fame long after their demise. With a deft eye and keen, neutral perception he exposes foibles and strong points alike, as if working with paleontological hammer, needle, and brush to prepare the bare skeletons beneath. Fortey is not opinionated and leaves ample room for thought and reflection. He sometimes sidesteps the contentious issues (what did kill the dinosaurs?), but this is possibly a gentler way of seeing the debate from the sidelines.

Are there drawbacks to this book? Few. Sometimes the descriptive train falters slightly while moving up the stratigraphic column (as if losing steam chugging up a long hill), but this is barely noticeable. The book lacks a "calendar" of the major revolutions of life, with which the uninitiated could keep track of time. Similarly, some pertinent paleogeographic maps might have better explained the formation and fragmentation of supercontinents, which account for much of the main trends of life. The role of global climate change in shaping the distribution and diversity of organisms seems underestimated. Although I could list many quibbles, Fortey clearly dislikes pedantry (several times he cites it as a major shortcoming in science), and such criticism might be carping. The book is painted with very broad brush strokes and should be perused accordingly.

This book was a pleasure to read and can be enjoyed by all. If you wish to get a sense of the excitement in paleontology (the thrill of finding an exquisitely preserved new fossil species, or a new skeleton leading to a cascade of fresh concepts) without the sterility and precise language of a scientific paper or symposium, or if you wish to learn of life's history while avoiding the fact-stuffed summaries of encyclopedias, this is a book for you.

ECOLOGY

Not Noticed by Darwin?

Deane Bowers

Induced Responses to Herbivory. RICHARD KARBAN and IAN T. BALDWIN. University of Chicago Press, Chicago, 1997. x, 319 pp., illus. $44 or £35.25. ISBN 0-226-42495-2. Paper, $17.95 or £14.25. ISBN 0-226-42496-0.

Plants are more reactive than their reputation might suggest. After being damaged or stressed (often in the process of serving as food for animals), they exhibit changes collectively called "induced responses." These responses—whether chemical, biochemical, or physical in form—can in turn affect herbivores feeding on the plants positively or negatively. Although induced responses are typically assumed to benefit the plant by reducing subsequent herbivory, Karban and Baldwin show that actually the effects of induced responses are variable and complex in both plants and their herbivores: A plant may show an induced response, but there may or may not be an effect on a particular herbivore and the plant may or may not benefit. Coupling their considerable experience in the study of induced responses with an exhaustive survey of the burgeoning literature in the field, Karban and Baldwin have crafted a thoughtful and provocative book.

A great deal has happened since the first book on induced responses, a volume edited by D. W. Tallamy and M. J. Raupp (*1*), was published seven years ago. Karban and Baldwin successfully integrate the wide diversity of recent studies, from the molecular biology of the genes involved in signaling induced responses, to the population dynamics of herbivore communities. Though Tallamy and Raupp's volume contained 17 chapters by 31 contributors (including Baldwin and Karban) and the new one has only six chapters, both books have a similar organization of topics. Each considers plant responses to herbivore attack, effects of induced responses on herbivores at levels ranging from individuals to communities, and the potential importance of induced responses for agriculture.

RICHARD KARBAN / UC DAVIS

Wild cotton reacts. Damage by the cotton leaf perforator, *Bucculatrix thuberiella*, induces greater numbers of glands of gossypol (small dark spots), which discourages herbivores.

Although edited volumes are often valuable additions to our understanding of particular research fields, they seldom have space to integrate their various chapters. In contrast, as is clear from reading *Induced Responses to Herbivory*, there are many advantages to a single, unified approach. It provides more room for discussion, speculation, and elaboration, and for detailing evidence for or against particular hypotheses. Nevertheless, because this book represents the views of its two authors, it does not have the breadth or represent the diversity of interpretations possible in an edited volume.

Besides reviewing the literature on induced responses, the authors insightfully and critically examine aspects of conventional wisdom in the field. They evaluate evidence that induced responses are costly to plants, that herbivore population outbreaks may be caused by induced responses in host plants, that plants can receive signals from other plants, and that certain types of plants are more likely to show induced responses (evergreen versus deciduous, or herbaceous versus woody). In these evaluations Karban and Baldwin pull together a vast literature on plants, herbivores, and pathogens. Their exhaustive survey will aid everyone from students just learning about the field to researchers already well-versed in the subject.

Although not all readers will agree with the authors' perspectives, the book is comprehensive and well-written. Still, I was disappointed to find the authors continuing the use of military terminology in describing types of responses, a tradition popular since the description of plant-herbivore interactions as an "evolutionary arms race." Using terms like "mercenary" or "civilian" does not advance our understanding of the mechanisms or functions of induced responses. Despite this minor quibble, the authors have done a great job of gathering information from a wide variety of fields, synthesizing (rather than merely reviewing) it, and suggesting productive avenues for future research.

The phenomenon of induced responses is a relatively new one in the field of plant-herbivore interactions. As the authors point out, "unlike most other natural phenomena, Darwin did not describe it." Much has been accomplished in the quarter-century since researchers first noted the importance of induced responses for plants and their herbivores. This book highlights how far we have advanced in our knowledge, and how much more remains to be done.

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References

1. D. W. Tallamy and M. J. Raupp, Eds. *Phytochemical Induction by Herbivores* (Wiley, New York, 1991).