method used was to divide the New World into geographical areas and subareas and then to have each covered by a specialist on that region. Thus, North America was represented by seven writers, Meso-America by two, and South America by three; this apparent unbalance was due, in part, to the different degrees of information available for the two continents. In order to give more coherence to this mosaic, several chapters on special topics are relatively unconfined by geographic limits. These cover such subjects as geoanthropology, Early Man in the New World, transpacific contacts, North and South American cultural connections and convergences, and a linguistic overview.

With 18 contributors, each a specialist in his field, it was inevitable that differences of opinion would crop up, but on the whole these differences are relatively unimportant and do not confuse the main issue, which is to present a consensus of current ideas. These differences also point up the need for more research in certain fields. Archeologists are usually impatient to construct theories and frequently do so with insufficient evidence, but this, in the long run, is a stimulant to progress.

Chronology is the backbone of archeology, and it is in this area that great progress has been made in the past 50 years, largely due to the contributions of other sciences such as physics, botany, geology, and the like.

The authors of the essays that deal with the various geographical areas have attacked their subject chronologically, beginning with the early hunters and carrying the story upward through various stages to the beginning of history in their particular region. It is in establishing the framework of stages through which prehistory passed in these different areas that we find the greatest difference of opinion among the various authors. This is largely a matter of nomenclature, since aboriginal conditions varied considerably in different parts of the New World. For example, it is obvious that in Southern Mexico and Peru, the prehistoric inhabitants passed through more stages on the road to civilization than did those of the Arctic or the Great Plains. It is apparent that there is not yet enough evidence to permit full agreement in defining a series of developmental periods into which all prehistoric American culture may be fitted.

One of the most intriguing problems connected with New World prehistory is that of Early Man. In no single aspect has so much new evidence appeared, nor have ideas changed as radically with respect to any other. Not many years ago the mark of the reputable archeologist was his insistence that man was a comparative newcomer in the New World. Actually ideas have not changed as much as surface appearances indicate. Krieger points out that Hrdlicka, the leader of the conservative element in this respect, was not at fault in his anthropological reasoning, but was the victim of geological misconceptions about the duration of the Pleistocene. The basic concept—namely, that man came into the New World fully evolved—still has not changed. Allowing Early Man a tenure of 40,000 years rather than 6000 has given the archeologist more room in which to work and more time to account for the rather profound cultural changes that have taken place.

Twenty-five years ago it would have seemed absurd to state that linguistics would prove to be an important prop to archeology. But one of the most interesting chapters is the one on linguistics by Morris Swadesh, a pioneer in the field of glottochronology. Swadesh demonstrates that language studies can cast important light on the movements of peoples and their former connections over thousands of years of time.

On the whole, I feel that the symposium has achieved its purpose. *Prehistoric Man in the New World* will be a convenient and most valuable reference work for professional anthropologists, students, and interested laymen who wish to be informed as to the most up-to-date theories concerning pre-Columbian archeology in the Americas.

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Botany

The Flowering Process. Frank B. Salisbury. Pergamon, London; Macmillan, New York, 1963. xii + 234 pp. Illus. $8.50.

In the preface the author clearly sets the limits (and limitations) of this book. This is not a review of the physiology of flowering but a broad discussion of the biological changes within the plant which lead to conversion from the vegetative to the reproductive state and to the conversion itself, always centered around the cocklebur.

Throughout the book, but principally in chapters 1 through 4, the author presents the flowering process as a unifying concept of biology under these headings: Diversity and Uniformity of Biological Material; Response of an Organism to its Environment; Biological Timing; Biochemistry; and Morphogenesis or the Origin of Form. Uniformity is seen in the pigment system and in the flowering hormone; diversity is seen in the response to environmental stimuli, such as day length and red and far-red light. In chapter 2 and the appendix are listed the many response types to photoperiod, temperature, age, and flowering time, and their interactions, with suitable reservations. From this, the flowering response is developed, in some detail, as primarily an ecological phenomenon (chapters 3 and 4). These first four chapters are unique in outlook and very well presented, especially for the experimental ecologist.

The balance of the book (150 pages) is devoted to the mechanisms involved in floral initiation, but concentrated on a single species—the cocklebur. Chapter 5 details practical methods for studying photoperiodism, an excellent answer to the interminable queries related to high school science projects. Chapter 6 is concerned with the minimal age and high light intensity (photosynthesis or energy source) which are necessary preceding the inductive dark period. Chapter 7 discusses what is known about the plant's response to light—pigments and action spectra; phytochrome and its reversible nature; and the effects of light interruption and of light of different intensities, durations, and qualities. Chapter 8 introduces the biological clock idea—the manner in which the plant measures the length of light and dark periods. In this connection, the possible resolution of Könitz's observations (p. 123) with Bünning's theory (pp. 133 to 136) is extremely interesting (see note on pp. 217 and 218). From a physiological viewpoint, chapters 7 and 8 are the highlights of the book. Chapter 9 deals with the synthesis of flowering hormones. Experiments are cited to show that ATP production and amino acid and nucleic acid metabolism may be involved. The final chapter treats the movement and action of the flowering hormone. Detailed discussion includes: translocation rate; autocatalysis; the

relation to auxin, gibberellins, and antimetabolites; and cell division and differentiation related to induction and the morphology of transformation.

