Book Reviews

Grasslands of the Great Plains. Their nature and use. J. E. Weaver and F. W. Albertson. With special chapters by B. W. Allred and A. Heerwagen. Johnson, Lincoln, Neb., 1956. 385 pp. Illus. $6.50.

With the exception of some 20-odd opening pages of general discussion, the reading of this companion volume to Weaver's *North American Prairie* [*Sci. Monthly* **80**, 262 (1955)] is pretty much an inductive experience. The characteristics of more than a score of important plants are reviewed, the vegetation of western Kansas is described and followed through a climatic cycle, the process is repeated on a more regional basis, then conditions in some ten representative areas are examined, with a pause to consider the underground characters of more than 2 dozen significant plants. At the end is a chapter on nongrasses, emphasizing their valuable role.

If the indolent reader objects to this routine, let him remember that he is being expertly guided on a vicarious field trip. What he can learn at the price of a few days' concentration would otherwise have cost him long months of arduous exertion, physical and mental. Should he be one of those whose living is derived from the hazardous environment of the Great Plains, he will find much that is to his advantage to know, if he has the wisdom and restraint to use it. If his interest is mainly scientific, he will gain greatly in insight.

The vegetation of the Great Plains seems to have had its inception in the Miocene, some 20 million years ago. For this there is sound paleontological evidence, contravening the ideas of Sauer and others on the origin of grassland through fires set by primitive man.

The semiarid grasslands, we are reminded, represent the greatest expanse of grassland on the continent. Except for their plateau extension in the Southwest, they are practically coterminous with the Great Plains; hence, the title of this book. Lying west of the True Prairie, or as some would prefer to call it the (subhumid, tall-grass) Prairie proper, the more arid grasslands extend on west to the Rocky Mountains, and north from Texas into Canada.

For these latter, the authors, following Clements, propose the name "Mixed Prairie" rather than the older term "Short-Grass Plains," basing their action on the appearance of mid-grasses along with short grasses when conditions are favorable. Aside from the historical fact that Prairie as first seen and christened by the French was the subhumid tall-grass community, there is the indubitable presence of a transition belt of some 100 miles in width, composed of both tall and shorter grasses and lying between the subhumid and semiarid communities. Some workers would prefer to see the name "Mixed Prairie" reserved for this interzone.

An interesting question is also raised by the authors' virtual elimination of the short grass as a climax type in its own right. Granting that the mid-grasses flourish under protection and under favorable soil and moisture conditions, it could be urged that neither of these ideals was general and continuous under natural conditions. Generally speaking, the short grasses are southern in origin, the mid-grasses are northern, more vulnerable to grazing and drouth, both of which were normal to the environmental complex that, by and large, must have determined the point of climax equilibrium.

The significant fact, regardless of terminology, is the great natural diversity of species and ecological types, beautifully adjusted to one another and to the vicissitudes of climate and soil. With such a resilient and persistent character, ready when possible to move beyond the equilibrium level, or to take refuge below it if need be, small wonder that there are differences of opinion with respect to a suitable terminology.

This amazing vitality of the short- and mid-grass community, which it shares with the tall-grass prairie, seems to me to be the essential theme of the book, overwhelmingly demonstrated. It rests not only upon the variety of species present and their complementary relationships but upon genetic variation within the species. One is surprised, therefore, to find no mention of Olmsted's work on regional segregates in *Bouteloa* or of the recent study in Nebraska of physiological differences of different clones of the same species growing in the same local community.

But if Weaver and Albertson have shown the recuperative power of grassland under normal adventures such as fire, drouth, and grazing by the natural fauna, they have shown with equal clarity how vulnerable it is to continued misuse by man. Even better they have shown that wise and moderate use is possible and, in the end, the most profitable course. Their demonstration of the maximum value of the natural grasslands for judicious grazing makes their book an important economic, no less than scientific document.

The late lamented Kirk Bryan was highly skeptical of the relation of overgrazing to erosion and was equally dubious of the claims made for the superior forage value of natural, especially climax, vegetation. A few weeks before his death he told me that he stood ready to change his mind anytime the evidence justified it. I am sorry not to have had a chance to discuss *Grasslands of the Great Plains* with him.

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Psychoanalysis and Psychotherapy. Developments in theory, technique, and training. Franz Alexander. Norton, New York, 1956. 299 pp. $4.75.

Ten years ago, Alexander and his colleague, Thomas French, published (in *Psychoanalytic Therapy*) an account of the experimental modifications of methods of psychoanalytic treatment which they and their Chicago colleagues had been trying for more than 8 years. It immediately aroused a vigorous controversy in psychoanalytic circles, which has continued for some years. In the present book, Alexander restates his position, buttresses it, and answers his critics. One of the main criticisms has been that Alexander's type of treatment is psychotherapy, not psychoanalysis. This argument is discussed with a full awareness that it is a matter of definition, yet one that carries a heavy freight of implications for prestige, income, and professional identification. It raises knotty professional issues: distinguishing the various techniques of psychological treatment that are based on a psychoanalytic understanding of personality, determining their differential usefulness in various pathological conditions, and training psychiatric therapists to carry them out.

The book opens with a literary-historical essay on the plight of mankind and the role that psychoanalytic psychotherapy plays in it. Alexander then restates the Freudian theory of the treatment process, discussing his additions to

it as well as those of several other analysts who have proposed modified techniques. Two chapters are taken up with the therapeutic consequences of a defensive stratagem encountered in some patients: bringing in material from a period in their lives earlier than the time of the pathogenic experiences. The devices of cutting down the frequency of appointments or temporarily interrupting the treatment help overcome this obstacle, Alexander says.

