variable stars, stars with peculiar spectra and cosmogony. The chapters on the sun and stellar classification are more extensive and more nearly complete than the others, and properly so, and they are essential to the interpretation of the physical characteristics in the stars. These interpretations are based largely upon the Bohr theory of the construction of the atom, with its application to the study of thermal ionization by Saha, and the latest researches of Jeans and Eddington on stellar evolution. The author is to be commended for the manner in which only the essential facts and the more generally accepted theories are presented and for his discrimination in the presentation of points under controversy. In fact, one could wish that the author's own comments upon some of these subjects had been more extensive.

In eight appendices the author has collected a considerable amount of data, most of it relating to wave-lengths, in a form and place for handy reference. It should be pointed out, however, that the international secondary and tertiary standard wave-lengths given in Appendicies IV and V have already been shown to be affected by appreciable systematic errors and have been largely superseded by new values. The corrections are small but of sufficient size to become important in refined investigations.

The illustrations have been selected with discrimination and are exceptionally well reproduced. They effectively enhance the value of the book. With its condensed form, its excellent outline and its copious system of references, "Astronomical Physics" is to be highly recommended to the student and teacher as a text-book and to the investigator as a handy and inspiring work of reference.

RALPH E. WILSON

DUDLEY OBSERVATORY,
ALBANY, N. Y.

Bats, Mosquitoes and Dollars. By CHARLES A. R. CAMPBELL. 1925. Boston, The Stratford Co. viii + 3 + 1 − 262 pp., numerous illustrations.

THIS book sets forth (pp. 36–175) the personal views of its author respecting the supposed service of bats in the control of malaria by feeding upon malarial mosquitoes. The remainder of the volume deals with dragon flies, bedbugs and smallpox, and the function of the spleen. For more than fifteen years Dr. Campbell has been interested in the construction of "bat roosts" designed to house colonial bats, particularly *Nyctinomus mexicanus*. Following the construction of a successful roost at Mitchell Lake near San Antonio, Texas, he has been instrumental in having other "roosts" erected near San Antonio, at Gulfport, Texas, at Tampa, Florida, and in Italy on the Pontian Marshes and in Terracina. The author has devoted much time to studying the habits of bats, in and about the limestone caves of Texas and at the bat roosts, and the book sets forth in considerable detail his experiences with bats and in the construction of the roosts. No details are given as to the manner of construction of the roosts, as these have been patented by the author. Among the suggestive items mentioned in the text are the following: That bats, upon arriving in the vicinity of their abode, seem to follow down the ammonia-laden currents of air arising from the roosts; that chemical changes in the guano masses of caves sometimes lead to spontaneous ignition of the accumulations in the larger caves; that bats have been captured by "chicken hawks," by sparrow hawks, and on one occasion a barn owl took to capturing bats at the Mitchell Lake roost; that individual bats, marked with chalk and released at a distance of twenty-eight to thirty miles from their home roost, returned "home" in as short a time as fifty-eight minutes.

Unfortunately, the subject-matter of the book can not be relied upon in many places. As the reviewer will shortly show elsewhere the fundamental premise, that bats feed upon mosquitoes, remains to be verified. No satisfactory evidence on this important subject is adduced in the volume under discussion. The book abounds in non-critical "depositions" and "testimonials" from many sources, ranging from illiterate Mexicans to various medical organizations. The nature of much of the contents may be indicated by one illustration—that of the gold pen with which the governor of Texas signed the bill protecting bats in that state.

The reviewer has no desire to criticize the book save in the interests of scientific accuracy. Would that the author were right in the supposed service of bats in suppression of mosquitoes! The entire world, scientific and lay, would welcome any additional agency in the suppression of mosquitoes or malaria.

Some computations on pages 249 to 251 relative to the amount of iron in guano and the consequent amount of human blood used as mosquito food would be alarming if true, but since they are founded on the supposed mosquito diet of bats they are of no significance. Furthermore, the blood and tissues of insects contain certain small amounts of ferric salts (as also phosphorus which figures prominently in the value of bat guano as fertilizer) and this is not allowed for sufficiently in the computations.

Naturalists are under considerable obligation to Dr. Campbell for his services in attempting to correct some of the popular misconceptions concerning bats, for his efforts in having bats protected by law in San Antonio and in Texas, and for his ingenuity

in developing a practical bat roost which can be colonized with bats and from which an annual "crop" of guano, of considerable monetary value, can be gathered. Our one important criticism would be that emphasis should be directed, not to the supposed service of bats in mosquito control, but to the fact that they feed upon night-flying insects, especially noctuid moths, many of which, in their larval stages, are important agricultural pests.

