emphasis on work carried out during the past decade. The material in chapter 2, "Aliphatic fluorocarbons," and chapter 3, "Derivatives of perfluoroalkanes," will be familiar to most organic fluorine chemists; nevertheless, it serves as a useful summary and bibliography of those fields. For the novice, a differentiation between fluorocarbon chemistry and hydrocarbon chemistry becomes clear. The author condenses a great deal of material into clear, understandable abstract. This is particularly valuable now, at a time when researchers are faced with a nearly insurmountable task of literature survey in order to remain competent in even a narrow field. The use of diagrams summarizing chemistry of individual compounds is an excellent and effective technique.

A major effort of the book is to summarize the chemistry of perfluoroalkyl derivatives of elements other than carbon (chapter 4). Banks does this very competently, in a report-like fashion, and most fluorine chemists will find new and interesting information in this chapter.

Banks also notes that there are still significant gaps in the field which should provide opportunities for interesting and profitable work for future researchers. The section on perfluoroalkane-sulfur compounds is particularly well written. The inclusion of a few photographs of apparatus is distinctive for a book of this type.

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Endocrinology and the Nervous System

Neurosecretion. M. GABE. Translated from the French by R. Crawford. Pergamon, New York, 1966. 886 pp., illus. $30.

"[I]n the future no single scientist will ever be able to deal with . . . neurosecretory organs in the whole animal kingdom in one and the same volume as Dr. Gabe has done." So writes pioneer "neurosecretionist" Bertil Hanström in his brief but cogent preface to this remarkable volume, which he predicts will become "the bible of neurosecretion." But Gabe has provided us with much more than an encyclopedia; he has provided us with a careful and imaginative "composite picture," raising numerous questions and problems that will stimulate and orient future research in the continually expanding area of neurosecretion.

This huge book, with its almost 600 illustrations and its bibliography of almost 100 pages (bringing the references up-to-date as of July 1965), represents an enormous effort of scholarship on the part of a man who has no peer today in the field of comparative histology.

Gabe's intimate knowledge of both vertebrate and invertebrate tissues is derived from detailed studies using both ordinary staining methods and precise cytochemical techniques. Hence it is regrettable that many of the excellent original photomicrographs of Gabe's superb histologic preparations have received such muddy reproduction in the hands of the publishers. Even some of the drawings are reproduced so badly that they are almost useless. In such a situation the author has the right to ask whether the expenditure of his time and the reader whether the expenditure of his money (this is an expensive book) is justified.

By far the largest part of the monograph is devoted to an analysis of the occurrence of the neurosecretory phenomenon and its physiologic correlates in vertebrate and invertebrate animals. The point of departure is essentially that of cytology and is based on recognition of specialized neurons with staining characteristics that suggest glandular activity of an endocrine nature. At the present time, when the concept of neurosecretion is being reestimated, it must be admitted that this approach has its limitations. Some workers will regret the extensive use of the adjective "neurosecretory" without sufficient qualification. Undoubtedly, presumed neurosecretory cells and systems are described in this book that will prove to have no neuroendocrine significance, and systems of considerable physiologic significance may not have been considered, owing to the absence of dramatic staining properties. That the author is aware of these limitations is clearly indicated in his discussions, and he is cognizant of the problem raised by "innervation" of endocrine tissues by neurosecretory fibers, with which morphologists and physiologists are presently attempting to cope.

The text is up-to-date as of the middle of 1962; since that time the number and the nature of advances in the field have been such as to necessitate revision of some of the descriptions and conclusions. This fact, however, only underlines the value of this work as a central reference document for future studies of the phenomenon fundamental to the entire field of neuroendocrinology. Indeed, Gabe can be commended for his prescience; in more than one instance he anticipates by his careful analysis of earlier studies what more recent data have firmly established (for example, in his treatment of the octopod epistellar body).

The translation leaves unquestionable the work's origin in the French language and has yielded an occasional neologism. The bibliography shows its share of misspellings, which are bothersome though understandable; typographic errors of a minor nature are frequent. A careful proofreading by an English-speaking biologist would have been useful. There is little one can find in the way of real shortcomings, however, and the importance of this work cannot be overestimated. The student of neurosecretion and of neuroendocrinology will find his background enriched from the point of view not only of morphology, both gross and fine, but also of physiology and cell biology. Gabe has truly done the comparative biologist an invaluable favor.

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Stereotaxic Atlas

Atlas Stéréotaxique du Diencéphale du Rat Blanc. D. ALBE-FESSARD, F. STUTINSKY, and S. LIBOUBAN. Editions du Centre National de la Recherche Scientifique, Paris, 93 pp., 39 plates. F. 50.

There are several features which will make this volume more useful than previous publications of its kind (see Table 1).

The atlas includes both frontal and parasagittal planes. A method for modifying the standard Horsley-Clarke apparatus for use with the rat is described, and the coordinates used are based on this modification. As an alternative to buying an apparatus specifically designed for the rat, this relatively simple alteration should prove expedient and economical to many lab-

Table 1. Comparison of available stereotaxic atlases of the rat.

