

conclusions of Professor W. H. Pickering, and others, regarding a slight atmosphere and various changes of the lunar surface. The author evidently has little confidence in these observations, since they, if trustworthy, would be of exceptional interest to the "ordinary reader." The different members of the solar system are taken up in order and briefly but clearly described. Probably no other astronomical subject is of such popular interest as the question of the presence of intelligent life on Mars. The author states: "We conclude that neither by visual nor by photographic evidence has the existence of an artificial network of markings been proven, or even rendered highly probable. Therefore the time has not yet come when we shall have to inquire whether geometric lines indicate the presence of intelligent inhabitants; that time will arrive if the lines themselves are ever shown to possess a real or even a highly probable existence." This view is doubtless shared by the great majority of astronomers at the present time.

Throughout the book Professor Jacoby calls attention to the familiar celestial phenomena of life, such as the rising of the sun and moon and their summer and winter paths. In calling attention to such facts and explaining them in a popular manner he has done a real service to the readers of his book. Even among educated people few can answer promptly the question, "Where does the moon rise?", and its changing path during the month and year is either not noticed or regarded as a mystery.

The volume is attractive in form, appears to be free from errors, and is admirably, if not profusely, illustrated. Many lines of recent astronomical advance have been lightly referred to, if at all, but this is inevitable in a popular treatise of such wide scope. The paramount importance of photography in research at the present time might well have been emphasized somewhat more strongly. On the whole, the book is exceptionally well written, and as a popular exposition of the whole field of astronomy is unexcelled.

S. I. BAILEY

ELLIOT'S REVIEW OF THE PRIMATES

FOR many years the Primates have been in need of systematic revision. The last general work on the order, Forbes's "Handbook," was published in 1894. Study of the group since then, particularly in Berlin, London and Washington, has resulted in a great increase in the number of recognized forms and in the modification of previously accepted views regarding many of those earlier known. In no one of the chief centers of activity is the material extensive enough to form the basis of a general review of the order, and in no two has a common standard of work existed. The resulting confusion was such that the understanding of relationships and the identifying of specimens had become in the larger genera impossible. To remedy these conditions and to establish a foundation for new work are the main objects of Dr. D. G. Elliot's "Review of the Primates."¹ This book is one of the most elaborate monographs ever devoted to a single order of mammals. By its publishing the outlook on the primates has been altered in a way that can be appreciated by those only who have for some time been actively occupied in the study of monkeys. In its 1,351 quarto pages may be found a complete review of the work done in the past by the author himself, his contemporaries and predecessors. It contains descriptions of all the known species drawn up by one person from direct examination of the specimens in all the principal museums of the world. Finally the series of photographs reproduced in 111 of the plates is so well selected and so fine in quality that it might be said almost to exceed in general usefulness the specimens hitherto existing in any one museum.

The inception and plan of the work are thus described by the author (Preface, pp. iii-ix):

1 "A Review of the Primates," by Daniel Giraud Elliot, D.Sc., F.R.S.E., etc. Monographs of the American Museum of Natural History, Vols. 1-3. Three volumes, quarto, with 169 plates (28 colored). New York, published by the American Museum of Natural History (1912), June, 1913. Price, \$30.

"This Review of the Primates is the result of a casual suggestion of my friend Frank M. Chapman, Esq., that I should 'write a book on monkeys.' The magnitude of the task—to compel all the described forms of the Primates to present themselves in their representatives for critical examination and comparison—was thoroughly appreciated, and also it was equally well understood that no institution in the world contained a collection of these animals sufficiently large to permit a work like the present to be completed by its aid alone. . . . Twice were the museums of England and the Continent visited, . . . and during a journey around the world, the museums and gardens of the Far East were also visited and their collections carefully studied. The author has seen and taken a description of nearly all the types of the primates extant in the world today, and there is not a collection of these animals of any importance existing at the present time with which he is not familiar. The results of five years' continuous study are therefore embodied in this work. . . . In the recognition of apparently distinct forms, subspecies in only comparatively few cases have been accepted, because intermediates between what are recorded as species have rarely been found in this order, and neither of two forms, no matter how closely they are evidently related can properly be deemed a subspecies, no intermediates having been observed. Also the author has not seen his way to establish a subspecies between the dweller of an island and one of the mainland, because, no communication being possible, the appearance of intermediates would seem most improbable. . . . In the present work there are altogether fifty-five complete monographs. . . . Each member of the order has been treated after the following method. First a general review is held of the genus accepted, the type fixed and description given; then remarks are made on the appearance and general habits of the species the genus contains, followed by a review of the literature and the geographical distribution, and a key by means of which it is possible that all the species of that particular genus may be recognized. Then each species is taken up in regu-

