

Comparative Anatomy. William Montagna. Wiley, New York; Chapman and Hall, London, 1959. xii + 397 pp. Illus. \$6.

"This book is written for the college sophomore for a one-semester course" is the first sentence in this book's preface. After reading the book, I feel that the author has very successfully fulfilled his aims. This is not the first stimulating text on comparative anatomy to come out of Brown University, but it is very different from the previous one (by Walter). Walter's book, a series of lectures delivered by a very good lecturer, was used by many teachers, not as a textbook but as a source for preparing clever lectures while another, less lively text was used in class. Montagna's work is a textbook in every sense. Every word counts, and every sentence contributes to the development of the subject. One might refer to this book for facts, but not for material to adorn a lecture. The facts presented are well chosen, and they are within the limits of sophomores' abilities.

The first few pages are deceptively easy. The definitions are so simple that they seem almost trivial. On two occasions I have seen smart 14-year-old youngsters pick up the book, read it for half an hour, and then put it down because the difficulty of the material increases very rapidly, and soon demands very close study. By the time a student finishes the chapter on the endoskeleton, he will realize that he is no longer a freshman, and that he has tackled something of considerable depth and complexity. The treatment is clear throughout, but demands concentration. The easy start is a wise procedure.

There are a few points that I do not like. The first is the practice of applying men's names to structures rather than the descriptive terms of more recent anatomical practice. Since these names were applied first in human anatomy, their use in a book on comparative anatomy seems unwise. Because most texts on human anatomy now use the more modern nomenclature, this is an unnecessary duplication of terms which detracts from the comparative aspects of anatomy. There is too little paleontology and possibly too much embryology, but these are matters of individual taste. A very few statements of fact may need correction. These are minor points, and the text is so sound that the lecturer can take class time to elaborate on any

aspect of the subject which he considers inadequately treated.

Against these trivial detractors must be set the text's many excellent departures. The freedom from copying previous work is refreshing. This freedom shows in both the text and the illustrations. The introduction to the chapter on the muscular system is possibly the best in the book, or in any comparative anatomy text written for undergraduates. The book is well printed on good paper. It should stand up under hard use. It is not a reviewer's duty to discuss anything except the book under review, but since many of this review's readers may consider using the book as a text, I take the liberty of pointing out that a laboratory manual is available to accompany the text, and that the manual should be revised. Not only does it mix up terms such as "lateral and medial" and "dorsal and ventral," but the nomenclature differs from the nomenclature of the text. There are some conspicuous errors of fact, yet it is a good manual with a broad coverage, which omits only work on the skin and its appendages. With these reservations, I am convinced that a stimulating and informative course could be built on these two books.

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Grasslands. A symposium. Howard B. Sprague, Ed. Publ. No. 53. American Association for the Advancement of Science, Washington, D.C., 1959. xv + 406 pp. Illus. Prepaid to members, \$8; others, \$9.

The conservation movement, in any effective sense, is now a half century old. As launched by Roosevelt I, its most dramatic aspect was centered about our forests. It is a pleasure to record, on the basis of recent visits to the Northwest and others to the southern pine region, that American forestry is coming of age.

Unfortunately, while cowpokes may be more romantic than lumberjacks, the grasslands where they work seem to have less appeal than the woods. It was, I believe, during Theodore Roosevelt's reign that a scientist in the Department of Agriculture addressed a memorandum to the secretary, calling attention to the serious deterioration of the west-

ern range, due to overgrazing and general mismanagement. The document was returned, endorsed "Probably true, but best not to do anything about it now." Actually our grasslands have suffered fully as much damage as our forests. Fortunately their cycle of recuperation is somewhat briefer, unless erosion has been severe.

Students of the food pyramid estimate that a unit of animal produce requires seven to ten units of plant material, and a similar ratio holds between meat eaters and meat. To the extent that we depend upon animal proteins and fats, each pound of us, therefore, represents from 343 to 1000 pounds of grain or forage—the former from cultivated lands, the latter from grasslands proper.

The area of grasslands in this country is about one billion acres—roughly three times that in all harvested crops except hay and, of course, timber. Much of this grassland never was, and probably never will be, highly productive. It follows, then, that grasslands are pretty basic to our economy and that their condition is a matter of grave importance.

In publishing this volume, *Grasslands*, and in sponsoring the symposium on which it is based, the American Association for the Advancement of Science has performed a public service. And so has Howard B. Sprague, who has ridden herd on some 44 authors of 37 papers; he deserves praise for doing well the kind of an editing job that is difficult at best. Except for an occasional rather perfunctory paper, the amount and the quality of information is highly satisfactory. It is also well presented.

It is impossible to summarize so complex a discussion. In it a rich array of the sciences has been marshalled—biochemistry, genetics, entomology, engineering, climatology, soils, pathology, and, of course, ecology. There is a record of much work well done and a clear indication that much more is needed. The general import is one of a much higher potential than is now enjoyed.

