PLANT SCIENCE BULLETIN

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BOTANICAL SOCIETY OF AMERICA

What would you include if you were asked to list some of the helpful resources available in the United States to support botanical research? Most of our lists would include major gardens such as the Missouri Botanical Garden or the New York Botanical Garden. They would also include university herbaria and the Smithsonian Natural History Museum. Government centers and even private industrial research centers would make some peoples' lists. But there is another gem, housed at Carnegie Mellon University in Pittsburgh, that deserves wider recognition among botanists. This is an institution that I knew about, but didn't know much about. I think many of you are probably in a similar situation. For this reason I asked Angela Todd, of the Hunt Institute for Botanical Documentation, to submit the following article to held educate some of us about the resources that are available there.

-editor

Hunt Institute for Botanical Documentation: A Center for Science and History

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University in Pittsburgh, Pennsylvania, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service.

Hunt Institute was founded in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971, the Hunt Botanical Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography, and the Library. The departments provide reference services and make the research collections accessible to others. The collections are available for on-site use by appointment and subject to restrictions placed upon materials by donors or by the Institute. The current collections include approximately 28,000 books; 24,000 portraits; 30,000 prints, drawings and watercolors; and 2,000 autograph letters and manuscripts.

The Institute's Archives department acquires, documents and preserves the evidence of past and present activities of individuals and institutions in the development of plant science worldwide. The Archives includes materials by and about botanists and others working in the plant sciences, including horticulturists, ecologists, botanical artists, and botanical organizations. The collection features citations of published biographical accounts; portraits and field photos (such as Agnes Chase in 1920s Brazil on the next page); curricula vitae; manuscripts and letters; personal and institutional papers; records, reports and journals of botanical societies; reprints of biographical articles; and oral-history interviews.

One of the special collections housed in the Archives department is the papers and library of Michel Adanson, consisting of annotat-

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ed books, letters, manuscripts, certificates, official documents, drawings, and maps by Adanson, his plate collection, herbarium specimens, portraits, and "objets de botanique."

A detailed synopsis of holdings in the Archives, *Guide to the Botanical Records and Papers in the Archives of the Hunt Institute*, is being published in parts and is currently done through Part 3, G–H. *Catalogue of Portraits of Naturalists, Mostly Botanists, in the Collections of the Hunt Institute, The Linnean Society of London, and the Conservatoire et Jardin Botaniques de la Ville de Genève* is also being published in parts and is currently done through Part 3, E–H. For further information about Archives' holdings or to place requests, please contact Assistant Archivist Angela Todd at 412-268-2437 or at3i@andrew.cmu.edu.

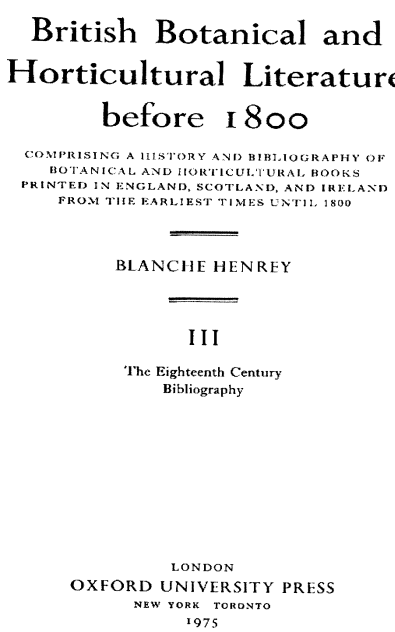
The Art department holdings include over 30,000 original paintings (mostly 20th-century watercolors), drawings and original prints dating from the Renaissance to the present. These holdings constitute one of the world's largest collections of botanical art and illustration. The department serves as an international center for the study of botanical art and illustration, acting as a repository for botanical artworks, providing information on artists working with plant themes and worldwide holdings of botanical art, and organizing and staging exhibitions. The department also offers ready-to-hang traveling exhibitions to museums, schools, botanical gardens and other institutions

The special collections housed in the Art Department include the Ann Ophelia Todd Dowden Collection, the Hitchcock-Chase Collection, the Torner Collection of Sessé and Mociño Biological Illustrations (see below for a reproduction from this collection), and the U.S.D.A. Forest Service Collection.

The art collection is fully catalogued, and the whole catalogue is in machine-readable form. A consolidated printed catalogue of our botanical artworks, titled *Catalogue of the Botanical Art Collection at the Hunt Institute*, has been published in nine parts. For further information about the Art Department, please contact Curator of Art James J. White at 412-268-2440 or jw3u@andrew.cmu.edu.

The Institute's Bibliography department identifies, locates and examines the literature of the plant sciences to make records of essential information from which bibliographical tools can be created and published. These records enable the plant scientist, historian, plant utilizer, educator or general reader to retrieve and exploit the intellectual content of the literature.

