tative and experimental course developed for students in zoology, is written in two parts, one theoretical and the other experimental. Part 1 gives a summary of Andrewartha and Birch's theory of environment. Following an introductory chapter, the properties and measurements of both the density and the dispersal of populations are discussed. The idea that the environment of an animal can be divided into four major components—weather, other animals and pathogens, food, and a place in which to live—is developed, and then each component is discussed in some detail on the basis of experimental evidence. The final chapter of part 1 is devoted to an exposition of a theory that is summarized as "the density of natural populations may be explained in terms of: (i) a shortage of time, (ii) a relative shortage of some essential resource, (iii) an absolute shortage of some essential resource, or interactions between these three mechanisms." There is also a short, critical review of the concepts of density-dependent factors and competition. Part 2 is a manual of practical exercises that arise from and are related to the theory developed in part 1. Twenty experiments, which deal with methods for measuring the distribution, density, and dispersal rate of animals and with the effects of the components of the environment on the survival, development, and behavior of animals, are described and analyzed in some detail.

As a general introduction to ecology, this textbook has some limitations. Emphasis is placed on the laws governing the physiology and behavior of individuals in relation to their environments and on the laws governing the numbers of animals in relation to the areas they inhabit; communities are discussed very briefly. The text is devoted to the development of a theory of population ecology which most workers in this field have not yet accepted. The quantitative aspects of the book require a very good grasp of statistical methods, such as analysis of variance and probit analysis. In table 3.07 the Poisson series appears to have been omitted. On the other hand, this well-written text, in addition to developing a concept, provides a wealth of experimental evidence and thus gives a good indication of current research in animal populations.

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Stimuli and Response

Bestiaire d'Amour. Jean Rostand. Translated by Cornelia Schaeffer. Doubleday, New York, 1961. Illus. $5.95.

Animals as Social Beings. Adolph Portmann. Translated by Oliver Coburn. Viking Press, New York, 1961. 249 pp. Illus. $6.

If you have a friend who annoys you with the old saw that science is ruining life by eliminating sweet mysteries, just give him a copy of Rostand's little book. It may not be, strictly speaking, science, but it has plenty of romance. The text is a capsule survey—15 minutes' reading time—of "amorous evolution." The style is in the best tradition of the yellow-jacketed French novel. Consider—

". . . they press themselves against each other mouth to mouth" (in referring to the paramecia).

". . . the fiancees chastely holding each other by the claw" (the scorpion).

". . . and when she is seduced, the couple drops down on the grass" (the meadow brown butterfly).

". . . her slim little belly seems to have a life of its own, endowed with some exquisite sensitivity" (the dragonfly).

Still there is little danger of overstimulation, for the climax of the book is the chilling statement, printed in bold, black capitals, "In the secret coming together of two human bodies, all society is the third presence." The book also has a message: artificial insemination would ruin the whole thing.

But this is quite unfair, because the book should be judged on the basis of its major contents, the illustrations by Pierre-Yvyes Tremois. His work is first-rate, flawlessly executed, part bold and free, part beautifully detailed. There is one drawing of two elephants, for example, which can only be described as awe inspiring.

Judging from the two books reviewed here, and from other recent works as well, there must be a strong interest among general readers in the social doings of animals. Some publishers have responded with new works like Rostand's; others have seen fit to reprint or to publish translations of books which are really somewhat out-of-date. For example, Portman's book was originally printed in German in 1953 and just now appears in English. But the prospective purchaser must take a vigilant look at the back of the title page to determine that this is not recent, up-to-date work. This is unfortunate, because the field is a swiftly moving one, and Portman took great care to have the book up to the minute at the time of original publication.

Portman skillfully presents many examples of social interaction in diverse animals species, in a spirit which is perhaps more admiring than analytical. The first chapter, on dragonflies, is particularly nicely done. His interpretations are based on an awareness of the limitations of trying to interpret an animal's behavior solely in terms of the stimuli just received from the external world, and a strong mistrust for the argument that natural selection is sufficient for the evolution of social behavior.

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Opaque Surfaces

Ore Microscopy. E. N. Cameron. Wiley, New York, 1961. xii + 293 pp. Illus. $10.50.

Cameron's *Ore Microscopy* fills a need long felt by people engaged in the study of polished surfaces of opaque minerals. It is really a pioneering attempt to explain the difficult complexities of elliptically polarized light and to systematize the optics so that they may be used for determinative purposes. The book brings together many widely scattered, miscellaneous data, and it should stimulate the study of opaque surfaces. It also demonstrates that quick and easy optical methods of opaque mineral determinations are possible.

The text presupposes a thorough knowledge of optical mineralogy and is designed for advanced students. The material it contains is excellent, but in places the reader becomes lost in a maze of Greek letters and other symbols. A table defining these letters would be most useful.

