dedicated to erasing Gardner's still valid reproach.

Volume 1 of *The Lower Tertiary Floras of Southern England* commenced with study of Paleocene plant fossils and new collections from the Lower Eocene London Clay. Volume 2 considers Middle Eocene remains from freshwater sediments lying above London Clay in the Hampshire Basin. It concentrates, as will the remaining volumes of the series, on carbonaceous fruits and seeds recently collected by Chandler, rather than on the impressions that attracted pioneer paleobotanists.

The body of the monograph (145 pages) presents detailed systematic descriptions of 86 species in some 64 named genera, representing 40 families (or major sections of families), whose remains have been recovered from the Lower Bagshot Beds. Angiosperms predominate; only two families of ferns and one of gymnosperms are represented. The accompanying 29 plates are of high calibre, and they include over 800 photographs of specimens taken by Chandler herself.

Compared with the London Clay materials, the Bagshot collections are small, the specimens lack fine details of structure, and they are often crushed or damaged: the possibilities for taxonomic determinations are correspondingly rather poor. In view of these circumstances, establishing 22 new species, some on as few as three specimens, most on only a single specimen, seems questionable practice. Seven new species of *Vitis* alone are named, mostly from single examples.

A brief introduction reviews the geology of the plant-bearing sediments and the general characteristics of the flora. Data on the age and stratigraphy of the Bagshot Beds was also provided in volume 1. The physiognomy, habitat, and modern distribution of Lower Bagshot families and genera are summarized on pages 14 through 18. Most of the Lower Bagshot families occur in the London Clay, although seven (Polypodiaceae, Cyperaceae, Capparidaceae, Rosaceae, Thymelaeaceae, Styracaceae, and Caprifoliaceae), are new to the Eocene of Britain. The Lower Bagshot flora reconfirms the presence of Indo-Malayan vegetation in southeast England during the Tertiary. Under the impetus of a stable climate, a tropical-subtropical forest apparently maintained itself in that area for some time.

Volumes 1 and 2 in the current series by Chandler, and doubtless those to come, provide detailed information on Tertiary paleoecology, plant evolution, and migration. Thus they are significant references for paleobotanists as well as for evolutionists and phytogeographers.

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Stimulus and Behavior

Nerve Cells and Insect Behavior. Kenneth D. Roeder. Harvard University Press, Cambridge, Mass., 1963. xi + 188 pp. Illus. $4.95.

Some of us have been lucky enough to be in a laboratory during a period when we felt, nay, when we *knew*, that a secret of Nature was being unraveled, that new relationships were being discovered and understood. There is an electric tension in the air, an exhilaration, so that the 24 hours in a day are not enough to work, to experiment, to calculate, and we become impatient with our own limitations of energy. This is "contagious excitement," and it can be found in this little book.

Roeder is a careful scholar, a facile writer, but above all, he is an excited scientist, and with his book, he infects the reader with this excitement. This is not surprising, for the central topic with which he deals is of intrinsic interest to all of us, scientists and nonscientists alike. And the source of the excitement is simply this: the students of nerve physiology, animal behavior, animal orientation, and psychology share a growing feeling that a real understanding of the cellular basis of organism behavior may be achieved. We can state this more bluntly: there is promise that we will reach a basic understanding of the workings of the brain.

Roeder does not say this; indeed, in a carefully written chapter (chapter 7, "Discrimination") he shows clearly how far we are from understanding the functioning of a single nerve cell, much less that of an entire nervous system. But, in a thoughtful summation of the different methods of approach and the utilization of new techniques of analysis, he shows the promise that the interplay of knowledge gleaned from different methods of approach may circumvent those gaps in our knowledge which cannot be filled in at the present time. There is extrapolation and speculation here, with which many workers may not agree, but in their proper context they indicate the exciting possibilities.

The title does not indicate the book's scope, for this is not a specialized account of a narrow field of investigation. Indeed, the opening chapter is a brilliant generalization of why biological systems are what they are and the place of stimulus-impulse-behavior relationships as a fundamental biological process. There are particulars and technicalities, of course, but the reader never loses sight of the woods for the trees. For example, details about the morphology of nerve activity, and about the techniques used to measure nerve activity and behavior patterns, are interesting. But the reader is fascinated when he is able to "see" the world through the typanic membrane of the noctuid moth and to understand the moth's behavior as a consequence of its contact with its bat-filled world. And it is important to understand that it is the morphological simplicity of this system which gives the advantage to insect material as an object of study for nerve cell-behavior relationships.

Roeder has written a good book, thoughtful and penetrating, with flashes of humor. It should be educationally rewarding to scientists and nonscientists alike.

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Chemical Botany

The Organic Constituents of Higher Plants. Their chemistry and interrelationships. Trevor Robinson. Burgess, Minneapolis, Minn., 1963. iv + 306 pp. Illus. $6.75.

Higher plants contain a wondrous array of organic compounds. The plant is able to synthesize a much larger and more diverse group of substances than the animal, a fact usually unappreciated by many biologists and chemists. Robinson has surveyed the organic compounds in higher plants with respect to occurrence, isolation, characterization, and metabolic pathways. The following subjects are considered: carbohydrates, water-soluble organic acids, aromatic compounds, saponifiable lipids, miscellaneous unsaponifiable lipids, volatile