lar sequence, its synonymy given and the type locality and geographical distribution recorded; the present location of the type, if existing, is then told, after which the peculiar characters of the species, if it possesses any, are given, followed by such remarks as may be necessary upon the relationship the species under review may have with some other in the genus; then a full description and measurements of the type if possible, concluding with an account of the habits so far as they may be unquestionably known. . . . The author can not refrain from calling attention to the illustrations produced by the methods and greatly improved instruments invented by the special photographer of the American Museum, Mr. Abram E. Anderson, which for clearness and perfection of detail, have possibly not been heretofore equalled. Mr. Anderson was sent to London expressly to photograph the crania in the British Museum. . . . The colored illustrations have been selected from those published in the *Proceedings* of the Zoological Society of London. . . . Those of the different species from life were taken by Mr. Lewis Medland, F.Z.S., of London, and certain excellent figures taken by Mr. E. L. Sanborn from animals living in the menagerie of the New York Zoological Society. . . . All the species and races known to the author that have been described prior to June 1, 1912, are included in the three volumes. After the date mentioned, the advanced state of the press work did not permit of any additions, except in an appendix to the third volume."

Following the preface is an introduction of 94 pages, a bibliography of 6 pages, a table of contents, lists of illustrations, list of genera and species in volume 1, and an "errata" calling attention to the single mistake which the author thought necessary to correct. The introduction deals with the general subjects of classification, variation and geographic distribution. There is also a list of the generic names that have been proposed for members of the order, and a complete synopsis of the arrangement adopted: 2 suborders, 8 families,²

² Although the family *Hylobatidae* is very properly used to distinguish the gibbons from the true

55 genera,³ and 588 species and subspecies. Except for the general accounts in the introduction there are no definitions of families and higher groups. There are no keys to the genera, while those provided for the species are not dichotomous.⁴ The account of each species is arranged under the following heads: synonymy, type locality, geographic distribution, general characters, color, and measurements, to which is usually added a discussion of characters and some account of habits. Cranial and dental peculiarities are either ignored or superficially treated; a lack which is partly compensated for by the abundance and excellence of the illustrations.

The nomenclature of the Review is uncompromisingly founded on the law of priority.⁵ The author's cheerful acceptance of the results, anthropoids, the number of such groups recognized is still too small. This is particularly true of the American monkeys, all of which, in spite of their great diversity of structure, are, as usual, crowded into two families.

³ The following generic and subgeneric names are here published for the first time: *Rhinostigma* (I., xl.), type *Cercopithecus hamlyni* Pocock; *Allochrocebus* (I., xl.) type *Cercopithecus l'hoesti* Selater; *Neocebus* (I., xl.), type *Simia cephus* Linnaeus; *Insignicebus* (I., xl.), type *Cercopithecus albicularis* Sykes; *Neopithecus* (I., lx.), accidental renaming of *Neocebus*; *Altilemur* (I., 111), type *Cheirogaleus medius* Geoffroy; *Brachyteles* (II., 49), substitute for *Brachyteles* Spix; *Neocebus* (II., 224), included species: *Pithecus resimus*, *P. validus*, *P. alacer*, *P. karimoni* and *P. fuscus* (not *Neocebus* Elliot, I., xl.); *Melanocebus* (II., 296), included species: *Lasiohyga leucampyx*, *L. pluto*, *L. nigrigenis*, *L. bou-tourlini*, *L. opisthosticta*, *L. aurora*, *L. stuhlmanni*, *L. neumanni*, *L. doggetti*, *L. princeps*, *L. car-ruthersi*, *L. nictitans*, *L. n. laglaizi*, *L. sticticeps* and *L. martini*; *Pseudogorilla* (III., 224), type a young male *Gorilla gorilla* supposed to represent the *G. mayema* of Alix and Bouvier.

⁴ There are 17 alternatives beginning with the words "General color" in the key to the species of *Pygathrix* (III., 30-32) and 24 beginning with the word "Hands" in that to the species of *Pithecus* (II., 189-190). Such tabulations of characters can not strictly be regarded as keys.

⁵ Except as regards the formation of names. Here the International code is abandoned and per-

however inconvenient they may temporarily appear, should do much to counteract the present tendency to seek relief in exceptions to the uniform application of this rule. Discussing the name *Simia*, recently shown to apply to the Barbary ape instead of to the orang or chimpanzee, Doctor Elliot says:

"This procedure may be regretted by mammalogists generally, for *Simia* has always been connected with some group of the great apes, but the reasons advanced for doing this were faulty, and an error was committed, and no matter how familiar this act may have become to authors and others generally, yet it was still an error, and therefore something necessary to change and correct. No error can ever become truth simply by toleration and should never be continued when discovered for any reason, and particularly not for the totally insufficient one that the change would inconvenience the memories of certain writers."

