

tained makes possible a more usable book, containing, actually, additional material pertinent to the recognized taxa. A significant change is the omission of the "Small viruses," order Virales, in the present edition. An addition is a 45-page "Comprehensive key to the genera of the manual," prepared by V. B. D. Skerman.

Many changes have been made in the text. Class Schizomycetes now has ten orders instead of five; family XI—Parvobacteriaceae—of the sixth edition is gone, and in its place we have family V—Brucellaceae; formerly six species of the genus *Diplococcus* were listed, now one is listed; 93 species of the genus *Clostridium* are now listed, instead of 61; *Staphylococcus albus* is absent, and so on. The new names and the changes will add to the confusion which is altogether too prevalent among microbiologists with regard to taxonomy. However, it seems to me that the changes made are clearly indicated and based on mature decisions of experts. The net result should be a need for less change in future editions and a very real advance in our understanding of microbes.

The authors are to be congratulated on a superb task well done. The book is of course highly technical, but, after hours spent going over it, I have yet to find a printing error. "Bergey's Seventh" is recommended to all microbiologists, but each who takes it up must be prepared for the feeling of entry into a slightly different world and advised not to put the book aside until it has been well examined. The work of preparing the book has been shared by many, but all will agree that this edition stands in a particular way as a monument to Robert S. Breed, deceased 10 February 1956.

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Zinsser Bacteriology. David T. Smith and Norman F. Conant, Eds. Appleton-Century-Crofts, New York, ed. 11, 1957. xiii + 953 pp. Illus. \$12.

A textbook of bacteriology, appearing five years after a previous edition, requires extensive revision, especially if the over-all length is not to be increased. The authors (this includes, in addition to Smith and Conant, other members of the faculty of Duke University School of Medicine: Beard, Willett, Overman, Brown, Sharp, and Poston) were well aware of this requirement. They have remained faithful, however, to the original purpose of Zinsser's textbook and have emphasized the medical and public health aspects of bacteriology. Thus, the section on physiology of microorganisms,

with the exception of bacterial genetics, has not been greatly enlarged. The chapters on immunology have been arranged in a more logical sequence and have been expanded. A chapter on immunohematology has been added. The sections on pathogenic bacteria and medical mycology have been reduced for the benefit of the section on viruses.

Numerous illustrations have been added, especially in the section on viruses. The book is well written and illustrated and remains a basic text for medical students and medical bacteriologists.

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Artificial Stimulation of Rain. Proceedings of the first Conference on the Physics of Cloud and Precipitation Particles. Held at Woods Hole, Massachusetts, 7-10 Sept. 1955. Helmut Weickmann and Waldo Smith, Eds. Pergamon Press, New York and London, 1957. xvi + 427 pp. Illus. \$15.

The contents of this book are described in the subtitle, "Proceedings of the first Conference on the Physics of Cloud and Precipitation Particles," rather than in the featured title. Of the 49 formal papers included in this impressive volume, only two or three treat somewhat directly certain aspects of artificial stimulation of rain, and even these do not answer questions likely to be uppermost in the minds of general readers—for example, what practical results have been attained in man's efforts to increase rainfall by cloud seeding or other artificial means? The present answer to this general question may be summed up in the words used by the author of one of the papers with particular reference to his own experiments in cloud seeding. He said: "Those are the results. We would be glad if some statistician could tell us exactly what they mean. The *only conclusion* [italics added] that we have drawn from them so far is that they justify a repetition of the experiment in 1955." Moreover, most of the technical papers in the volume reveal by inference how relatively little man knows about the physical processes of formation of hydrometeors. Urgent indeed is the need for basic research in clouds and precipitation.

For the most part the papers are by scientists who have been engaged in research in cloud physics and related subjects. They present some of the latest results of competent studies in the laboratory and in the free air. An interesting feature is the discussion that follows most of the papers. The questions and answers bring out views of many of the leaders in experimental cloud physics in

North America. They show the many complex facets of this broad subject.

The papers are organized around four main headings. Part 1—Aerosols: their origin, distribution, and measurement. Part 2—Condensation and coagulation: measurement of cloud and rain-drop size; rain from water clouds. Part 3—Melting and freezing: studies of snow and ice in the generation of precipitation. Part 4—Crystal growth and nucleation: laboratory and field studies. Two shorter sections treat thunderstorm electricity and international terminology (definitions of hydrometeors)—the latter made complicated by the diversity of precipitation phenomena and the international scope of applied meteorology. Among the subjects taken up in the different articles are mechanics of droplet growth by condensation, collision, and coalescence; the composition, distribution, and meteorological role of condensation and freezing nuclei; supercooling of water droplets (a phenomenon somewhat peculiar to precipitation physics); crystallography of snowflakes and ice clouds; the effects of chemicals in facilitating and inhibiting nucleation of clouds; and use of radar and other instruments in studying cloud physics.

As a whole, the papers collected in this volume are devoted to the problems one would expect would be discussed by research scientists brought together to consider the present state of knowledge of cloud physics and implied applications to modification of clouds and precipitation. The book does not have a subject index, but the convenient table of contents makes it fairly easy to find desired material. It contains extensive bibliography lists and should be a valuable reference source for the researcher, for the student, and for the layman interested in learning more about this field and its widening possibilities.

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The Fishes of Ohio. Milton B. Trautman. Ohio State University Press, Columbus, 1957. xvii + 683 pp. Illus. \$6.50.

Dr. Trautman of Ohio State University has devoted his life, since 1925, to study of the fishes of Ohio. In this book, the glacial history is followed by a description of the replacement of the original habitat with a dense human population and the drastic changes that have taken place in the fishes and other wildlife.

There are sections on artificial keys, equipment for identification, methods of collecting, counting and measuring, comparisons between waters, hybridization,