There is a short, selected bibliography, and three indexes—author, organism, and subject. The type, illustrations, and format are good.

The physiologist may feel that more time and emphasis should have been placed on the time relations in which light and darkness succeed each other than on such secondary considerations as the duration of the light and dark period, or to such modifying factors as temperature. Emphasis on modifying factors tends to stress the differences between various plants with respect to flowering, whereas an understanding of the fundamentals of flowering physiology must come from recognizing similarities. The author freely admits that the cocklebur is somewhat atypical, but uses this classical example to unify his presentation. Others may prefer a more critical survey of the literature and reference to already published work, rather than to unpublished data of experiments by the author and his students. Despite these inevitable exceptions, the author has accomplished exactly what he set out to do, in a most effective manner. The book should be well received, particularly by ecologists.

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Latin American Politics

The Military and Society in Latin America. John J. Johnson. Stanford University Press, Stanford, Calif., 1964. xii + 308 pp. $7.

This is the second important book published in English on the role of the military in Latin American politics. Its point of view differs substantially from that of the earlier work by Edwin Lieuwen. Both are essential reading if one wishes to understand the importance of the armed forces in the contemporary Latin American scene.

Johnson takes a substantially less-dismal view of the activities of the military in politics than did Lieuwen. In some countries, notably Brazil, he thinks that, on balance, their behavior has been positive and constructive. In general, he seems to think that the military are no less subject (albeit there is some time lag involved) than the civilians to the forces of change which are prevalent today in Latin American society. He sees the fact that the service academies are reaching further and further down the social scale for their students as indicating that, in the future, there is likely to be more and more sympathy among the officers for drastic social change.

On another point, too, Johnson differs from the earlier writing on the subject. He is a good deal less sanguine than Liewen about the effect that the so-called "professionalization" of the armed forces has on their tendency to engage in politics. He indicates that it may well induce them to intervene more rather than less. This is particularly true in the less well developed nations, where the technology possessed by the officer class is of greater relative importance and leads the officers to feel that they have capacity for dealing with technical problems which the civilians lack. He buttresses this argument with information on the number of government dependencies which are headed by military men, even in civilian-controlled administrations.

Fundamentally, Johnson starts with the proposition that, whatever the civilians might like, the military are not going to disappear and they are not going to cease being active politically. Therefore, the basic problem, as he sees it, is what direction this political activity is going to take. He says of the Latin American civilians that ". . . faced with such a situation, they could throw up their hands in despair and say to the officers, 'Do what you will not let us do.' That would be dramatic, and conceivably effective in certain instances. Or, knowing that they are moving rapidly into an era of profound social disorder and that Western representative democracy no longer has a monopoly in this Hemisphere, the public can maintain their armies as deterrents against extremist-provoked violence but at the same time work to convert them into more socially constructive institutions. That would not be so heroic but it would certainly be realistic, and Latin Americans will probably have to be more realistic than they ordinarily have been if they are to survive the onslaught of extremists from both the right and the left."

Several sections of this book are worthy of particular mention. One is that devoted to a historical account of the evolution of the military and its political role in Latin America, from the heroes of independence, to the ruffian armies of the "caudillos" of the later 19th century, to the comparatively well educated and technically capable officers of most present-day Latin American military forces.

Another particularly interesting aspect of the book is its more or less sociological analysis of the officer class. Johnson insists that in most countries there has been a shift in recent decades from the upper middle class of the smaller towns and cities to the lower middle and even the working classes of the cities as the principal source of officer candidates.

Finally, Johnson's analysis of the behavior of the Brazilian military as a special case is worthy of particular attention, especially in the light of Brazilian events since this book was published. Johnson's prediction that the Brazilian officers might be on the verge of changing their role from that of a grey eminence behind the political scenes to chief actors on the governmental stage seems to have been borne out by the revolution of 1 April and its aftermath.

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Computer Technology

Automatic Data Processing. Frederick P. Brooks, Jr., and Kenneth E. Iverson. Wiley, New York, 1963. xxvi + 494 pp. Illus. $10.75.

This book evolved from and with the lecture notes used in a two-semester graduate course given at Harvard University from 1954 to the present. It has been written in a form that is intended to be suitable for a two-semester course for college seniors, and, in addition, the authors have taken particular pains to make the book suitable for self-study. A set of exercises, usually well chosen, is given at the end of each chapter, as well as an extensive list of references to sources where a more detailed discussion of various topics treated in the chapter may be found. Twenty-two of the exercises are considered exceptionally difficult and their solutions are given in an appendix. The authors assert that the mathematical maturity attained from a course in college algebra should enable the reader to deal with the only occasional use of elementary mathematical concepts. However, the authors do use