TRACY I. STORER

ZOOLOGICAL LABORATORY,
UNIVERSITY FARM,
DAVIS, CALIF.

SPECIAL ARTICLES

APPLICATION OF THE GENERIC NAME PHYLLOCOENIA MILNE EDWARDS AND HAIME AND THE INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE

IN my paper on the "Fossil Corals from Central America, Cuba and Porto Rico," I pointed out that the generic name *"Phyllocoenia"* of Milne Edwards and Haime must be placed in the synonymy of *Orbicella* Dana, because the type species of *Phyllocoenia, P. irradians* Milne Edwards and Haime, is referable to the genus *Orbicella* Dana, 1846, type species *Madrepora annularis* Ellis and Solander.[1] Professor J. Felix has just published the paper cited below,[2] in which he agrees with me that *Phyllocoenia irradians* belongs to *Orbicella,* but he retains the name *Phyllocoenia* for species of corals which are not congeneric with the type-species of the genus. This procedure is not permissible under the rules of the International Code of Zoological Nomenclature. The following are three quotations from the International Rules of Zoological Nomenclature adopted by the Ninth International Zoological Congress at Monaco in 1913:

> If a genus is divided into two or more restricted genera, its valid name must be retained for one of the restricted genera. If a type was originally established for said genus, the generic name is retained for the restricted genus containing said type.[3]
>
> When in the original publication of a genus, one of the species is definitely designated as type, this species shall be accepted as type, regardless of any other consideration.[4]
>
> If an author, in publishing a genus with more than one valid species, fails to designate (see *a*) or to indicate (see *b, d*) its type, any subsequent author may select the type, and such designation is not subject to change. (Type by subsequent designation.)[5]

Milne Edwards and Haime in 1848 at their original publication of *Phyllocoenia* cited *P. irradians* as an example of the genus, and in 1850 definitely designated *P. irradians* as the type-species.

No coral that does not agree generically with *Phyllocoenia irradians* may receive the generic designation *Phyllocoenia,* which by its type-species is a synonym of *Orbicella.*

Professor Felix in his paper cited makes an important contribution to the morphology of the hard parts of certain Triassic and Upper Cretaceous corals which *have been erroneously referred to Phyllocoenia.* These species must receive another generic designation, if they all belong to the same genus; or other generic designations, if they represent more than one genus.

One of the striking defects of the work of many paleontologists is that it does not conform to the rules of the International Code of Zoological Nomenclature. There are so many errors in many of the publications that I have occasion to read that I have wished to analyze the nomenclature in a number of papers to show why the names can not stand. Pressure of other work has rendered undertaking the task impracticable; but a few glaring failures to comply with the rules will be mentioned.

Munier-Chalmas in 1891 proposed the generic name *Orthophragmina* for certain foraminifera for which at least five previously published names were available, which is in conflict with Article 28 of the code:

> A genus formed by the union of two or more genera or subgenera takes the oldest valid generic or subgeneric name of its components. . . .[6]

H. Douvillé has proposed *Isolepidina* as a subgenus of *Lepidocyclina* and designated as the type-species of *Isolepidina* the type-species of *Lepidocyclina, L. mantelli* (Morton) Gümbel; and he has proposed *Orbitella* as a substitute for *Oribtoides* s.s. and included in it *Orbitoides media* (d'Archiac) d'Orbigny, which is the type-species of *Orbitoides.* The names *Isolepidina* and *Orbitella* must lapse. The first is in conflict with Article 9 of the Code:

> If a genus is divided into subgenera, the name of the typical subgenus must be the same as the name of the genus.[7]

The second name, *Orbitella,* conflicts with the rules quoted as notes 3 and 5 of this paper.

Many eminent paleontologists have committed and are committing errors of the kind indicated above. It is a great pity that any scientific work should

[1] Vaughan, T. W., U. S. Nat. Mus. Bull., 103, pp. 363, 394, 395, 1919.

[2] Felix, J., "Ueber die Gattung Phyllocoenia," *Centralbl. für Min.,* etc., Jahrg., 1925, pp. 363–368.

[3] IXe Cong. Internat. Zool., Art. 29, p. 902.

[4] *Op. cit.,* Art. 30, *a,* p. 29.

[5] *Op. cit.,* Art 30, *g,* p. 903.

[6] *Op. cit.,* pp. 901–2.

[7] *Op. cit.,* p. 897.