and botanists, and thanks to a strong emphasis on the pharmacological side of ethnobotany, to pharmacists as well, even *zoopharmacognosists*: "Homo might have learned to use plants for medicines or other purposes on the basis of observed animal behaviour".

Cotton's introductory quote suggests that the best ethnobotanist would be an ethnic minority trained in botany and anthropology. Interestingly he draws this introductory quote from another good ethnobotany book, published a year earlier by Martin. One hundred years apart, Harshberger in 1896 defined ethnobotany as "the use of plants by aboriginal peoples", while Cotton in 1996 considers ethnobotany "to encompass all studies which concern the mutual relationship between plants and *traditional peoples*."

Cotton has produced twelve chapters, (1) introduction, (2) plant structures, (3) traditional botanical knowledge, (4) ethnobotanical methodology, (5) subsistence, (6) agriculture and domestication, (7) material culture, (8) traditional phytochemistry, (9) indigenous philosophies, (10) paleoethnobotany, (11) applied ethnobotany, and (12) sustainable development. The book's greatest offering to me is a plethora of valuable tables, many with dollar data on the ethnobotanicals.

Those of us interested in evolutionary diets, i.e., diets consumed by the primitive ancestors of modern man, will also find much of interest, e.g., the history of many in Australia. The first Australians arrived from Indonesia ~40 000 years ago. When European pioneers arrived in 1788, there were 500 000 aborigines with 500 distinct language groups. The population fell to 60 000 by the 1890s, but today there are 250 000 Aborigines, mostly urban. Thus, the Australian Aborigines have had two to four times as long to coevolve with their flora as the Amerindians are estimated to have been in America. Historically, nomadic groups of the vast central desert relied fairly heavily on the seeds of wild grasses like wild millet (*Panicum decompositum*). Elsewhere, others depended on underground storage organs (*Dioscorea*, *Microseris*, *Nymphaea*). "During periods of seasonal stress, Aboriginal groups have often used food plants which, although rich in nutrients are inherently toxic, and require sophisticated processing" (*Cycas*, *Dioscorea*, *Macrozamia*). So add Australia to Africa, America (N & S), and Asia as continents on which wild yams served as important foods for the Aborigine. So humankind and her genes have had a long flirtation with diosgenin, the chemical precursor for many steroid hormones.

There are some interesting surprises among the examples of various ethnobotanical uses of plants, and that to me was the most refreshing part of the book. I recommend it, not only as a textbook, but as interesting reading for scientists of many disciplines.

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Biomedical Frontiers of Fluorine Chemistry. Edited by Iwao Ojima (State University of New York at Stony Brook), James R. McCarthy (Neurocrine Biosciences, Inc.), and John T. Welch (State University of New York at Albany). American Chemical Society, Washington, DC. 1996. xi + 356 pp. 15 × 22.5 cm. $99.95. ISBN 0-8412-3442-6.

In the organic chemistry of fluorine, there have been three distinct breakthroughs: refrigerants (1930), plastics (around (1940), and pharmaceuticals (late 1950s). Up to 1970, only a few fluorinated pharmaceuticals had practical applications: inhalation anesthetics, fluorosteroids, fluorouracil, and a few others. By 1990, some 35 fluorinated pharmaceuticals were on the market. Today, over 160 fluorinated pharmaceuticals and 100 fluorinated pesticidies are commercially available, according to Becker's *Inventory of Industrial Fluoro-Biochemicals*. A thorough study of biochemical and medicinal aspects seems to be a center of gravity of the present research in organic fluorine chemistry.

The book, very appropriately entitled *Biomedical Frontiers of Fluorine Chemistry*, summarizes accomplishments in this field, especially over the past 5 years. It has been assembled from three American Chemical Society Symposia held in 1995: "Fluoroamino Acids and Peptides in Medicinal Chemistry" (Iwao Ojima), "Fluorine in Drug Design" (J. R. McCarthy), and "Fluorine in Biological Chemistry" (J. T. Welch). In addition to the papers selected from these three symposia, some additional chapters written by other experts in this field have been included.

The first of the 23 chapters is an overview of trends in research on biomedical fluorine compounds. Strong electronic effects and the relatively small steric requirements of fluorine and trifluoromethyl groups, and the effects of replacement of carbonyl oxygen by CHF and CF_2 groups, are leads to clarifying the mechanisms of action of some fluorinated compounds and to their practical applications. An important role of fluoro compounds is the inhibition of many enzymes such as proteases, hydrolases, transformases, synthesases, renin, and others. In this way, some fluoro compounds are active against cancer, viruses such as hepatitis B virus, common cold virus, HIV virus, and others. Fluoro compounds are used as antibacterials, antimalarials, antifungal agents, antidepressants, antiinflamatory agents, anorectic agents, and possibly for treatment of Parkinson's and Alzheimer's diseases.

The following chapters elaborate on the syntheses and biological effects of individual types of compounds and contain much interesting and helpful information. Thus, an elegant method for the synthesis of enantiopure fluoroamino acids is based on aldol condensation of fluorinated aldehydes with glycine attached to the nickel complex of a chiral auxiliary. The incorporation of trifluoromethyl-substituted amino acids into peptides retards proteolytic degradations and enhances lipophilicity. Trifluorinated amino alcohols play a role in enzyme inhibition. Chiral fluorocyclopropane-containing amino acids impart rigidity necessary for the study of conformational requirements for receptor specificity. New fluoroprostacyclins were found to be active against platelet aggregation and to possess antianginal activity. Chiral 6,6,6-trifluorosugars are prepared by enzymatic resolution or by a silylation method. Fluoroamino acid

derivatives of folic acid and methotrexate act as enzyme inhibitors, and similar effects were observed in some fluoroolefin isosteres. Special chapters are devoted to fluorosteroids and fluorotaxoids as potential anticancer agents. Fluorinated nucleosides are currently used as anticancer agents and also show antiviral activity against HIV. The effects of fluorinated amino acids, amines, catecholamines, and other compounds on the central nervous system are the object of a chapter dealing with neurotransmitters. Finally, the book is concluded by a chapter showing the importance of ^{18}F labeling of compounds for positron emission tomography (PET).

The book is written in a clear and concise style, and the text is accompanied by abundant formulas and documented by some 1100 references. The subject index (only 10 pages) could have been more comprehensive, and the book should have a real author index; the list of contributors is not enough. Researchers often associate certain findings and discoveries with the names of the authors of the lectures and papers, and a list of all the authors in the references would be helpful.

Overall, the book is very valuable and is a must for researchers on biologically active fluorine compounds.

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