dependent on distance as the other passive methods and can be carried out by the use of modest-sized telescopes. The method does require a fortuitous alignment in orbital inclination, but the large number of planetary systems increases the odds for detection. This passive method can then tell us where to beam signals in our search for intelligent extraterrestrial life, although serious minds should question whether we should let the rest of the universe in on our ignorance.

Astronomers as a group are highly in tune with, and sympathetic to, the subject matter of this book. The author has a lot to say and perhaps even tries to cover too much ground, but it is ground that must be covered. If one weeds out the mistakes, the book is worth reading for the vistas that it reveals and the thoughts that it provokes.

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Plant Products

Symposium on Phytochemistry. Proceedings of a meeting held at Hong Kong in September 1961. H. R. Arthur, Ed. Hong Kong University Press, Hong Kong; Oxford University Press, New York, 1964. xiv + 256 pp. Illus. $10.

This volume presents the proceedings of one of six symposia held in September 1961 in conjunction with the Golden Jubilee Congress of the University of Hong Kong. The material is divided into two main sections—(i) Structural and Biosynthetic Relationships in Plant Products and (ii) Isolation, Structure, and Chemistry of Plant Products, with the second section further subdivided into sections dealing with alkaloids, terpenoids, steroids, phenolic and other oxygenated plant products, and flavonoids and related compounds. In addition to short reports on recent work on natural products, eight special lectures on more general aspects of phytochemistry were delivered at the symposium.

With emphasis primarily on reports of investigations carried out in the Far East, as is entirely appropriate for a symposium of this character, it is only natural that substantially all of the short reports were given by investigators from this broad geographical area. The special lectures, however, which were given by A. J. Birch, Carl Djerassi, T. R. Govindachari, C. W. Shoppee, K. Nakanishi, W. A. Bonner, T. R. Seshadri, and E. S. Hiscocks, are representative of worldwide phytochemical investigations. That the short reports, 29 in number, cover a broad spectrum of fields is indicated by the section headings.

Inasmuch as a similar congress was held in Kuala Lumpur in 1957, the investigators in general report on work done between 1957 and 1961. Both the quality and quantity of the work represented by these reports furnish adequate testimony to the interest in studying the host of natural products that are indigenous to the Far East, a fact which reflects due appreciation of the potential economic benefits that may accrue from these products.

Space does not permit detailed treatment of all of the topics discussed but a few reports may be singled out as providing well-documented surveys that will be of value to those interested in particular subjects. Of particular interest are the comprehensive review of the fungicidal components of cedars, by A. B. Anderson, and that of the chemistry of the isoflavonoids, by T. R Seshadri.

The volume concludes with a series of summarizing reports dealing with phytochemical investigations made since 1957 at a number of laboratories —namely those at the Tropical Products Institute, London, and various laboratories in Hong Kong, India, Japan, Korea, the Philippines, Singapore, Taiwan, and Thailand. The extensive bibliographies in several of these reports will prove quite valuable (many of the cited references are in journals not too readily accessible in American libraries). Some 479 references are cited in the Indian report, 75 in the report from Taiwan, and at least 150 in the Japanese report, Furthermore, as an indication of the activity in the countries represented, this section is very impressive.

For a volume of this type, with inevitable delays in publication, the literature citations are remarkably up to date, with several references to 1963 publications. The editor is to be congratulated for this all too rare occurrence.

In this age of modern instrumentation, one question raised by Shoppee in his concluding remarks is especially pertinent. Should *every* research laboratory be equipped with *all* modern instruments, or would it not be more efficient and economical to establish adequately equipped regional centers? There is much to recommend the latter alternative. The problem of efficient servicing is by no means the least important consideration.

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Chemical Technology

Infrared Spectroscopy of High Polymers. Rudolf Zbinden. Academic Press, New York, 1964. xii + 264 pp. Illus. $9.50.

Zbinden's comprehensive *Infrared Spectroscopy of High Polymers* consists of five chapters—"Characteristic features of polymer spectra," "Selection rules for chain molecules," "Numerical calculations of vibrations in chain molecules," "Vibrational interaction in chain molecules," and "Orientation measurements." Literature references to infrared spectra of individual polymers are surveyed in an appendix.

Chapter 1 is a general survey of the subject; the other chapters contain mathematical derivations of the theory required in performing a partial or detailed infrared analysis of a high polymer. In the last chapter the author discusses in detail the effects of molecular orientation on the spectrum of a high polymer. The experimental conditions and auxiliary equipment needed to record these effects are also thoroughly treated. Of the utmost importance is the discussion of the effects that falsify dichroic ratio measurements, since true dichroic ratios are required in order to interpret properly the infrared spectra. Some excellent explanations are offered about why some dichroic ratios are smaller than predicted from theory. Zbinden included some real and hypothetical examples of high polymers to illustrate the theory presented, and his book is well documented. The literature references alone are worth the price of the book.

In my opinion, infrared spectroscopists who are interested in the theoretical investigation of high polymers will find that this book is a significant contribution to their field, but the polymer chemist will find here only that which a thorough infrared investigation can reveal about his polymeric substance. It is surprising that no mention is made of the fact that