more, there is little new in a methodological sense. Chang's statement of methodology is essentially a series of definitions of concepts, lacking clearly specified guidelines as to how one might actually go about discovering the organizational features of prehistoric societies. Trigger's paper, though more clear in this regard, reaffirms the traditional method of simply applying inferences drawn from ethnographic data to the archeological record, without adequate test. Methods of analysis also remain unchanged, since the implication is that, once sociological traits have been described, the analytical goal is to place them into foci, phases, and so forth—as has been done traditionally with artifacts. One must conclude, in agreement with Willey's appraisal, that the newness of this endeavor lies primarily in the nature of the data being examined. Instead of making inferences solely from the traditionally considered kinds of artifacts, settlement archeologists are making inferences from a previously inadequately examined class of artifacts—the structures, village plans, and site distributions of prehistoric peoples.

It is also important to note that although Chang conceives of the settlement approach as a beginning toward a science of society, there is little indication in the primary methodological papers (Chang and Trigger) that what are generally accepted as goals and methods of science are being advocated or employed. There is, for example, no indication of interest in explaining variability and change in social organization. Thus far, the goals appear to be primarily descriptive. Science attempts more than this; it involves a commitment to the search for nomothetic principles—laws or generalizations of process. In addition, this book lacks an awareness of accepted hypothesis-testing procedures; this too is fundamental to a science.

Nonetheless the book is important. It is important because of the continuing claim that settlement studies represent a new approach. It is also important, however, because it does present a departure from tradition—it provides a further demonstration that settlement data are indeed useful in drawing inferences about the ways in which past human societies were organized. The many specific examples (both real and expected) of the relationships between social organization and settlement characteristics are stimulating and useful. And further, these relationships are frequently presented in the form of descriptive cross-cultural generalizations. Such relationships are just beginning to be discovered, and the effort to find them must be encouraged.

JAMES N. HILL
Department of Anthropology,
University of California,
Los Angeles

Heterogenetic Organisms

Plant Chimeras. W. NEILSON-JONES. Second edition. Methuen, London, 1969 (U.S. distributor, Barnes and Noble, New York). viii + 124 pp., illus. $4. Methuen's Monographs on Biological Subjects.

A chimera is defined as an individual organism composed of tissues of more than one genotype or plasmotype, the difference being maintained by continued growth of a terminal meristem. Thus unique to higher plants, chimeras are properly distinguished by Neilson-Jones from such other heterogenetic forms as grafts, transplants, and mosaics. The modern spelling has been adopted to avert confusion with the elasmobranch genus *Chimaera*. Of various types, the periclinal chimera, in which each cell layer is genetically homogeneous, is the most stable and most useful experimentally. Numerous varieties of vegetatively propagated horticultural species exist in a periclinal condition.

The general subject is presented skillfully according to its historical development. It is revealed how the early "graft hybrid" hypothesis was supplanted by Baur's chimera concept, now verified in scores of examples. As is typical of science, the exceptional cases often prove to be the most interesting ones. The composition of mature organs of periclinal chimeras was clarified by the discovery that the subepidermal layer, initiated as a layer of single-cell thickness, can thicken by anticlinal divisions. Anomalous variegations in certain monocots revealed extensive invasion of one layer by another even though the periclinal chimera maintains its integrity near the meristem.

Paraphrase of the contents of the first edition constitutes two-thirds of the new edition, updating being restricted almost entirely to the remainder of the text. The early portions are belabored and redundant examples of chlorophyll variegation presented at the expense of important new developments. For example, the classical research by Satina and her colleagues on *Datura* cytochimeras is treated briefly; although these workers successfully traced the origins of all parts of the leaf and flower to the respective histogenic layers, reference is made only to their research on the ovule. Also missing are accounts of: the demonstrations by Asseyeva, Crane, and Simmonds that mutants and established varieties of potato are periclinal chimeras with cores of other known varieties; Howard's x-ray-induced reconstitution of entire meristems from the epidermal layer in periclinal chimeras; and Günther's chimera of *Lycopersicon peruvianum* and *L. esculentum*, which breeds as the former but displays the self-compatibility and interspecific compatibilities of the latter. The extensive research on various problems in chimeras from induced mutation is scarcely mentioned.

For proper balance the book should have included additional applications of chimeras. Michaelis revealed how chimeras can be utilized to trace the origin of plasmon mutants and to discriminate between various hypotheses of origin. Fascinating mechanical discontinuities are known between component tissues of certain chimeras, and interactions of a nutritional or regulatory nature might be envisioned from the wealth of combinations that can be effected between species or between genotypes within species. Clearly a subject of such broad biological interest deserves a general treatment. Neilson-Jones's book provides the closest available approximation.

C. M. RICK
Department of Vegetable Crops,
University of California, Davis

Tools in Biology

Glass Microelectrodes. MARC LAVALLEE, OTTO F. SCHANNE, and NORMAND G. HEBERT, Eds. Wiley, New York, 1969. xviii + 446 pp., illus. $22.50.

Since the papers of Ling and Gerard 20 years ago, the glass microelectrode has been constantly used and abused by biologists in their attempts to ascertain the internal conditions of cells and the properties of the membranes. This collective volume is of practical help to experimentalists who make and use electrodes; some of the 19 contributions are of as much relevance to macro- as to microelectrodes, notably the chapters dealing with the choice of