The Bibliography department utilizes published bibliographies (such as Blanche Henrey's, see below), and maintains comprehensive data files on the history and bibliography of botanical literature. Data files include the


British Botanical and Horticultural Literature before 1800

COMPRISING A HISTORY AND BIBLIOGRAPHY OF BOTANICAL AND HORTICULTURAL BOOKS PRINTED IN ENGLAND, SCOTLAND, AND IRELAND FROM THE EARLIEST TIMES UNTIL 1800

BLANCHE HENREY

III

The Eighteenth Century Bibliography

LONDON
OXFORD UNIVERSITY PRESS
NEW YORK TORONTO
1975

following: title-list of all life-sciences periodicals that include botanical literature; author-arranged bibliographical files of plant-science books and periodical articles published in the period 1730–1840; author-arranged file of references to contemporary reviews and announcements of plant-science books published in the period 1730–1840; bibliography of secondary literature relating to life-sciences periodicals; bibliography of reference literature on the plant sciences; bibliography of the instructive literature on natural-history illustration (including photography), 1450-present; directory of natural-history manuscript, library and graphics resources in North American institutions; index to information about the preservation or dispersal of past naturalists' personal libraries; historical directory of graphic-arts printing firms and related specialists working in the British Isles, 1750–1900; biographical index to printmakers working in the British Isles 1750–1900.

Among the bibliographies prepared from our files is the recent *B-P-H/S*, a supplement to *Botanico-Periodicum-Huntianum* (out-of-print). A fully revised second edition of *B-P-H* is in preparation. For information about the Bibliography Department, contact Bibliographer Gavin Bridson at 412-268-2438 or gb1q@andrew.cmu.edu.

The Library identifies, acquires, conserves, catalogues, and provides access to published materials relating to botany and its history, with an emphasis on systematics. Known for its collection of historical works on botany, the Library is a non-circulating research collection consulted by the Institute's staff, visiting scholars and the public. The collection features botanical publications that date from the late 1400s and focuses on the development of botany as a science and includes modern taxonomic monographs, floristic works and serial titles in the plant sciences. Highlights of the collection include: early herbals and taxonomic works; early horticultural works; color-plate books from the 17th, 18th and 19th centuries; accounts of travel and exploration relating to plant discovery.

The special collections maintained by the Library include the Strandell Collection of Linnaeana, a collection of some 3,500 books documenting the impact of the work of Carl Linnaeus on the history of botany and biology and including the works of Linnaeus and his students; and the Michel Adanson Library, which includes 127 books used and annotated by the 18th-century naturalist as he developed his theories and his botanical classification system (see next page). Approximately 70% of the Library's catalogue records are available online, with additional records being added weekly. The Carnegie Mellon University Libraries' online

FAMILLES
naturelles DES
PLANTES.
Par M. ADANSON, de l'Académie des Sciences,
Contenant une Préface Historique sur l'état ancien & actuel de la Botanique, & une Théorie de cette Science.
Tot generibus herbarum, utilitatibus hominum aut voluptatibus genitis recensitis, quantò plura restant, quantò que mirabiliora invenit! PLIN. Hist. nat. Lib. 22 Progem.
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catalogue <cameo.library.cmu.edu> contains records from all of Carnegie Mellon's campus libraries, including those of Hunt Institute. For information about the Library holdings, contact Librarian Charlotte Tancin at 412-268-7301 or ct0u@andrew.cmu.edu.

Major involvement in the Flora of North America (FNA) project is a notable component of the Institute's long-term research program. This binationally collaborative endeavor has been undertaken by a consortium of 30 institutions and hundreds of botanists. Flora of North America will comprise 30 volumes when completed. Volumes 1 and 2 were published in 1993, Volume 3 in 1997, and Volume 22 in 1999. The Flora includes scientific and common plant names, illustrations, identification keys, descriptions, distribution maps and other biological information. Until now, no single work has systematically surveyed and classified the more than 20,000 plant species known to grow on the continent north of Mexico. The Flora is an authoritative resource for those working in the fields of conservation, agriculture, natural-resource management, zoology, environmental assessment, and medical research, as well as in botany itself.

For more information about the Flora of North America editorial center at the Institute, please contact the Editorial Coordinator, Elizabeth Polen, at (412) 268-4707 or kiser@andrew.cmu.edu. If you would like to know more about the FNA project in general, see the FNA Web site, www.fna.org.

We invite those individuals who share the Institute's interests to join our Associates program. Regular Members ($25.00 level) receive either the current issue of *Huntia*, the Institute's journal of botanical history, or the current art exhibition catalogue; Patrons ($100.00 level) receive both. The benefits of membership include the following: a subscription to the *Bulletin*, the Institute's newsletter; discounts on Institute publications, cards, and reproductions; a page-charge waiver on articles accepted for *Huntia*; invitations to exhibition preview receptions; preferential eligibility for sale of duplicate books and unaccessioned artworks; preferential query service; discounts on photocopying services; and eligibility for staff volunteer program in curation and research.

