ent monograph by Vand and Pepinsky. These authors agree that, except for certain approximations that are probably of little importance, Hauptmann and Karle's derivation is correct. But they claim that the most probable phases will not always be the true phases and, moreover, that the discrepancies will not be random but systematic and of such nature as to produce in general an incorrect structure, resembling the Patterson function (self-convolution) of the structure more than the structure itself. In a simple case that they present this is indeed what happens, but their case may be too simple to meet the basic requirements of any statistical method.

The controversy is by no means settled yet. But such a controversy, if pursued in good spirit, can benefit the science greatly. Vand and Pepinsky's monograph is a case in point. They have presented their case admirably, and they have put forward a considerable number of new ideas.

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Mammalian Hybrids. A check-list with bibliography. Annie P. Gray. Commonwealth Agricultural Bureaux, Bucks, Eng., 1954. 144 pp. 21s.

This annotated compilation of records of hybridization of mammals lists more than 300 cases, a surprising number. It is also surprising how many of these hybrids have been fertile.

A bibliography of more than 600 titles and an excellent index are included. There are interesting notes on behavior, fertility, and physical characters.

Naturally, in a work of this sort there are a number of omissions, but this book will be welcomed by biologists, especially those interested in mammalian genetics, as a reference and as a guide.

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Autotrophic Micro-organisms. Fourth Symposium of the Society for General Microbiology held in April 1954. B. A. Fry and J. L. Peel, Eds. Cambridge Univ. Press, New York, 1954. ix + 305 pp. Illus. $5.

In the beginning there must be synthesis. Autotrophic microorganisms are independent of the more elaborate forms of carbon compounds, being able to live and multiply in an environment containing carbon dioxide as the sole source of carbon. Many organisms may live autotrophically—others have to. In this book a group of scientists from Britain, the U.S.A., Norway, and Holland record the discussion at a meeting in London regarding the physiology, biochemistry, metabolism, production, and economic importance of these organisms. Early chapters simplify the nomenclature, describe connections with other types of organisms, and show that although simple in the nutritional sense the autotrophs have a greater range of biochemical accomplishment than any other living creatures. Later chapters delineate present knowledge of these simple and mainly aquatic bacteria and algae and indicate many possibilities for the development of this knowledge in the future. Thiobacilli, nitrifying bacteria, blue-green algae, photosynthesis, the utilization of organic compounds, and energy relationships are dealt with in turn.

The economic importance of the autotrophs is discussed in the final chapter. By accumulation of chemical energy by the phytoplankton (photoautotrophs), by the nutrition of higher green plants, by improvement of eroded soils, by sewage disposal, by increasing the yield of fish, or by the production of sulfur, they can or may in the future be of great use. Destructive effects such as corrosion of iron, ships, rubber, and cement, and the occasional mass mortality of fish, are dealt with.

This is a valuable collection of data for workers in this field. Its interest to others arises both because of the substantial conformity that these microorganisms show in their metabolic pattern with all forms of life and because of the occasional striking biochemical differences that are present. The book, well produced and well written, has accomplished its aim of providing an account of the present position in this expanding field of knowledge.

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Elements of Food Engineering. vol. II: *Unit Operations.* Milton E. Parker. With the collaboration of Ellery H. Harvey and E. S. Stateler. Reinhold, New York, 1954. vi + 360 pp. Illus. $8.50.

This is the second volume of a three-volume series. In the first volume, published in 1952, the authors described different classes of refined food products and *what* is usually done in the way of processing to produce the product. Processing equipment was only incidentally mentioned. This second volume places more emphasis on *how* the processing is done.

The 10 chapters (chapters 14–23) in this volume cover unit operations concerned with assembly, preparation, and conversion of raw materials. The book is profusely illustrated with pictures and diagrams showing typical equipment and processing layouts for operations in a diversified group of food industries. For example, the cleaning of raw materials is illustrated by pictures and diagrams covering gyrosifters, Entoleters, spinach dry cleaners, automatic bottle cleaners, hydraulic scrubbing equipment, whirlpool washers, air purifiers, filters, clarifiers, and so forth. The treatment is descriptive rather than critical.

The authors have assembled a large and diversified list of standard pieces of food processing equipment, along with descriptions of how each fits into normal commercial operations. This should provide undergraduate students of food technology with an excellent introduction to the broad scope of food process-