and magnetometers which make use of them, noting advantages and disadvantages of each particular instrument. Surveying and transmitting compasses each receive a full chapter. The gyromagnetic compass, which usually consists of a gyrostabilized inductor, is treated with the author's characteristic thoroughness.

The author introduces the problem of compass-position correction by noting that with the advent of iron and steel ships the corrections became a necessity. Earlier unexpected errors or deviations of the compass had almost certainly arisen owing to nearby cannon balls and such unfortunate habits as Captain Bligh's tendency to store pistols in the binnacle. However, with the advent of the new ships a number of serious incidents were blamed upon compasses. G. B. Airy and Lord Kelvin were called in to consult for the Admiralty Compass Committee. It is tempting to imagine the conversations which may have taken place between Kelvin and the naval officers on the Committee in this early encounter between the military and science. At any rate, Kelvin and Airy, relying heavily upon theoretical work by Poisson, became the pioneers of practical compass corrections, and their methods are used in ships to this day. The field due to permanent magnetization of the ship is canceled at the compass by small permanent magnets. The field due to soft-iron effects is canceled by soft-iron spheres on the binnacle athwartships.

Between the chapter on compass-position correction and the final chapter on compass testing, there is a somewhat unsatisfactory treatment of measurements of the earth's magnetic field by methods not involving the saturable inductor or the pivoted-needle. Too little is said about these other methods for the chapter to be very helpful.

This book has a wealth of technical detail concerning compasses and magnetometers. It is no exaggeration to say that it will be invaluable to those who use or make compasses. It will also be of great value to the student of the history of science and technology. The book will be less useful to those who use magnetometers in geophysical or space research, because the instruments covered in the book are not those most popular in these fields of research. It is sad that the author did not live to see the completion of his book, for it should have brought him great satisfaction.

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Phytochemical Reviews: Some New Arrivals

Recent Advances in Phytochemistry. Vol. 1. Proceedings of the 6th annual symposium of the Phytochemical Society of North America, Austin, Texas, 1966. T. J. MABRY, R. E. ALSTON, and V. C. RUNECKLES, Eds. Appleton-Century-Crofts, New York, 1968. xiv + 437 pp., illus. $16.50.

Progress in Phytochemistry. Vol. 1. L. REINHOLD and Y. LIWSCHITZ, Eds. Interscience (Wiley), New York, 1968. x + 723 pp., illus. $23.75.

Phytochemistry has its own journal for original articles and an assortment of recent reviews appearing in monographs, published symposium proceedings, or treatises on comparative biochemistry and biochemical systematics. Now two new volumes have appeared, each the first of a projected series. *Recent Advances in Phytochemistry* will consist of papers given at the yearly symposia of the Phytochemical Society of North America (formerly the Plant Phenolics Group). This will be the American counterpart of the published symposia of the British Phytochemical Society, edited recently by Pridham. In contrast to these series, *Progress in Phytochemistry* is not based on a symposium but represents a miscellaneous collection of topics.

The advent of two new series poses a problem for both institutional and private libraries, whose budgets are approaching deficit spending. On the other hand, the knowledge explosion makes scientists partly dependent upon others for critical reviews of original work. Are these two new series worth the annual outlay of funds?

Although some of the reviews are gems of newness (to me, at any rate), others are good examples of the problem of overlap and repetition that will continue to plague these series. Three examples of repetition that I can detect because of my reading interests are the articles by Erdtman and by Grisebach in *Recent Advances* and by Harborne in *Progress*. In the review by Grisebach, several figures and at least four tables are identical to ones he published in an earlier symposium. Erdtman's article, "Chemical principles in systematics," is similar to one he wrote in 1963, and Harborne's paper on the same subject presents few new ideas.

Both volumes suffer from a lack of a general author index and from the omission of titles of papers cited. The latter is particularly unfortunate in international reviews citing less readily available sources.

The first volume of *Recent Advances* is dedicated to the late R. E. Alston, a pioneer in biochemical systematics. The theme of this volume is the use of new chemical techniques in analyzing natural products. It is divided into four parts: The Role of Chemistry in Modern Biology, Nitrogen and Sulfur Compounds, Acetate and Mevalonate-Derived Compounds, and Flavonoids. Since this is a symposium-based series, the themes will vary from year to year. The delay of two years before publication will lessen the value of this series if not corrected.

Although many of the articles are merely an updating of the 1966 treatise *Comparative Phytochemistry*, edited by T. Swain, some of them are of considerable interest. Mabry continues his review of the betalains, the group of pigments formerly confused with the anthocyanins; Alston summarizes data concerning the *C*-glycosyl flavonoids; and Ollis discusses the iso- and less-well-known neo-flavonoids. Although they are of a more encyclopedic nature, I will find useful the updated article of Ettlinger and Kjaer on sulfur compounds and that of Ponsinet *et al.* on the systematic aspects of the distribution of di- and tri-terpenes.

The format and printing in *Recent Advances* are very good. Several of the writers include useful concluding remarks. Information in tables is frequently well presented. The editors should be commended for permitting the personalities of the authors to filter through, as on page 58. Occasional comments, such as that by a chemist on botanical nomenclature (p. 121), are somewhat naive, and one author is downright unfair when he states that "most botanists are poorly informed of the extent to which modern natural products chemistry is dependent on instrumentation" (p. 188).

According to the editors, Reinhold and Liwschitz, the reviews in *Progress in*

Phytochemistry will not be limited to the most recent advances in any area. But in spite of this difference of stated objective, a perusal of the contents indicates that there is a danger of excessive overlap among these two new series, the older British series, and the *Annual Review of Plant Physiology*. I hope that the freedom from the restrictions of a symposium will permit this *Progress* series to continue reviewing less popular areas such as lichen chemistry.

In general, the content and tabular form of the data presented in the *Progress* volume are excellent. For basic new and useful information, I prefer the articles on plant cuticles by Mazliak, on lichen substances by Huneck, and on lipids and fatty acids of photosynthetic tissue by Nichols and James. The summary of fern constituents should be of considerable use to biochemically oriented taxonomists.

Trewavas discusses the interactions between nucleic acid and hormones, coverage of which is much duplicated in other sources. However, his paper is a critical review, with citations of pertinent work with animal tissues. The articles by Hardy and Knight on the biochemistry and mechanisms of nitrogen fixation will be useful to teachers and researchers, even though the emphasis is on the work and interpretations of the author. It apparently fills a gap among the recent reviews that have stressed other aspects of nitrogen fixation. Furuya's paper on phytochrome is quite readable, but it is hard to present new ideas on a subject that has been reviewed so often recently. Furuya mistakenly states that "anthocyanin synthesis . . . always requires an irradiation via an energy-dependent photoreaction." All the papers mentioned above contain useful tables of data.

The paper and printing of this first volume of *Progress* are not completely satisfactory. The binding of my review copy is poor; several pages have already pulled out.

Whether I continue to buy and to recommend for purchase by our library these series will depend on the editors and the subsequent authors. There are excellent reviews here, with new ideas or summaries of data, but there are also some that represent only repetitions or a rehashing of former publications.

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Books Received

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