For further information about Hunt Institute collections and publications, please visit our Web site at huntbot.andrew.cmu.edu or contact the Institute via telephone at 412-268-2434 or via mail at Hunt Institute for Botanical Documentation, Carnegie Mellon University, Pittsburgh, PA 15213-3890.

Compiled by Elizabeth Polen, Angela Todd, and Scarlett Townsend

Graphics by Frank A. Reynolds

BSA Endowment Fund Grows by Gift from Two Deceased Members

The BSA Financial Advisory Committee, charged with receiving and investing gifts for the BSA Endowment Fund, received notice late last year that the Society was to receive a major gift from the estate of the late Drs. Richard and Deana Klein, long-time members of the Botanical Society of America. Their contributions to the field of botany and the Society were numerous and can be read about in more detail below. Suffice it to say their gift, in excess of $200,000, sets an example for the entire Society membership in understanding the depth of feeling that these two individuals had about plants and about a Society whose mission is to promote all aspects of basic plant biology. The Kleins' generous gift will be added to the ever-growing Endowment Fund that already has begun to support Society initiatives determined by the Executive Committee and Council. For information about how you can contribute to the Society, contact by letter the BSA Business Office / Endowment Fund, 1735 Neil Avenue, Columbus, OH 43210-1293; by phone (614) 292-3519; or by email hiser.3@osu.edu - You will be put in contact with the Chair of the BSA Endowment Committee.

Richard M. Klein 1923-1997; Deana Tarson Klein 19XX - 1999

Both Dick and Deana received Bachelors, Masters, and Doctoral degrees from the University of Chicago. Dick, who served in the US Army Medical Corps in Europe during WWII, received his Ph.D. in Botany and

Biochemistry in 1951 on nutrient influences on crown gall formation in tomato. Dean received her Ph.D. in Botany in 1952 for work on the nutrition and distribution of *Pilobolus*.

After several years in New York City (Dick worked as Asst, Assoc., then A.H. Caspary Curator at the New York Botanical Gardens), they moved to Vermont. Dick accepted a position as Professor of Botany at the University of Vermont, while Deana was appointed to the faculty at St. Michael's College. Both taught and conducted research in Plant Physiology. During the course of their careers, they served as advisors and mentors to hundreds of undergraduates and dozens of graduate students.

Together and separately they published in both the popular and scientific press on a wide variety of biological science topics (from-photobiology to forest decline), amassing over 200 publications during their lifetimes. Dick authored or coauthored several books, including „Discovering Plants", „Research Methods in Plant Science", and „The Green World." Together they authored „Fundamentals of Plant Science." Dick and Deana were active a number of professional societies, particularly the Botanical Society of America and the American Society of Plant Physiologists and served on numerous review committee and editorial review boards. Dick served as editor of *Plant Science Bulletin* from 1975-1980. Deana achieved the rank of Professor Emerita in 1991, and Dick was appointed Professor Emeritus in 1992. They continued to be active even in retirement, finishing manuscripts and investigating subjects of interest.

Dick and Deana enjoyed nature which they experienced through travel, gardening/bonsai, hiking and snowshoeing, and bird-watching. They were spectators and supporters of the theater and ballet. Richard M. Klein passed away after a brief illness in 1997(see PSB Vol 43(3):103). Deana T. Klein died suddenly in 1999. They were married for 50 years. They had no children. -Tim Perkins, University of Vermont.

Young Botanist Awards

Certificate of Special Achievement

Brian Barringer	University of California, Davis
Jill Brown	Ohio University
Jeremiah Busch	University of Chicago
Erica Carlson	Ohio University
Jennifer Dean	Ohio University
Sarah Emery	Denison University
Susan Emmert	S. Illinois Univ., Carbondale

Cheryl Hackworth	Univ. of California, Los Angeles
Karen Hayden	University of Tennessee
Thomas H. Johnson	S. Illinois Univ., Carbondale
Angela Kerber	Eastern Illinois University
Jessica R. Lucas	S. Illinois Univ., Carbondale
Yimei Lin	Univ. of California, Los Angeles
Steven McGreevy	Saint John's University
Terry Miller	S. Illinois Univ., Carbondale
Kristi Niehaus	Salisbury State University
Stephen Ratzel	Ohio University
Madeline Segert	S. Illinois Univ., Carbondale
Anne Senters	Washington State University
Brent Todd	Eastern Illinois University
Peter Voth	University of California, Davis
Sarah Wilhoite	Miami University
Sean Whitcomb	S. Illinois Univ., Carbondale