For the sake of complete coverage, the work of A. M. Gaudin and others, on the identification of sulfide minerals by selective iridescent filming, should have been mentioned. A brief paragraph on the possibilities of infrared light would also be helpful, and the very excellent loose-leaf folder entitled "Card index of ore photomicro-

graphs," edited by A. Moucher and G. Rehwald (Umschau, Frankfurt am Main, Germany), should have been called to the attention of readers. The final chapter, "Application of ore microscopy," is primarily devoted to the application of ore microscopy to ore beneficiation. This discussion should be better balanced, possibly by added emphasis on the relationships between minerals as they affect ore genesis.

On page 96 the description concerning measurements of reflectivity cannot be followed in Fig. 5.3. I noted a few other minor editorial errors, but the book is almost free of this distraction.

Both Cameron and the publishers are to be congratulated on this excellent book.

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Sand, Rock, and Habitancy

Desert Wildlife. Edmund C. Jaeger. Stanford University Press, Stanford, Calif. (a revision of *Our Desert Neighbors*), 1961. x + 308 pp. Illus. $5.95.

This series of essays offers the general reader a wonderful insight into the life and habits of several of the dwellers of the desert of the southwestern part of the United States and northwestern Mexico. Jaeger, who is known for his series of books concerning various aspects of the desert, has a wonderful ability to transform personal observations and experiences into extremely interesting reading. The book is illustrated by a series of excellent photographs and many interesting line drawings. It is unfortunate, however, that neither the author nor the editors bothered to check even the readily available standard references concerning the taxonomy and morphology of the animals discussed. It is doubly unfortunate that some of the worst offenses are handled as footnotes in a manner which suggests documentation of current thought concerning the taxonomy of the animal concerned.

Most mammalogists will disagree with concepts such as the following: that there are "two desert species of coyote" in southern California (page 19); that "the peccaries of the New World [are] representatives of the Old World pigs" (page 42); that the currently recognized generic name of the peccaries is *Dicotyles* (page 143)—to mention a few. The essay on bats (pages 124 to 129) has several bits of misinformation—not all flying foxes are large; not all long-nosed bats are Old World fruit bats; there are two species of long-nosed bats, occurring in the deserts of the southwestern United States, which feed on the nectar and pollen of desert agaves and saguaros.

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German Zoological Society

Fortschritte der Zoologie. vol. 13. Hans Bauer, Ed. Fischer, Stuttgart, Germany, 1961. xii + 397 pp. Illus. DM. 78.

This "progress report," sponsored by the German Zoological Society, deals with selected fields in zoology, the latter used in its broadest definition. Since one volume is published each year, coverage of the whole of zoology can occur only over many years. Consequently, the individual articles report progress made during a variable number of years, as evidenced by the bibliographies. However, as a rule the more important papers of the world literature during the last 5 years have been utilized.

Like any book written by a number of contributors, not all chapters are equally readable. But all the compilations are well done, and one has the impression that the really relevant material has been included. All the contributors avoided the common pitfall of such review-reports, that of abstracting a lot of recent literature and then of enumerating in a boring, unimaginative fashion, good only as a source of references. In all chapters, the material is fused into interesting, concise, and comprehensive representations. Since space does not permit detailed evaluation of each chapter, it should be pointed out that this book deserves the attention of, and indeed should be available to, any teacher of advanced zoology or of comparative physiology.

The contributors and the fields covered are: E. Reisinger (Graz), morphology of coelenterates, and acoelomatic and pseudo-coelomatic worms; H. Adam (Vienna), microscopical anatomy of the nervous system of vertebrates; L. Wiese (Tübingen), the biochemical basis of fertilization (the so-called gamons); D. Burkhard (Munich), general physiology of sensation and electrophysiology of receptors; C. Hoffmann (Munich), comparative physiology of temperature sensation and of chemical sensation; E. Autrum (Munich), physiology of vision; W. Wickler (Seewiesen), ecology and ontogeny of behavior, and F. Mainx (Vienna), population genetics.

Unfortunately, the book contains neither an alphabetical index of authors nor a subject index.

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Sound, Factual Treatment

Electronics in Everyday Things. William C. Vergara. Harper, New York, 1961. 235 pp. Illus. $3.95.

This is a sound, educational book for a young man with a real interest in electricity. It has sections on the elementary theory of electricity and on the applications implied by the title. It is simple and straightforward; it is correct in its statements.

The book seems to be more suitable for the student with a real interest in electricity than for one who is looking for entertaining reading. There is something reminiscent of a good textbook, and of course a serious-minded student of high school age reads a well-written textbook with genuine interest, an interest that is more rare in later years. This is the kind of reader for whom the book is recommended.

Perhaps the reader will not be troubled by the absence of chapters, with the customary chapter headings, and a table of contents, as I was; but it seems to me that the organization of a book can be indicated by a table of contents, a need that this book's good index does not serve.

I lent the book to a high school senior with a particular interest in electronics. Since then I have heard nothing of either boy or book. Perhaps he was less serious-minded than I thought, or perhaps he also found the book more instructive than entertaining.

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