Several annoying errors in chemical history could easily have been avoided. Basilius Valentinus is treated as a real person, although, even in this book, mystery surrounds him; he is supposed to have preceded Paracelsus by about a century (page 291) and yet to have survived to publish work in 1650 (page 482). The phlogiston theory is described as having been "exploded by Lavoisier and his English contemporaries" (page 294), of whom Priestley and Cavendish, those stout phlogistonians, are specifically named (page 476). It is not true that "during the first half of the eighteenth century, the halogen elements were discovered, as were also boric and phosphoric acids" (page 479).

There are a few more such minor blemishes, but instead of listing them here, the great value of this book should be emphasized. Its skillful and many-sided description of the history of metals is greatly enhanced by profuse illustration. This includes maps of the ancient world, clear outline drawings and pictures, 262 in all, placed right on, or very close to, the page on which their story is told. Some of them are dramatically confronted—for example, the iron-carbon equilibrium diagrams (Figs. 246 and 247); a sculpture by Rodin and the propeller for the liner R.M.S. Queen Elizabeth (Figs. 256 and 257).

In addition to references at the end of each of the 15 chapters, there are 6 pages listing "some sources." Studying all these references brings to mind Peter Guthrie Tait's remark in the introduction to his "Sketch of thermodynamics" (1877) about "the old absurd British contempt for all things foreign. . . ." Aitchison cites very few American books, only two German, and no French or other "foreign" publications. The old French works by Hassenfratz, the newer ones by Léon Guillet and Bertrand Gille, Sten Lindroth's Swedish book on Stora Kopparberg, and the many German ones—by Beck, Osann, Tammann, and others—do not appear in this bibliography. At least, John Webster's *Metallographia or an History of Mettals,* first published in London in 1661, should be listed in a second edition of Aitchison's work, and, in view of its great merit and beauty, a second edition should soon become necessary.

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Anthropological Papers. Numbers 57–62. Bulletin 173, Bureau of American Ethnology. Smithsonian Institution, Washington, D.C., 1960 (order from Supt. of Documents, GPO, Washington 25). iv + 498 pp. Illus. $3.25.

Bulletin 173 is a collection of six papers on specialized topics. Three papers (Nos. 57, 58, and 62) discuss restricted archeological manifestations in the United States. Paper 57, C. G. Holland's "Preceramic and ceramic cultural patterns in northwest Virginia," is an excellent example of the useful results obtained by pooling amateur and professional efforts: Holland, the amateur, contributed an intimate knowledge of the area and several years of careful collecting, and Clifford Evans and Betty Meggers of the Smithsonian Institution provided the systematic framework which makes the report a valuable first approximation of the cultural sequence in northwestern Virginia. Paper 58 is "An introduction to Plains Apache archeology—the Dismal River aspect," by James H. Gunnerson, who concludes that the group of sites, chiefly in western Nebraska, comprising the aspect represent the final phase (about A.D. 1700) of Apache domination of the High Plains. Gunnerson further suggests from archeological evidence that the southwestern Athabascans (Apache and Navaho) came to the southwest via the High Plains around A.D. 1525. The third archeological paper (No. 62) is "Stone tipi rings in north-central Montana and the adjacent portion of Alberta, Canada: their historical, ethnological, and archeological aspects," by Thomas F. Kehoe. Kehoe concludes that most of the circles of stones in the area (and probably elsewhere in the Plains) are in fact tipi cover weights, although this explanation will not serve for all types of configurations of stones. The remaining three papers are a miscellany including No. 59, "The use of the atlatl on Lake Patzcuaro, Michoacan," by M. W. Stirling; No. 60, "A Caroline Islands script," by Saul H. Riesenberg and Shigeru Kaneshiro; and No. 61, "Dakota winter counts as a source of Plains history," by James H. Howard. Stirling's paper describes one of the few survivals of the spear thrower, a device of Paleolithic antiquity. Howard describes nine hitherto unpublished "winter counts"—annual pictographic records of outstanding events drawn on hides or cloth—and comments on their consistency and chronological reliability. Riesenberg and Kaneshiro present an interesting study of cultural innovation—the development by stimulus diffusion of a syllabic system of writing derived from European writing through an American missionary and native intermediaries.

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The Physiology of Crustacea. vol. 1, *Metabolism and Growth*. Talbot H. Waterman, Ed. Academic Press, New York, 1960. xvii + 670 pp. Illus. $22.

This is a valuable book, comprising 17 reviews of aspects of crustacean physiology by a well-chosen group of authors and coauthors; the whole is well edited, unified, documented, and indexed. In its general level and approach it may be compared with *Insect Physiology*, edited by K. D. Roeder (Wiley, 1953), although the completed *Physiology of Crustacea* (two volumes are planned) is scheduled to have twice as many contributors as the earlier work.

Naturally, the treatment accorded the various topics in this first volume is as diverse as one might expect from its 18 contributors. The length of the chapters varies with the scope of the selected topics from as little as 12 pages in chapter 12 ("Ecology and metabolism," by Florkin) to 57 pages in chapter 2 ("Respiration," by Wolvekamp and Waterman), and the number of references per chapter also varies, from 56 to 257, averaging 109. Some idea of the extensiveness of the review coverage might be gained from the fact that the author and coauthor index includes 1208 names, many of which represent more than one paper. Since each chapter has its own bibliography (unlike the single bibliography of *Insect Physiology*), there is repetition of titles, and I did not attempt to determine the actual number of separate papers cited; as a guess, I would say over 1400.

