were papers on impurity conduction, but they were confined to the classical semiconductors, while one knows that there is a vast unexplored wilderness of amorphous and disordered structures lying just beyond. Newest on the scene were reports on magnetic semiconductors and superconducting semiconductors, and it seems likely that these will receive further attention at these conferences.

The papers showed that in certain topics we are now dotting the *i*'s and crossing the *t*'s, but that in others hard, unresolved fundamental questions remain. Muto in his opening address drew attention to these in the areas of deep impurity centers, impurity conduction, and collective oscillations. It was evident that the techniques of investigation were becoming increasingly sophisticated, with extensive use of differential methods in optical spectra, laser sources, high-resolution optical equipment, and intense magnetic fields. Not as evident was any extensive attempt to produce very pure materials with well-categorized composition and defect structure, and this, if it reflects reality, might spell trouble in the future. Still, the conference showed that the discoveries and techniques of this discipline are having an impact on all of solid-state physics and that even the oldest and most jaded of us can find exciting new things in semiconductors. Students of solid-state physics may read this volume with profit. For the professional semiconductor man, it in common with the reports from previous such conferences will be an indispensable reference for several years to come.

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Laboratory Problems

Husbandry of Laboratory Animals. Proceedings of the third international symposium, September 1965. M. L. CONALTY, Ed. Academic Press, New York, 1967. 666 pp., illus. $28.

The International Committee on Laboratory Animals (ICLA) is an independent, nongovernmental organization, founded under UNESCO auspices in 1956, whose objective is to improve the quality, availability, and efficiency of utilization of laboratory animals. This volume comprises 37 papers presented during the ICLA's third symposium, held in Ireland during two weeks of September 1965. It exemplifies the "rule" that the publication resulting from a lengthy symposium is likely to be lengthy. As one who attended the symposium, I felt it was too long; and the published proceedings confirm this opinion. The book contains a potpourri of papers of uneven quality, some of which clearly duplicate information already in the literature. Subjects covered include various aspects of laboratory animal husbandry, disease, nutrition, and effects of environment on animals. Papers on how to handle "unusual" species, such as scorpions and cobras, and "how to" information on production or handling of commonly used species, such as rats and guinea pigs, are coupled with scientific reviews on such topics as "aspects of physiological stress in animals" and "influence of psychological factors on disease susceptibility." A one-page note on ringtail in rats with no citations from the literature, said to be "a shortened version of an unscripted talk," contrasts with a fine 53-page review of effects of rearing temperature on physiological characteristics with 224 literature citations. In short, the publication faithfully reflects the symposium; it is a mixture of extremely valuable and extremely superfluous papers of diverse scope and content.

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Feeding the Hungry and the Prospering

Alternatives for Balancing World Food Production and Needs. A conference, Ames, Iowa. Iowa State University Press, Ames, 1967. 281 pp., illus. $4.95.

This is a collection of papers prepared for a conference sponsored by the Center for Agricultural and Economic Development at Iowa State University. As with almost all symposium volumes, the quality of the papers is uneven.

There are some excellent summaries of the present state of our knowledge in a variety of fields bearing on the problem; for instance, there is an "overview" given by Lester Brown, a review of ecological factors affecting nutrition and food use by Nevin Scrimshaw, an examination of the prospects for world population control by Donald Bogue, and a review of ways of meeting the protein deficit by A. D. Odell. Few if any of the contributions reflect new research not previously reported elsewhere, nor was it possible in a brief conference of this sort to lay adequate stress on the connections and interdependencies among all the various factors treated by different disciplines that are reported on in the conference papers.

The overall impression left by the book is a much more balanced and optimistic one than is given by some of the more extreme predictions of disaster in the race between population and food made in such books as *Famine 1975!* by William and Paul Paddock, or even in the recent report of the President's Science Advisory Committee on the world food problem. Several of the authors offer a much-needed corrective to the overemphasis on the population explosion as the main thing to worry about and underline the equal or greater importance of the income explosion on which we all hope the underdeveloped world is launched and which creates a problem of expanding food production to meet the demands resulting from higher income levels that is at least as great as that posed by the increase in number of mouths to feed.

There are some rather surprising gaps among the topics presumably assigned by the conference organizers. There are no systematic treatments of problems or prospects in the supply of the major inputs, such as water, fertilizers, and pesticides, required to multiply world food production and no thorough discussion of the revolution, past and potential, in plant genetics, which has produced the new seed varieties on which a large part of our hopes for a radical acceleration in agricultural productivity in the next couple of decades is based.

Nonetheless, taken not as a comprehensive treatise but as a collection of brief papers on some important aspects of the problem of population and food supplies, this is a valuable addition to the burgeoning literature on one of the critical problems of our time.

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