Atlas	Apparatus	Horizontal zero plane*	Micrographs	Accuracy
Krieg, 1946	Rat	Parallel	Drawings only	Approximately ±0.5 mm, all planes
DeGroot, 1959	Rat	10° below	Drawings only	Not stated
Massopust, 1961	Rat	10° below	Fiber	Not stated
König and Klippel, 1963	Rat	5° above	Cell and fiber	Not stated
Albe-Fessard *et al.*, 1966	Modified standard	Parallel	Cell	Anterior-posterior, ±200 μ; vertical, ±500 μ

* Plane is given as relationship in degrees to interaural-incisor bar line, with interaural line used as locus of rotation.

oratories that hitherto have worked with larger animals and would now like to work with the rat. The atlas can also be used with more specific rat apparatuses as long as the plane between the interaural line and upper rostral edge of the superior incisor bar is used as the horizontal zero.

The nuclear detail provided by the photomicrographs of Nissl preparations is excellent, and clearer than that provided by previous atlases. A corresponding myelin preparation would have complemented the atlas by more clearly portraying tracts which are inadequately seen in Nissl preparations.

A precision of diencephalic lesion and probe localization of ±200 microns in the anterior-posterior plane and ±500 microns in the vertical plane is possible if rats of the specified 200- to 300-gram weight are used.

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Plants: Chemistry and Systematics

Comparative Phytochemistry. T. SWAIN, Ed. Academic Press, New York, 1966. 374 pp., illus. $14.75.

The efflorescence of chemical approaches to plant systematics may be looked upon (botanically) as "the blossoming forth" of a new subdiscipline or (pathologically) as "a cutaneous rash" (*Funk and Wagnalls New Standard Dictionary*, 1945 edition). If the latter, the infection is apparently getting worse, for we have in the volume under review the fifth major text to appear on this subject in as many years. Interestingly enough, natural-product chemists have been mainly responsible for the continuing emphasis in this discipline. Not that taxonomists are uninterested; rather, the current practitioners are already hopelessly tied down with their own paraphernalia, data, and associated problems. A new breed of systematist is needed to cope with the array of new specialties necessary for the more meaningful chemosystematic investigations. Thus it is not surprising to find only a single systematist (V. H. Heywood) contributing to the 18 papers which comprise this volume, a compilation of the papers presented before the Phytochemical Society of England in April 1965.

Actually the book may be viewed as a somewhat thinner, second edition of *Chemical Plant Taxonomy* (Academic Press, 1963), also superbly edited by T. Swain, for about one-third of the authors are the same (Bate-Smith, Eglinton, Harborne, Hegnauer, Kjaer), and for the most part each has treated the same group of compounds he treated in the 1963 text. Consequently the editor describes the more recent contribution "as a necessary up-to-date report showing the . . . progress made in the field in the last year or so." The progress referred to (as discerned from the reports submitted by those who have contributed to both texts) has been more in the accumulation of new data than in the acquisition of new taxonomic insights derived from these data. This has been recognized by the authors themselves, and their rewrites are mostly concise (for example, Hegnauer's account of the comparative chemistry of alkaloids is remarkable for its extensive "tabular-reference list" documentation).

New contributions of considerable interest to plant systematists include those of E. A. Bell (free amino acids, mostly relating to the Leguminosae); T. J. Mabry (betacyanins and betaxanthins, relating to the Centrospermae—the data make possible a most incisive phyletic treatment); H. W. L. Ruijgrok (ranunculin and cyanogenetic compounds, relating to the Magnoliales, in particular to the Ranunculaceae); E. C. Bate-Smith and T. Swain (asperulosides and acubins, mostly relating to the Gamopetalae); and C. Mathis (hydroquinones in both animal and plant kingdoms).

Some of the papers have little or no systematic relevance, as indicated by T. W. Goodwin's account of the carotenoids ("a study of carotenoid distribution in fruit cannot have profound taxonomic significance") and H. Wagner's account of the flavonoid *C*-glycosides, in which taxonomic relevancies are not even mentioned (rightly so, for there appear to be none). One of the papers—A. H. Williams' on dihydrochalcones—is written in the vein of plant taxonomists of an earlier generation, for Williams seems preoccupied with sorting trivia, or else engrossed with raising needless questions as to a compound's presence or absence in natural populations (for example, why should "two specimens of a single species of plant [contain] two completely different phenolic compounds which have no close chemical relationships"?).

Other authors include C. Mentzer (biogenetic classification of plant constituents), J. D. Bu'Lock (biogenesis of natural acetylenes), G. Weissmann (distribution of terpenoids), and E. Percival (distribution of polysaccharides). R. E. Alston's paper, "Chemotaxonomy or biochemical systematics?", bridges the gap between Heywood's purely taxonomic purview and the more technical accounts noted above. Alston says what he has to say very well indeed; mortar of this sort is needed if chemosystematics is to become something more than lists of compounds and chromatographic spots.

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For Mathematicians et al.

Excursions in Number Theory. C. STANLEY OGILVY and JOHN T. ANDERSON. Oxford University Press, New York, 1966. 176 pp., illus. $5.

Ogilvy and Anderson aim to make the excursions they provide here "educational and entertaining . . . for the general reader who has had no more