One aspect of the excellent editing of this work is seen in the extensive indexes, which total 78 pages (about 12 percent of the book). There is an author index, indicating by page and superscript numerals each point at which an author is cited; in most instances authors are not cited by name in the text.

With the index, the curious researcher can easily check all citations of his own work without having to read the whole book. If, however, he does read the book, as he should, he will find the second or systematic index even more useful. The editor has followed the practice of referring to a given species by one specific name, that considered currently most valid (presumably by Chace), regardless of the names originally used by authors of cited works. Thus we note that *Homarus gammarus* is used without explanation throughout the text in referring to the European lobster, which has hitherto been generally called *H. vulgaris* in the published literature. In addition to giving synonyms in such instances, the index gives the family or higher group of all genera cited, as well as the older names *not* used in the text; all of this is most helpful to the reader, physiologist or other, who is not versed in crustacean systematics. There is a good subject index.

Among the chapters, each a self-contained review, which make up this volume, some are outstandingly good, others are valuable contributions, and one or two approach the pedestrian level or represent compilations of facts rather than fresh analyses of the topics. But all are competently and conscientiously done. Although a full review should discuss each chapter separately, space permits comments on only a few representative chapters.

Chapter 1 ("General crustacean biology," by Waterman and Chace) impresses me as being too general to be especially helpful. It includes an up-to-date outline of classification which, however, lacks characterizations of the intermediate groups and, hence, is of little use to the physiologist who might want to know what manner of beast a given taxon represents. Neither in text nor illustrations is it clear, for instance, why the much-discussed Cephalocarida rate the status of a subclass, nor is the selection of *Anaspides*, a form most physiologists have neither seen nor heard of, as a basic type likely to convey much information to the group that needs it most. Both authors understand crustacean systematics, and they talk *about* it intelligently; but most of their potential readers do not understand systematics, and probably never will unless given more illustrated basic material than this chapter provides.

In chapter 2, we find a good discussion of respiration. As the authors note (page 91), "The Crustacea do not seem to have any striking idiosyncrasies or innovations in their respiratory functions." Certainly this chapter analyzes the *general* aspects of respiration very well; it does, however, suffer from a lack of illustrations of the peculiarly *crustacean* respiratory organs, especially details of gills, the tracheal bodies of isopods, and other morphological features which would make this chapter more interesting and valuable to the physiologist seeking an introduction to crustaceans as physiological material. Certain other chapters are similarly lacking in illustrations. By contrast, chapter 5 ("Circulation and heart function," by Maynard) does provide helpful illustrations of the heart and circulatory arrangements in Crustacea, so that the stranger may feel better acquainted with the organization of these animals. In addition to his excellent organizational job, Maynard holds the record in the volume for number of references cited (257). Certain chapters deserve mention because they bring together material not previously presented in comprehensive and analyzed form. Chapter 13 ("Sex determination," by Charniaux-Cotton) is a well-illustrated section bringing together much information not hitherto treated in an English language publication. However, exception must be taken to this author's view that a "reversion toward unisexuality" has occurred in certain Cirripedia; the genera cited as examples include some that are probably primitive, and their unisexuality would seem to be primitive rather than derived from a hermaphroditic condition. Chapter 15 ("Molting and its control," by Passano) tends to over-compilation of facts in places, but salvages the situation with a good attempt at unification of arthropod molt-control mechanisms. Some other chapters are of equal quality, but do not happen to deal with material so much in need of review. The topic of parasitism is not specifically dealt with in any one chapter, except where secondary sources are cited.

The general level of editing is high; there are numerous cross references between chapters. Although there is diversity of opinion between authors, there is little superfluous overlapping of material, and there are few noticeable gaps in coverage. One discrepancy is in the use of the terms exo- and endocuticle in chapters 14 and 15; the index-reference, "Exocuticle, see under Cuticle, endocuticle," does not alleviate the situation. Also, I hope to learn by return mail from the authors the sources of the following undocumented statements concerning maxillary and antennal glands: (pages 5–6) "In mystacocarids, lophogastrid mysids and Nebaliacea both pairs of glands are present in adults," and (page 342) "Rarely, both pairs may be retained in the adult (Ostracoda and *Nebalia*)." However, such lapses are rare. There are very few typographical errors; I noted no more than half a dozen; the only one in which the meaning is altered is the use of "hyposmotic" for "hyperosmotic" in the last line of page 361.

At the time this volume appeared, the price of $22 seemed formidable; but it should be noted that there was a prepublication price of $19, and the professional discount provided a further reduction for some readers at least. Considering the general quality of the reviews included, the obvious care in editing, and the really large amount of information assembled and documented, I feel that this volume, and undoubtedly the one which is scheduled to follow it, will be indispensable to any biological library. No worker on the comparative physiology of invertebrates can afford to be without access to it.

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In the Company of Man. Twenty portraits by anthropologists. Joseph B. Casagrande, Ed. Harper, New York, 1960. xvi + 540 pp. Illus. $6.50.

If social anthropology differs from the other behavioral sciences, and if (despite its affiliation with the National Academy of Sciences and other scientific associations) it retains a strong humanistic flavor, surely one of the bases for these characteristics is its *informant* tradition. The ethnological informant is neither a psychological *subject* nor a sociological *respondent* (although he may, of course, be used in either or both of these capacities as well). The informant, *qua* informant, is a knowledgeable member of his society who serves the anthropologist as a primary source of information concerning its cultural traditions and social structure. He is the guide, the anthropologist is his follower; he the teacher, the anthropologist his student; he the superior, the anthropologist his inferior.