field tests plants containing this compound experienced heavier grazing than a member of the same genus depauperate in sesquiterpene lactones, suggesting the presence of another defensive system in the lactone depauperate plant.

Taxonomically dissimilar animals deal with dietary toxins by remarkably similar metabolic pathways (P. Millburn). Disappointingly, differential mechanisms or detoxification potencies among coevolutionarily relevant groupings, such as herbivores versus nonherbivores or host-restricted herbivores versus generalized herbivores, are not discussed, and resistance mechanisms other than those involving chemical modification of the toxin are not covered.

M. Rothschild has so far obtained little evidence for her hypothesis that dietary carotenoids may potentiate olfactory and auditory perception and hormonal changes in animals. *Ophrys* orchid fragrances attract male insects, which transfer pollen while endeavoring to copulate with the flower, but attempts to associate the fragrances with insect sex pheromones have proved unsuccessful (G. Bergström). Bergström believes that the interaction probably evolved from a stage in which the orchids produced nectar to one in which the insects benefit by collecting volatile secretions from the flowers for use in swarming behavior. Seed toxins and insect carotenoids are discussed by E. A. Bell and J. Feltwell, respectively, to conclude the section on plant-animal interactions.

E. I. Newman concludes that allelopathy occurs, but he thinks this effect may be merely fortuitious, not due to natural selection acting on competing plants, and that allelopathy is not the primary function of the substances involved. Doubtless, these conclusions will be challenged. According to J. B. Harborne and J. L. Ingham, postinfectional production of phytoalexins is the most important mechanism by which plants resist fungal infection. Harborne and Ingham compare phytoalexins produced by various plant taxa, but unfortunately no comparisons are made among ecologically relevant groups such as trees, shrubs, and herbs.

Evidence has been accumulating to suggest that many plants, perhaps most, can actively increase their levels of defensive substances over time periods ranging from hours to years in direct response to attack by herbivores, analogously to their responses against pathogens. This effect may be of great importance as an analytical tool in herbivore population dynamics and, potentially, for pest control. The absence of any reference to this phenomenon is a failing in a book claiming to cover the most significant developments in ecological biochemistry of the last five years. The book should be read by all those in the field, but more complete and condensed introductory summaries are available for the general reader.

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Techniques in Field Theory

Relativistic Quantum Fields. C. NASH. Academic Press, New York, 1978. x, 224 pp. $31.

Relativistic quantum field theory has become a tool used daily by the high energy physicist. It is now widely believed that non-Abelian gauge field theories give the fundamental dynamics of the strong interactions as well as furnishing the framework for the unification of the weak and electromagnetic interactions. In particle physics the fundamental issue of our time has centered on attempts to understand the interaction of non-Abelian color gauge fields with quark fields. The application of quantum field theory has not been limited to particle physics, however. The great advances that have recently been made in our understanding of the scaling laws in second-order phase transitions have come about through a study of the long-distance behavior of zero-mass quantum field theories.

There is a notable lack of books for students dealing with modern quantum field theory. This short volume by Nash discusses a number of recently developed techniques in field theory in a manner intended to be comprehensible to postgraduate students. In particular the book deals with functional integration, dimensional regularization, infrared behavior in quantum electrodynamics (QED), the Wilson expansion, and the Callan-Symanzik equation. Each topic is illustrated by many well-chosen examples, though there are hardly any physical applications given. By and large ϕ^4 theory and QED are the field theories discussed, with some results quoted for non-Abelian theories.

About a quarter of the book is devoted to a discussion of dimensional regularization. The examples in this section are especially well chosen. A reader familiar with the basic properties of Feynman diagrams should be able to obtain a good working knowledge of dimensional regularization. I think this is the most successful part of the book.

Renormalization of ϕ^4 theory and QED is done mostly by means of examples. A general subtraction procedure, such as that of Bogoliubov, Parasiuk, Hepp, and Zimmermann, is not given. This makes the discussion of the Wilson expansion little more than the statement of a set of rules. In deriving the Callan-Symanzik equation the very elegant method of Symanzik is used. However, without a thorough knowledge of a subtraction procedure this method is virtually impossible to comprehend.

Relativistic Quantum Fields is written in a crisp, lucid style. Many of the topics discussed in the book are not covered in any other book intended to be used by students. If the reader is willing to refer to some of the original papers while reading this book, he or she should be able to obtain a good foundation in modern quantum field theory without an undue amount of pain.

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Adaptive Optics and Short Wavelength Sources. Papers from a summer school, Telluride, Colo., Aug. 1977. Stephen F. Jacobs, Murray Sargent III, and Marlan O. Scully, Eds. Addison-Wesley Advanced Book Program, Reading, Mass., 1978. xii, 213 pp., illus. $24.50. Physics of Quantum Electronics, vol. 6. *To order circle 555 on Reader Service Card.*

Advances in Cancer Research. Vol. 28. George Klein and Sidney Weinhouse, Eds. Academic Press, New York, 1978. x, 410 pp., illus. $31.

Advances in Cryogenic Engineering. Vol. 23. Proceedings of a conference, Boulder, Colo., Aug. 1977. D. K. Timmerhaus, Ed. Plenum, New York, 1978. xviii, 748 pp., illus. $49.50. A Cryogenic Engineering Conference Publication.

Advances in Experimental Social Psychology. Vol. 11. Leonard Berkowitz, Ed. Academic Press, New York, 1978. x, 344 pp. $21.

(Continued on page 214)