Some 15 million acres in the Northeastern States and some 60 million acres in the Corn Belt are reckoned as grassland. Despite the rapid growth of the livestock industry in the South it is these two areas and the drier grasslands of the West that receive chief attention. Broadly speaking, the technology of the more humid regions is one of intensive,

largely artificial operations. In the sub-humid and semiarid grasslands, management is more largely a matter of understanding and taking advantage of ecological factors—seeing that nature gets a chance to do the work. While it is true that each landscape is in some respects unique, we already have, thanks to Weaver and his industrious associates, a lot of information on the western grasslands that we should be using. Meanwhile eastern workers, both state and federal, have done much to improve our knowledge of intensive management under humid conditions.

Our present food surpluses should not blind us to the fact that we are living in a hungry world. Our own rate of population increase suggests that, even if we consider only ourselves, we shall soon be seriously concerned with adequate food production. On both counts the present volume deserves attention.

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Maya. The riddle and rediscovery of a lost civilization. Charles Gallenkamp. McKay, New York, 1959. xvi + 240 pp. illus. + plates. \$5.50.

Whatever the causes may be, it has been evident that for some time now there is an increasing market for books, written in "layman" style, on archeology. A fair proportion of these books have been devoted to American archeology, particularly to the high culture areas of Middle America and the central Andes. Gallenkamp's book concentrates on the pre-Columbian Maya, a group that occupied the scrub and rain forests of the Yucatan Peninsula of Central America. Thanks to modern transportation and the interest of the various governments in the tourist potential and the scientific value of the many Maya sites within this area, an increasing number of people are able to visit the impressive, often awesome ruins that until recently could be reached only by the most determined of travelers and scholars. One might wonder, however, how many visitors leave a site such as Uxmal, or Tikal, or Copan with any substantial awareness of the historical and anthropological implications of what they have seen. Are monuments, temples, and palaces akin to some museum objects—poorly labeled and without sensible context—

at most just attractive "things"? The chances are though that the majority of visitors come away with many valid questions. Does a book such as this one by Gallenkamp properly answer what is answerable and provide a context for a searching appreciation of all the carvings and structures no longer so "lost" in the jungle?

The book is thoroughly readable and reasonably well illustrated with a selection of photographs covering various outstanding Maya remains. The major periods of Maya development are covered, from the still slightly known Formative era through the relatively well investigated Classic or florescent period, to the final period of militarism, secularism and, in many ways esthetic disintegration. A chapter is devoted to John Lloyd Stephens, whose explorations over a century ago marked the beginning of our archeological knowledge of the Maya. A chapter on how the Americas were populated with subsequent cultural diversification, is well done. Other chapters are given to the famed Classic-period tomb found a few years ago at Palenque and to the equally well publicized polychromed frescos of Bonampak. The rich yield from the "Sacred Cenote" (well) of Chichen Itza in Yucatan is similarly treated as a highlight of discovery and an interpretive source.

On the whole, Gallenkamp's book appears to be free of all but minor error (for example, Tikal "Temple V" in one photograph is actually "Temple VI"), and to be generally comprehensive and very much up to date. A good bibliography is appended. In fact, the book often appears to be a synthesis of two prior popular studies—J. E. S. Thompson's *The Rise and Fall of Maya Civilization* (University of Oklahoma Press), and S. G. Morley's *The Ancient Maya* (G. Brainerd, Ed., Stanford University Press). Full credit is given to these sources, and it is evident that Gallenkamp has heavily relied upon them. The question is, if one must choose one of these three books, whether that by Gallenkamp would be the choice. I would certainly favor the revised edition of Morley's study for detail and that by Thompson for an often penetrating view of Maya culture. Another excellent study is George Brainerd's *The Maya Civilization* (Southwest Museum, Los Angeles).

In summary, the Gallenkamp volume should certainly be recommended as an adequate, up-to-date, and reliable pres-

entation of a fascinating subject of interest to anyone concerned with the comparative study of what causes and constitutes "civilization." However, his principal sources, written by men long and actively concerned with the subject, cannot be recommended enough.

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The Physico-chemical Constants of Binary Systems in Concentrated Solutions. vol. 1, Two Organic Compounds (without hydroxyl derivatives). 1274 pp. vol. 2, Two Organic Compounds (at least one a hydroxyl derivative). 1283 pp. Jean Timmermans. Interscience, New York, 1959. \$29 each.

These are the first two volumes of a four-volume work aimed at extracting from the literature all of the data on the physical constants of solutions of two components. Elements and compounds are taken as components; alloys and solutions more dilute than 10-weight percent are excluded from consideration.

The first two volumes consist of tables of data on binary systems of the type indicated in the title. Apparently all of the published data on a given system are included without critical evaluation; thus, the user will find reference to the original reports necessary for obtaining an idea of the accuracy of the determinations. Since the bibliography is to appear in the fourth (and last) volume of the series, which is not yet available, the single volumes appear to be of limited usefulness at the present time. Although the arrangement of compounds is quite systematic, the index to compounds is also to appear in the last volume; therefore locating a particular compound in the very large mass of data reported in the first two volumes is a chore.

The work is reproduced from type-written records by offset printing, and although the print is easy to read, the tables, in many instances, are rather carelessly aligned on the page. Further, a cursory inspection reveals several typographical errors in names of compounds; this would hardly encourage one to regard the numerical data as completely reliable without checking the original source. While the complete set of four volumes will undoubtedly be