Certificate of Recognition

Nicholas Asselin	Connecticut College
Karen Balkey	Miami University
Rebekah Grassl	Connecticut College
Tracy Harrison	Miama University
Marisa Heath	California State Univ., Chico
Drew Johnson	California State Univ, Chico
Lauren Magee	Miami University
Jenna Malarkey Hill	Oregon State University
Patrick Paumier	University of California, Davis
Holly Sebby	S. Illinois Univ., Carbondale
Sumer Seiki	University of California, Davis
Kristin Skinner	Oregon State University
Andrew Wagner	Miami University

Oregon Convention Center

6-10 August, 2000 Portland, OR

Botany 2000

SECTION PROGRAM CHAIRS

See the BSA web site http://www.botany.org/ or contact the appropriate section chair below for additional meeting information.

BRYOLOGICAL AND LICHENOLOGICAL SECTION – ABLS

William R. Buck, Institute of Systematic Botany, New York Botanical Garden, Bronx, NY 10458-5126. Tele: (718) 817-8624, Fax: (718) 562-6780, E-mail: <bbuck@nybg.org>.

DEVELOPMENTAL AND STRUCTURAL SECTION

Elizabeth M. Harris, Ohio State University Herbarium, Museum of Biological Diversity, 1315 Kinnear Road, Columbus, OH 43212. Tele: (614) 292-3296, Fax: (614) 292-3009, E-mail: <harris.690@osu.edu>.

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Felix G. Coe, Tennessee Technological University, Department of Biology, Box 5063, Cookeville, TN 38505- 0001. Tele: (931) 372-6257, Fax: (931) 372-6257, E-mail: <fcoe@tntech.edu>.

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PTERIDOLOGICAL SECTION – AFS

Thomas A. Ranker, Department of EPO Biology, Campus Box 350, University of Colorado, Boulder, CO 80309-0350. Tele: (303) 492-5074, Fax: (303) 492-8699, E-mail: <ranker@stripe.colorado.edu>.

SYSTEMATICS SECTION

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TEACHING SECTION

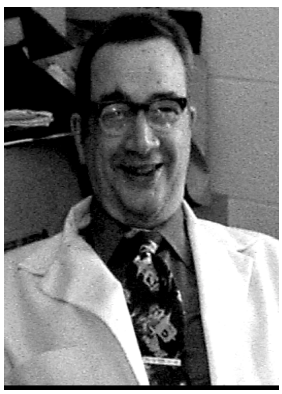
Rob Reinsvold, Department of Biological Sciences, 501 20th Street, University of Northern-Colorado, Greeley, CO 80639. Tele: (970) 351-2716, Fax: (970) 351-2335, E-mail: <rjreins@bentley.unco.edu>.

TROPICAL BIOLOGY SECTION

Susanne Renner, Department of Biology, 8001 Natural Bridge Road, University of Missouri-St. Louis, St. Louis, MO 63121-4499. Fax: (314) 516-6233, E-mail: <biosrenn@admiral.umsl.edu>.

Announcements

In Memoriam:



Ernst Cleveland Abbe, 1905-2000

Professor Abbe, Professor Emeritus of Botany at the University of Minnesota, died March 15, 2000. He was born August 21, 1905 in

Washington, D.C. and earned his B.S. (1928) and Master's (1930) degrees from Cornell University, the latter under the tutelage of A.J. Eames. In the same year he married Lucy Elizabeth Boothroyd. He received his Ph.D. in Biology from Harvard University in 1934, under the mentorship of R.H. Wetmore. After a National Research Council Fellowship with Sinnott at Columbia, he moved to a faculty position at the University of Minnesota where he was a member of the Botany Department until he retired in 1974. Twice during his tenure, 1944-47 and 1962-67, he served as Department Chairman. During his tenure at the University, he made a lasting impact on science teaching, scientific research and administration in the state. He was active in the Minnesota Chapter of Sigma Xi, serving as president in 1947-48, and encouraged his students to become active members. In 1982 he received the Chapter's "Distinguished Service Award." He was instrumental in revitalizing the Minnesota Academy of Science, in which he served as vice-president (1951-52) and president (1952-53). The Abbe laboratory was always well represented at Academy meetings; all of his students, from Bernie Phinney and Otto Stein in the 1940's through Martin Goffinet and Marsh Sundberg in the 1970's "cut their professional teeth" at the Minnesota Academy of Science.