The same uncompromising attitude is assumed with regard to every question discussed in the Review: "The conclusions given, no matter how they may disagree at times with the opinions expressed by other laborers in the same field, have in every case been reached only after careful and patient investigation." This strongly personal character of the work is manifest on every page. While it gives the text its chief value it, in connection with the peculiar circumstances under which the manuscript was prepared, accounts also for the main defects. These are the lack of proper correlation between notes made at widely different times and places,⁶ and the generally sonal taste is freely indulged, not always with happy results from the point of view of the purist. For instance, the generic name *Ateles*, evidently intended by Geoffroy as a transliteration of the Greek adjective ἀτέλης, is changed to *Ateleus* (II., 21) with the following comment: "Ἀτέλης (sic α priv. and τέλος (sic), εος (sic) a neuter noun, which with the α priv. would be, when Latinized, *Ateleus*."

⁶ At least it is difficult otherwise to explain the frequently-recurring discrepancies such as: the statement on one page that an animal is clove brown and on the next that it is jet black (III., 109, 110); "upperparts bistre" and "upperparts

superficial quality of the descriptions and technical discussions. Nowhere does the author give evidence of felicity in the treatment of those characters of fundamental importance derived from skulls and teeth.⁷ The vital part of a monograph of the order therefore remains unwritten. To an experienced systematist the results of such tendencies can not fail to bring annoyance and disappointment, while to a beginner, or to a person who has no access to large collections of primates, they must render the book often confusing and misleading. The frequent inaccuracy of statement by which the text is marred⁸ will be a further source of black or nearly so" in two paragraphs of a description based on a single specimen (II., 200); "no skull" as part of a color description (III., 70); the application of the same new subgeneric name to two different groups (II., 224, 319); the application of two new names to one group (I., xl., lx., and II., 319); the listing of the name *Pavianus* under Lemuroidea (I., xxviii.), and again under *Anthropoidea* (I., xxxii.).

⁷ The striking peculiarities of the skulls and tooth cusps in the lemurs are barely mentioned; the equally interesting molars of the American monkeys receive no more attention (the remarkably primitive structure shown by those of *Alouatta* is not even alluded to); the molars of the three genera, *Pongo*, *Gorilla* and *Pan*, the cusps of which furnish unmistakable generic characters, are described in practically identical terms; the skull of an ordinary immature male gorilla (the age clearly indicated by the open sutures shown in the photographs) is made the type of a new genus "*Pseudogorilla*" (III., 224), supposed to be intermediate between *Gorilla* and *Pan*. Cranial characters are described for none of the 8 subgenera and for only 3 of the 84 species and subspecies of the genus *Lasiopyga*, though in the preliminary discussion of the monkeys of this group the remark is made that: "Cranial characters . . . are of supreme importance in the discrimination of species . . ." and also that they furnish "one of the most important methods of determining species" (II., 290).

⁸ The following examples have been found during actual use of the book, and without search for errors as such: *Tarsius philippinensis* for *T. philippensis* (I., 9, 10, 12, 13); *Nycticebus menagensis* Lydekker, *Zool. Rec.*, etc., for *Lemur menagensis* Lydekker, etc. (I., 32); I. Geoffroy, Cat.

difficulty to every one who attempts to use the Review in any serious work.

In these initial numbers of its series of "Monographs" the American Museum of Natural History has established a high standard of excellence in book-making. Good paper, clear type and unsurpassed half-tone plates are its main characteristics. Consistent italicization of generic and specific names would have made the text more easy to use, one series of numbers instead of four would have made the plates less perplexing to cite, while "editing" might have been expected to eliminate an allusion to the opossum as a member of the order Carnivora (I., xxi.), together with such solecisms as "cratarrhine and platarrhine" (I., xxi.), and the almost uniform incorrectness in the printing of Greek.

GERRIT S. MILLER

NOTES ON METEOROLOGY AND CLIMATOLOGY

DYNAMIC PRESSURE UNITS

BEGINNING January 1, 1914, the Blue Hill Meteorological Observatory will use dynamic units of pressure instead of millimeters of Primates, p. 51," cited as authority for alteration of *Brachyteles* to *Brachyteles* (II., 49) though the change is not mentioned by Geoffroy. (It is apparently published for the first time by Elliot); *Cynocephalus niger* Desm., Mamm., etc., for *Cynocephalus niger* Desm., Mamm., etc., (II., 162); *Cercopithecus mona* Hollister for *Lasiopyga mona* Hollister (II., 350); description of color of *Pygathrix melanolopha* beginning: "Long black hairs along the forehead, golden cream yellow" (III., 33); original reference to the name *Presbytes batuanus* given as "*Presbytis batuanus* (!) . . . p. 470" (III., 44) when it was actually published on p. 65 and with the masculine form of the generic name; *Pygathrix femoralis* (III., 45), Horsfield cited as authority, though first description was published by Martin, type locality said to be "Tenasserim, Bankasun, (Thomas)" though Thomas merely recorded a specimen from Bankasun as "precisely similar" to the type; *Pygathrix obscura* (III., 52), Reid cited as authority though he is said to have published no description; *Callithrix goeldi* Thomas . . . p. 100 for *Midas goeldii* . . . p. 189 (III., 261 and I., 224, not 324 as cited on III., 261).