be described as dissociative if the usual controls are inoperative" (p. 228). Some of the more dramatic hypnotic phenomena—hypnotic analgesia, deafness, amnesia, and so on—may be conceptualized as and even directly demonstrated to be (though how convincingly remains an open question) dissociative phenomena. Thus, the subject may verbally report no pain (or hearing, or memory) while at another level (for which Hilgard uses the metaphor "the hidden observer") the information may be shown, through such techniques as hypnotic interrogation or automatic writing, to have been registered and stored.

A bold synthesizing effort such as the present one, attempting, as it ultimately does, to repair the dissociation between the clinic and the laboratory, inevitably inspires doubts and objections.

From the clinical side, it may be asked whether the phenomena have been any better elucidated than before. The work of Jung, perhaps the greatest dissociationistic theorist of the century, is unaccountably ignored despite his rich theoretical analyses—and laboratory investigations—of the phenomena of interest. The treatment of psychoanalysis is not always adequate, and its dissociationistic underpinnings are not fully appreciated. The frequent suggestion that the unconscious in psychoanalytic theory necessarily implies a more primitive mode of cognition is based on a confusion of Freud's "dynamic unconscious" with his "systemic unconscious" (which he renamed the "id" in 1923).

From the vantage point of experimental psychology, the question may well be raised whether Hilgard has managed to domesticate the subject matter he undertook to explore experimentally. His methods and analyses are, as a rule, presented in a highly impressionistic fashion that makes them difficult to evaluate. Some problems, however, are clearly evident. Despite "the centrality of the hypnotically based data" (p. 155) it is not demonstrated experimentally that hypnosis is essential for the production of the effects. This is a particularly serious deficiency, for T. X. Barber and his group have been demonstrating experimentally that the whole gamut of hypnotic phenomena may be produced without hypnosis. Those well acquainted with the literature will be able to pick up a number of hints in the book about Hilgard's position on this matter, but it is not made explicit enough for the uninitiated. Questions can also be raised about the viability of the concept of hypnosis as a special state, which Barber has challenged. This is not to suggest that Barber's position is unassailable, but his work demands that the issues be confronted.

The central experimental weakness of the studies reported on in this book is their direct reliance on verbal reports about the presence or absence of awareness, whether of pain, hearing, or memory, which raises questions about whether one is dealing with cognitive or reporting effects. It is a pity that signal-detection techniques, which were designed precisely for the purpose of dealing with such questions, have not been employed.

Also, it is to be regretted that Hilgard did not choose to discuss, beyond some passing references, the research on split brains, which provides a physiological standard against which to compare the psychological data.

Despite these various objections Hilgard's book stands out as unique in contemporary experimental psychology. Any experimentalist wishing to explore the issues it deals with will want to start—but not stop—with this important work.

MATTHEW HUGH ERDELYI
Department of Psychology, Brooklyn College, City University of New York, Brooklyn, New York 11210

A Synthesis in Primatology

Living New World Monkeys (Platyrrhini). With an Introduction to Primates. Vol. 1. PHILIP HERSHKOVITZ. University of Chicago Press, Chicago, 1977. xiv, 1118 pp., illus. + plates. $80.

Like many branches of organismic biology, the study of living mammals has over the past 30 years become too sharply divided between those who specialize in systematics and those who deal with anatomy, physiology, behavior, or ecology. Individuals with either the versatility or the desire to treat all aspects of the biology of a group of mammals are rare. Philip Hershkovitz, however, is such an individual. Thus, a volume that was begun 12 years ago "with the stated objective of providing taxonomists and others with a means for making unequivocal identification of all known living callitrichids and callimiconids" has emerged as a lavishly illustrated opus of more than 1100 pages that provides not only an exhaustive synthesis of information on the biology of the clawed New World monkeys but also a provocative and insightful review of many other aspects of primate evolutionary biology.

This first volume consists of three sec-

tions of successively increasing length, detail, and taxonomic restriction. In the initial part, the author critically reviews the numerous morphological and behavioral features that have been used to characterize the order Primates and its major subdivisions, provides a classification of the order to generic level, and offers a selective critique of the literature on primate locomotion.

The second part, entitled Evolution and Comparative Morphology of New World Monkeys, is undoubtedly the section that will interest the most readers. As a comparative base Hershkovitz provides a wealth of morphological data on all primates and a variety of other mammals. The numerous illustrations and photographs in this section, including an atlas of primate skulls and dentitions, are alone well worth the price of the book. It is also in this section that Hershkovitz outlines his view of the major patterns of New World monkey evolution as well as the more general rules of mammalian evolution that he believes his studies illustrate.