Abbe's early research was on inflorescence and floral anatomy of the Betulaceae. Through the 1940's and 50's he turned his attention to the maize plant and more than 25 papers and articles on maize morphogenesis flowed from the laboratory. Many of these were investigations of the role of various mutants in altering developmental patterns. Later he returned to comparative studies of amentiferous taxa, particularly the Myricaceae. His last major publication was "Flowers and inflorescences of the 'Amentiferae'" Botanical Review 40(2):159-261, 1974. During his career he was the recipient of a number of awards, including a Guggenheim Fellowship at Harvard University (1941-42) and a Fullbright Professorship at the University of Singapore (1961-62). He participated in the Grenfell-Forbes Northern Labradore Expedition, 1931; the University of Minnesota Expedition to Hudson Bay, 1939; an expedition to Mt. Kinabalu on Borneo, 1962; and expeditions to Malaysia in 1959-60 and 1964. He was a Fellow of the American Association for the Advancement of Science and a Fellow of the Linnean Society of London.

Following retirement he remained active in research and mentoring and could be found daily in the now Plant Biology Department into the early 1990's. Dr. Abbe contributed his extensive preserved plant collections to the University of Minnesota Herbarium and was instrumental in expanding it into an important regional and international collection within the Department.

Dr. Abbe is survived by a sister, Elfriede Abbe of Manchester Center, VT; two sons, Robert C. Abbe of Newton, MA and David C. Abbe of San Diego, CA; six grandchildren and seven great-grandchildren. Memorial gifts whould be made to the Ernst C. and Lucy B. Abbe Scholarship, College of Biological Sciences, at the University of Minnesota.

-Marsh Sundberg, Emporia State University

Tharl Richard Fisher. 1921 - 2000.

T. Richard Fisher, age 78, plant taxonomist specializing in *Heliopsis, Siliphium* and other related genera of the Compositae, died from a heart attach 11 February 2000, in Queenstown, New Zealand. He was on a three-week vacation trip with his wife, Charlotte, and 36 other mostly senior citizens as a group touring New Zealand and Australia. Dick Fisher was a vibrant, energetic, and friendly individual who loved plants. He imparted that genuine enthusiasm to his general botany and horticulture classroom students, a large number of whom decided to pursue a major in botany or horticulture, and who then continued with related life careers. Some of them became professional botanists teaching at the college or university level.

Born 23 December, 1921, in Brownstown, Illinois, Fisher graduated from nearby Vandalia High School in Vandalia. While serving in the U.S. Army during World War II, he was stationed on the Philippine Islands. Concentrating his studies in botany, zoology, and physical education, Fisher received a B.E. at Eastern Illinois State (now University) Teachers College (1947), taught high school biology and physical education in Stockton, Illinois (1947-1950), and earned the Ph.D. in botany at Indiana University (1954). His dissertation was on the systematics of the genus *Heliopsis* (Compositae) completed under the guidance of Charles B. Heiser, Jr. and published in the *Ohio Journal of Science* (57:171-191). Fisher held teaching and research professorships at Appalachian State Teachers College (now University) in Boone, North Carolina (1954-1956), The Ohio State University (1965-1968), and Bowling Green State University, Ohio (1968-1988).

Dick Fisher was hired as an instructor in botany at The Ohio State University to develop an active graduate-level program in plant systematics, designing new courses to teach and receiving federal grants to support research. During the twelve years at OSU, he advanced to full professor in eight years. Eight M.S. and eight Ph.D. degrees were earned by 13 students under his advisorship, and in 1965 he made possible the hiring of Ronald L. Stuckey, an additional faculty member, into the program. He designed a course in field botany that he taught for twelve summers from 1957 to 1975 at the University's F.T. Stone Laboratory, Put-in-Bay. As a past member of the American Society of Plant Taxonomists, he served as the Society's local host when the organization held its annual meeting with the American Institute of Biological Sciences at The Ohio State University (1968).

Fisher was selected in 1968 as chairperson to develop the graduate program in the Department of Biology at Bowling Green State University, Bowling Green, Ohio. Among his many accomplishments was the preparation of the documentation resulting in accreditation to the University to grant the Ph.D. degree in the Biological Sciences. Following resignation of the chairperson position in 1974, he continued as a faculty member designing and teaching courses in horticulture until retirement in 1983, when he was named Professor Emeritus of Biology. He continued teaching part-time there until 1988.

While at Bowling Green, Fisher served as an advisor and member of the Board of Trustees of the non-profit Schedel Foundation, which now maintains a 17-acre public Arboretum and Garden, about 22 miles northeast of Bowling Green at Elmore, Ohio. In 1989, Fisher was named the Arboretum's first executive director, serving until 1998. During that time he vastly improved the facility, making it a garden show place that attracted large numbers of visitors and organizations from throughout northwestern Ohio and elsewhere.

An avid gardener, Dick had his own garden and greenhouse in Bowling Green, where for twenty years he persistently worked toward developing a special chrysanthemum that would bloom earlier and thought a "full season." Fisher wrote two books: A laboratory manual, *Introduction to Horticulture*, T.I.S., Bloomington, IN (1978, Rev. 1979), and the *Vascular Flora of Ohio: Asteraceae (Compositae)*, a project of the Ohio Academy of Science, published by The Ohio State University Press (1988). In 1997, he was a recipient of the Herbert Osborn Award in recognition of his contribution to the knowledge of the vascular flora of Ohio, presented by the Ohio Biological Survey.

