Book Reviews

Carcinogens

Aflatoxin. Scientific Background, Control, and Implications. LEO A. GOLDBLATT, Ed. Academic Press, New York, 1969. xiv + 474 pp., illus. $12.50. Food Science and Technology, vol. 7.

Discovery of aflatoxins—a family of the most virulent carcinogens known—came at a time when man was beginning earnestly to contemplate how meager the bounds of the earth's ecosystem are and how soon the by-products of biological and industrial intensification would imperil his existence. Thus, in a segment of science already sensitized to the menace of chemically induced disease, the finding of carcinogens in some primary human and animal food staples catalyzed research as few events have in history.

This monograph is a digest of the decade of research on aflatoxins since the "turkey X disease" episode in Great Britain in 1960. It tells in detail the story of the discovery and the remarkably swift elucidation of the structure of the compounds. Pathogenesis and metabolism in farm and laboratory animals and in fish are carefully described and compared with characteristic effects of other carcinogens. Analytical methodology, both biological and physicochemical, is authoritatively presented and evaluated. Several chapters are devoted to the occurrence of mycotoxins and toxigenic fungi in human food and livestock feed. Four chapters deal with contamination control and regulation in foodstuff and provide a rather rare insight into the complex, and sometimes economically painful, machinery that functions from the farm to the consumer to ensure wholesome food in the marketplace.

Although the aflatoxins have been an expensive nuisance, their discovery was also fortunate. From aflatoxin research has come an appreciation of the insidiousness of toxigenic fungi in human diseases and the capriciousness of fungi never kindled by the many recorded episodes of mycotoxin poisoning throughout modern and medieval history.

Epidemiological studies, goaded and given direction by the geographical associations of aflatoxins, point to a vital etiological role of mycotoxins in human diseases, particularly in nonindustrialized areas of Africa and Asia. Even in countries with advanced agricultural technology, postharvest spoilage of fruits, vegetables, and grains ranges up to 10 percent, much of it due to or accompanied by toxigenic fungi. In areas where quality control is less than rigorous, often nonexistent, there is no doubt that dangerous quantities of contaminated food are eaten, for it is not likely that a hungry people who suffer chronic malnutrition will discard any but the vilest rations.

Awareness of these problems is an invaluable spin-off from aflatoxin research, but it is not the only bounty. We are reminded now that toxigenic fungi are ubiquitous and that their biosynthetic activities are strongly influenced by physicochemical factors around them, particularly by nutrition. Moreover, hybridization is perpetual among some species, and many of them are prone to mutation. Thus, new strains with new and unpredictable biosynthetic capabilities constantly come into being. Intuitively, we can expect the spectra of fungi and toxins to expand as man, through his industry and quest for food, further modifies his environment.

The authors of this book have written meticulously from their own experience and from the findings of others. They have provided sufficient detail and data for in-depth appreciation of aflatoxins, and, in many instances, for useful reference without resort to the original papers. The end product is an authoritative source book which will serve well as a reference and a guide to future mycotoxin research.

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Facts of Zoogeography

Dynamic Zoogeography. With Special Reference to Land Animals. MIKLOS D. F. UDVARDY. Illustrated by Charles S. Papp. Van Nostrand Reinhold, New York, 1969. xviii + 446 pp. + plates. $17.50.

It is a fact, cheerfully ignored by most of its would-be practitioners, that biogeography is far and away the most difficult of all the biological sciences. The task of this discipline is truly formidable: to account for the chaotic distributional data of systematics by means of the basic principles of geology, climatology, meteorology, evolutionary theory, and population and community ecology. College courses in biogeography seldom even make the attempt. The few general textbooks on the subject are innocent, myopic failures. The book under review here, *Dynamic Zoogeography,* unfortunately continues the tradition of, first, failing to present a clear view of the foundations of the subject, and, second and much more seriously, failing to expose even indirectly what it was that was not comprehended.

It must be nevertheless added at once that *Dynamic Zoogeography* has certain strong points that make it a worthwhile purchase. It is at the very least a meticulous and detailed coverage of much of the factual material of terrestrial zoogeography. Udvardy has probed deeply into the literature to bring out numerous case histories of the most diverse kinds of distributional phenomena. The illustrations are numerous and of high quality, and close attention is paid throughout to the historical background of each of the topics. The author's command of foreign languages, and particularly of the difficult, anecdotal German literature, has been put to good use. One of the most commendable results is the focusing of attention on some important pieces of research hitherto largely neglected in conventional evolutionary reviews. I was very pleased to find examples of Carl Lindroth's outstanding contributions on carabid beetle evolution made the subject of the frontispiece and frequent discussions throughout the book. Readers will be grateful to have a convenient reminder of the contributions of Hesse, Kalela, Reinig, Rübel, Salomonsen, Shelford, Schwerdtfeger, Voous, and literally hundreds of other major and minor figures in the history of the subject.

Udvardy's style makes the book