One of the most interesting parts of the book is the collection of answers to a brief questionnaire that Alexander sent to a number of the leading figures in psychiatric and psychoanalytic education. These contain many thoughtful statements about the difficulties of sensibly differentiating the teaching of psychiatric residents and of psychoanalytic candidates. Now that psychoanalytic theory is such an integral part of psychiatry, a number of teachers frankly bring into the open their doubts about present traditions and methods of training for psychoanalysis and psychotherapy, and a few of them point out the need for better research training in these fields.

On the whole, the book will be of most interest and value to psychoanalysts and psychotherapists who are concerned with understanding their techniques of treating patients and training future colleagues. The onlooker from other disciplines who is primarily interested in the scientific and theoretical aspects of psychoanalysis and psychotherapy will find little here that is directly nutritive, although there is a good deal that can help him to understand the idiosyncrasies of psychoanalysis as a science.

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Bacterial Anatomy. Sixth symposium of the Society for General Microbiology held at the Royal Institution, London, April 1956. E. T. C. Spooner and B. A. D. Stocker, Eds. Cambridge University Press, Cambridge, England, 1956. 360 pp. Illus. + plates. $6.

This book is a stimulating addition to the literature. It is technically descriptive, analytic, and often provocative, according to the spirit and wit of the individual and highly competent authors. The 15 articles were published before the symposium, so that discussion could be the main business of the meeting. The book could well serve to repeat the original and admirable intent of the society as a basis for discussion in many laboratories around the world.

The first half of the book might be considered an extension of the initial symposium of the series [*The Nature of the Bacterial Surface* A. A. Miles and N. W. Pirie, Eds. (Blackwell, Oxford, 1949)] and reflects much of the most provocative ensuing work on superficial structures—for example, flagella (B. A. D. Stocker). Contributions on the characteristics and capabilities of protoplasts (C. Weibull and K. McQuillen), osmotic regulation (P. Mitchell and Jennifer Moyle), the nature of cell walls (M. R. J. Salton), and an ingenious immunological analysis of the distribution of constituents in complex capsules (J. Tomcsik) clearly underline a current direction of attention to the physical and chemical nature of cell surfaces and to the definition of the structure and functions of these regions. These lucid articles represent analytic approaches, mainly biochemical, with important structural overtones. A description of the crystalloid protein and other inclusions found in certain *Bacillus* sp. during sporulation is a fascinating contribution (C. L. Hannay) and points to new areas of study. The toxic role of these inclusions in insect disease has been demonstrated.

The complex and often confusing literature on the form and division of bacterial chromatin structures is considered in two vigorous and philosophically dissimilar articles. On the one hand, C. F. Robinow describes the behavior of chromatin bodies, discusses their cytological status in general biological terms, and argues strongly for differentiation (in properties, behavior, and descriptive terminology) of chromatin bodies from analogous organelles in most other kinds of cells. On the other hand, E. D. DeLamater assumes the acceptability of a mitotic process of chromosomal separation in a bacterial nucleus, describes his observations in those defined terms, and cites synchronization experiments, which he feels support his case. Helpful for those following these differences of approach and interpretation is an appended section to Robinow's article examining "the alleged evidence of mitosis in bacteria." One might have hoped that the general article on "Chromosomes in micro-organisms" (C. G. Elliot) would give a more useful perspective from outside the field of battle, but the pronouncements are not particularly illuminating.

The uncertainties of preservation involved in preparation for ultrathin sectioning and electron microscopy are clearly defined by O. Maaløe and A. Birch-Andersen. These authors describe a new epoxy resin imbedding technique that may be of good use. Their paper and the deceptively persuasive prose of J. R. G. Bradfield concerning cytoplasmic organization really emphasize that we are not yet in a position to interpret the fine structure of the bacterial protoplast, but they are nevertheless helpful assessments of our current state.

This book will be a source of information and enjoyment to bacteriologists, to the biologist who would like to examine "the resemblances of things," and to the advanced student who would like to stray from the strict confines of course-work.

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Ultrasonic Engineering with Particular Reference to High Power Applications. Alan E. Crawford. Academic Press, New York; Butterworths, London, 1955. x + 344 pp. Illus. $8.

This book contains a survey of current practice in the use of vibration, sound, and ultrasonics of high amplitude for practical purposes. It also provides a review of pertinent scientific literature, suitable for orientation of the would-be user. An extensive, but nevertheless carefully selected, bibliography follows each chapter.

The author is successful in presenting a large amount of useful and interesting material at a satisfying scientific level without use of mathematics beyond simple algebra. Two chapters contain general introductory acoustical facts and a 20-page discussion of cavitation phenomena. In four chapters a good deal of practical data is given on transducers and generators now in use. Six chapters treat applications of high-amplitude sound and ultrasonics; detailed information is given on *precipitation and agglomeration, emulsification and dispersion, chemical applications, metallurgical applications, coating of metals* (*soldering*), and *biological applications.* A final chapter treats applications of sound for measuring and testing (rather than producing changes in) materials.

This book will be a very good one for that wide audience of persons, not specialists in acoustics and ultrasonics, who wish to know the possibilities of high-amplitude sound for their application. The specialist will also find much useful information here but will want to complement this source with others, especially for the necessary mathematical theory.

A small lament might be entered. The title follows a common departure from standard terminology in its use of the adjective *ultrasonic.* The latter should refer to sound whose frequency is above the audible range, whereas the subject of this book naturally involves sound of *all* frequencies, since many of the effects