T. Richard Fisher is survived by his wife, Charlotte Mary (Greene) Fisher of 56 years, two sons, Michael and Jonathan, two daughters, Ann (Fisher) Otley and Mary (Fisher) Kirk, and eight grandchildren. Since 1957, the family has maintained a summer home at Lake Erie on South Bass Island at Put-in-Bay, and since about the mid-1980s, they have lived in a winter home in North Fort Myers, Florida. Memorials may be made to the T. Richard Fisher Scholarship Fund at BGSU, the Schedel Arboretum and Gardens, or the Lake Erie Island Historical Society. A memorial service was held at the Schedel Arboretum in Elmore, 21 May, 2000.

-Ronald L. Stuckey, The Ohio State University

Personalia

Gery Allen

The New York Botanical Garden is pleased to announce that Gery Allen, currently a post-doctoral fellow at the Laboratory of Molecular Systematics, National Museum of Natural History, Smithsonian Institution, Washington, D.C., is the recipient of the **Rupert Barneby Award** for the year 2000. Dr. Allen will be studying the phylogenetic systematics of *Lotus* (Fabaceae) and other genera of the Loteae (Faboideae).

The New York Botanical Garden now invites applications for the **Rupert Barneby Award** for the year 2001. The award of US$1000.00 is to assist researchers to visit The New York Botanical Garden to study the rich collection of Leguminosae. Anyone interested in applying for the award should submit their curriculum vitae, a detailed letter describing the project for which the award is sought, and the names of 2-3 referees. Travel to the NYBG should be planned for sometime in the year 2001. The application should be addressed to Dr. James L. Luteyn, Institute of Systematic Botany, The New York Botanical Garden, Bronx, NY 10458-5126 USA, and be received no later than December 1, 2000. Announcement of the recipient will be made by December 15th.

Anyone interested in making a contribution to **The Rupert Barneby Fund in Legume Systematics**, which supports this award, may send their check, payable to The New York Botanical Garden, to Dr. Luteyn.

Symposia, Conferences, Meetings

Fast Plants/C-Ferns

Dynamic Plants for Teaching and Investigating Biology Principles

Inquiry and Hands-On Workshop For

Middle/High School Biology Teachers

Ferris State University

August 16-19, 2000

Fast Plants and C-Fern are Instructor and User Friendly

Fast Plants and C-Fern are unique teaching tools for middle and high school biology teachers. Their unique features make them easy to grow and maintain in the classroom They are excellent systems for inquiry-based instruction and student-initiated research.

Learn From the Experts who Helped Develop these Unique Plant Systems!

Paul Williams, University of Wisconsin and developer of Fast Plants, and Stephenie Baxter, C-FernProject, University of Tennessee will travel to Michigan to show you how to establish and maintain these plants, and then guide you through a series of lab activities that you can easily use in the classroom to liven up and improve your science teaching. Don't miss this unique opportunity to learn from the experts who developed these plants to meet the needs of biology teachers for addressing the national Science Education Standards.

Major in One, Learn About the Other

Participants will register for a 3-day workshop in either Fast Plants or C-Fern, but will have opportunities to explore both systems during several open-lab demonstrations.

Resources are Readily Available

Plants/spores, culture supplies, educational kits and manuals are available through Carolina Biological Supply Company. The C-Fern (http://cfern.bio.utk.edu) and Fast Plants (http://fastplants.cals.wisc.edu) web site contains information that instructors and students can use, including: background information, general culture and manipulation instructions, a photo gallery and examples of research questions.

Fast Plants Workshop

Experience Fast Plants as a vehicle for modeling inquiry, for implementing hands-on activities, and for addressing the national Science Education Standards. Explore the life cycle by measuring the impact of environment on plant growth, development and reproduction. Investigate the relationship of variation, selection and inheritance among individuals and populations. Learn friendly and engaging ways of introducing genetic principles which are adaptable for various grade levels. Ease into the variation and diversity of the plant kingdom. Explore tropisms for gravity and microgravity situations. And wrap up everything in the genre of Bottle Biology. Participants will construct the versatile Plant Light House -- your own low-cost environmental chamber, and receive a manual that includes model lab activities, instructions for growing and maintaining, and resource information.