New World monkeys range in size from the rat-sized pygmy marmoset to large cebids the "size of a setter." Most of the diversity in "diet, locomotor system and to a lesser degree other aspects of primate economy and organization" exhibited by this group can, in Hershkovitz's opinion, be related directly to differences in body size. In partial support of this argument he provides an impressive comparison of parallel dental adaptation in New World monkeys and unrelated primate genera of similar size. In addition, he feels that in almost all instances size evolution among platyrrhines has been from small to large. Thus he argues that among closely related genera, or for New World monkeys as a group, the smaller forms retain the most primitive morphology and the largest are the most specialized. The evidence for this pattern lies in the (size-related?) characteristics that the smallest New World monkeys share with living insectivores and prosimians. At the subspecific level, the differences between taxa, mostly in pelage patterns, are described, if not explained, by the author's principle of metachromism, which he has discussed and defended in earlier publications.

The final, longest section, dealing with the systematics, evolution, and biology of the callitrichids and callimiconids, provided the raison d'être for the volume and is unrivaled as a descriptive treatment of a group of extant mammals. The synoptic histories of each taxon are extraordinarily complete and the distribution maps are unquestionably the most accurate ever produced, being drawn around the plotted locality records from the more than 3100 museum specimens of callitrichids the author examined in preparing the book. Drawings and photographs are provided of each subspecies, and there are more extensive illustrations of skeletal, cranial, and reproductive anatomy for species and genera. The systematic section for each species group is followed by a summary of information on the physiology, behavior, and ecology of that group in the form of excerpts from the literature and notes from the author's own observations. As in previous sections, well-labeled illustrations and tables of raw data abound.

Hershkovitz rejects the opinion of most previous researchers that marmosets and tamarins are derived from cebid-like ancestors and that the primitive-looking features of callitrichids, such as twin births, digital claws, a nonopposable pollex, tritubercular molars, and semiprocumbent incisors, are due to secondary regression. Rather, he thinks that only in their lack of third molars and in certain cranial features do callitrichids appear specialized; otherwise they are the most primitive of all higher primates.

In this volume Hershkovitz has avoided many of the difficulties found in the only comparable book on callitrichids, volume 3 of *Primates* by the late W. C. O. Hill. The illustrations are clear and well labeled. The systematic and distributional information is largely original, internally consistent, and supplemented by an extensive gazetteer. The use of the literature is largely through direct quotation, and includes references from as late as 1975 and 1976. In its mechanics the book is a masterpiece. The corrigenda that were required are mostly late taxonomic revisions. The quality of photographs is high and the large format permits many comparative illustrations. Complete references, including authors' first names, are given in the bibliography, and the volume includes author, systematic, and subject indexes as well as several appendixes of morphological data.

There are, however, aspects of the book that are disappointing. Although the book deals largely with systematics, there is little or no discussion of the philosophy or methods used in determining the relationships of the taxa involved. Even on such critical issues as the identification of primitive and derived morphological features the reader must try to reconstruct Hershkovitz's reasoning from his conclusions. The same problem arises with many statements of fact. For example, Hershkovitz asserts, with no discussion or mention of the numerous authors who state the reverse, that *Plesiadapis* lacked a petrosal bulla. Likewise, a full page of quotations describing the importance of sap in the diet of pygmy marmosets is followed by a statement that the animal "can very likely live and reproduce year round without eating sap." Although many of the author's critical comments are valuable and insightful, the many others that are unsubstantiated, petty, or unnecessarily aggressive detract from the more positive contributions of the volume.

Although the synthesis Hershkovitz presents is a personal view throughout rather than one representative of current opinion, his monograph, appearing amid an endless flood of many-authored volumes and summaries of primate behavior and evolution based on secondary or even tertiary sources, is both a refreshing change and a reminder of how narrow most considerations of mammalian biology really are. As the definitive treatment on the systematics of clawed New World monkeys and an invaluable reference work for comparative anatomists, the book is indispensable for biological libraries and anyone interested in the biology of living mammals. Page for page, the book is a bargain despite the hefty price, and I, for one, am eagerly looking forward to volume 2.

JOHN G. FLEAGLE
Department of Anatomical Sciences, State University of New York, Stony Brook 11794

Asiatic Mammals

Mountain Monarchs. Wild Sheep and Goats of the Himalaya. GEORGE B. SCHALLER. University of Chicago Press, Chicago, 1977. xviii, 426 pp., illus., + plates. $25. Wildlife Behavior and Ecology.

How many readers of *Science*, I wonder, can conjure a mental image of a bharal, or a goral, or a serow? Or, for that matter a takin, a tahr, or a tur? All are large mammals of Asia that deserve to be as well known as their popular counterparts in Africa, but knowledge of their distribution and habits, particularly in the Himalaya, has been limited mainly to that collected by hunters. George Schaller has now remedied this deficit by giving us an account of his observations made during arduous expeditions from