C-Fern Workshop

C-Fern, a specially derived strain of the tropical homosporous fern Ceratopteris richardii, offers a dynamic approach to teaching many basic aspects of biology. Students can explore general biology, cell biology, genetics and ecology using hands-on activities, inquiry-based investigations and independent student-initiated research. C-Fern has rapid gametophyte and early sporophyte development which allow for investigations that can be completed typically within a two week period. All phases of gametophyte growth and differentiation, fertilization, embryo development and sporophyte growth can be easily observed using low power microscopy. The rapid development, compact growth and simple, inexpensive culture requirements make C-Fern an excellent research organism that is both instructor and student-friendly! Participants in the C-Fern workshop will learn how to prepare cultures, complete investigations and analyze data involving gametophyte and sporophyte development, germination, fertilization, chemotaxis and mono- and dihybrid crosses. Wild type and mutant cultures at various stages of development will be available for observation and experimentation. A wide variety of mutant strains are available, ranging from striking visual types like polka dot to developmental mutants and types resistant to environmental stresses from agents such as herbicides and salt. Students can use readily visible C-Fern sperm for controlled crosses between various strains or to demonstrate chemotaxis and fertilization. Large numbers of individuals can be cultured in a very small space. This allows students to work with populations and to obtain large quantitative data sets (e.g., growth rate, germination rate, population sex ratio). Participants will receive a C-Fern

Manual, basic culture supplies and will 'make and take' a C-Fern Growth Pod which allows easy maintenance of cultures.

Registration Specifics

Location: Science Building, 2nd Floor, Ferris State University, Big Rapids, MI

Lodging: A block of rooms at a special rate of $50 per night plus tax for workshop participants is available at the Super 8 Motel, located just a few blocks from FSU campus. Please call 231.796.1588 and indicate you are attending a workshop at FSU.

Registration Fee $425 (Eligible under local Eisenhower Funds) Wednesday, August 16, 1:00 p.m. to Saturday, August 19, 12 noon. Fee covers food (except Friday evening), manuals and lab supplies. Graduate credit available: 1 or 2 semester hours--$230 per hour. The workshop is consistent with the Michigan Standards and Benchmarks which are directly related to the Michigan Core Curriculum, and Michigan's Essential Goals and Objectives for Science Education in K-12. SB-CEU's will be available at no charge.

Registration Deadline: June 16, 2000

The number of participants is limited for this special workshop!

Participants are encouraged to send ASAP via email to hoerterj@ferris.edu or fax 231.591.2540 their intent to register (indicate either Fast Plants or C-Fern) before mailing their completed registration form and fee.
For additional information, telephone Jim Hoerter at 231.591.2550 or e-mail hoerterj@ferris.edu.

Register early! A letter of confirmation and map will be sent upon receipt of paid registration. Please submit one registration form per person. Tuition is nonrefundable after the registration deadline date of June 16 but may be transferred to another person. All refund requests prior to the deadline date will be given minus a $25 administrative fee. Ferris State University reserves the right to cancel the course due to insufficient enrollment.

The Biology of Small Populations

A Symposium to be held Friday, September 15, 2000 at the Chicago Botanic Garden

Many plant populations are rapidly dwindling in size due to several factors including habitat loss, fragmentation, over-harvesting, and competition with exotic species. As populations get smaller, they are more vulnerable to genetic problems such as inbreeding and drift, demographic uncertainty, and environmental variation or catastrophe. These factors tend to reduce populations size further and ultimately can drive the population to extinction. This symposium will address several of these phenomena in small populations, as well as the issues involved in small population management. Speakers include: Kent Holsinger, Martha Groom, Leonard Nunney, Peggy Fiedler, Stephen Hendrix, and Sue Gawler.

To be added to the mailing list or for information, please contact:

Education Registrar

Chicago Botanic Garden

1000 Lake Cook Road

Glencoe, IL 60022

847-835-8261

E-mail:
continuingeducation@chicagobotanic.org

Symposium on Scientific Basis for Participatory Improvement and Conservation of Crop Genetic Resources,

October 8-14, 2000. Oaxtepec, Morelos, Mexico.

Contact: Dr. Adi Damania, Symposium Facilitator, Genetic Resources Conservation Program, University of California, Davis, CA 95616-8602, USA. Tel: +1-530-754-8506. Fax: +1-530-754-8505.

E-mail: abdamania@ucdavis.edu Internet: http://www.grcp.ucdavis.edu/projects/indexe.htm

Piedmont Ecology & Conservation Symposium 2000

November 9 - 11, 2000

Co-sponsored by Daniel Stowe Botanical Garden and Schiele Museum of Natural History & Planetarium, Inc.

Purposes of the Symposium:

-Bring together researchers, educators and conservationists with knowledge of and concern for Piedmont ecosystems.
-Facilitate the dissemination of scientific knowledge and information about conservation issues relevant to the Piedmont.
-Establish a forum for individuals and organizations with interests in the Piedmont.
-Promote collaborative studies among researchers and regional institutions.

Keynote Speaker: Dr. William Schlesinger, Professor of Botany at Duke University and principal investigator for the Free Carbon Dioxide Enrichment (FACE) experiment in the Duke Forest, will present a keynote address on Friday, November 10.

Papers & Posters:

Three paper sessions and a poster session will be provided.

For information on submission of proposals for papers and/or posters, visit our information web page http://www.stowegarden.org/piedmont.htm.

CALL FOR PAPERS: Proposals are to be submitted by July 14, 2000.

To communicate with our symposium coordinator, contact Don Rhoades by phone (704) 829-1257, email rhoades@stowegarden.org, or fax (704) 829-1240.

Special Opportunities

HUNT INSTITUTE OFFERS SESSÉ & MOCIÑO BOOK AND CD-ROM FOR SPECIAL PRICE

The Hunt Institute for Botanical Documentation is offering Rogers McVaugh's *Botanical Results of the Sessé & Mociño Expedition (1787–1803) VII. A Guide to Relevant Scientific Names of Plants* together with the *Torner Collection of Sessé & Mociño Biological Illustrations* CD-ROM for a special price of $75.00. Pairing McVaugh's exhaustive accounting of the approximately 7500 plant names relating to the Expedition with the full-color digital reproductions of watercolor botanical drawings from the Expedition provides scholars with the most comprehensive information yet assembled about the botanical results of the Spanish Royal Botanica Expedition to New Spain.

Botanical Results of the Sessé & Mociño Expedition (1787–1803) VII. A Guide to Relevant Scientific Names of Plants. By Rogers McVaugh. 2000. v, 626 pp. Cloth bound, $55.00. ISBN 0-913196-68-1.

This is an annotated list of about 7500 names of plants (mostly Latin binomials) that have been generated during the last 200 years as a result of the activities of an official Spanish expedition (devoted to natural history) that began its work in Mexico in 1787 and closed out its work in the New World in 1803. The relevant names, whether officially published or existing only as manuscript names, are those that usefully can be documented to some degree, in order that a researcher may hope to identify the plant to which a name applies. Identification of the plants may be possible if their original geographic source is known, if an associated carefully drawn description, detailed illustration or a preserved specimen is available, or from a combination of the above.

Documentation may consist of a reference to a specific locality associated with the name, e.g., on a label with an herbarium specimen, or indirectly by a reference to one of the more than 400 numbered illustrations (*icones*) that were cited in the posthumous works of the Expedition's botanists, published 1887–1894. A very important contribution to documentation is the sum of the new names that have been based on the Expedition's materials during the two centuries that have

elapsed since the collections were returned to Europe.

Scientifically the Royal Botanical Expedition to New Spain was of extraordinary potential importance. Before 1800 the scientists of the Expedition had explored more widely in tropical and subtropical North America than any previous European travelers of their ilk, and always with the primary aim of producing a great new illustrated Flora Mexicana. If a summary account of the Expedition had been published when the surviving scientists returned to Europe, in the form they envisaged, it would have been a major contribution to our knowledge of the plants of tropical America.

The botanical materials gathered by the Expedition in America over many years, including descriptions, observations, illustrations, and herbarium specimens, went their several ways in the early years of the 19th century. The botanical community was scarcely aware of their existence, and even then thought of them as disparate units, of some inherent scientific interest but without any perceived relationship to the work of a real Expedition, or to one another. The illustrations became relatively well known because of the work of A. P. de Candolle and were commonly attributed to Mociño, who had brought them to the attention of de Candolle. Many duplicate specimens in Lambert's herbarium were studied and reported upon as from the herbarium of Sessé & Mociño, but at the same time many exactly equivalent specimens in other herbaria were being wrongly attributed to Pavón. The connection between the illustrations (which were in de Candolle's collection in Geneva) and the duplicate specimens distributed by Pavón (which by 1845 had become dispersed to a number of herbaria) was not well understood. The original herbarium of Sessé & Mociño, with its thousands of named specimens, remained unstudied in Madrid until after 1935. It was not generally realized until some years after the publication of *Plantae Novae Hispaniae* and *Flora Mexicana* that these works contained many hundreds, if not thousands of supposedly new names (in fact it was not until these new names were listed in the standard indexes to such names, 1929–1933). There has never been an effort to bring all this material together, collate the data from different sources, and estimate the scientific value of the whole.

In the closing years of the 20th century, almost every serious publication on the taxonomy of Tropical American plants, or on the floristics of the same region, began to include notice of these Sessé & Mociño names and to cite them in publication, often erroneously or in doubt of the history of the name, or of the proper identity of the associated plant or its geographical origin. It is our hope that this Guide will serve to answer many such questions, and enable botanists to think of the Royal Botanical

Expedition as the great enterprise that it actually was, and one that is continuing to contribute mightily to our knowledge of tropical American plants.

The Torner Collection of Sessé & Mociño Biological Illustrations. CD-ROM. Catalogue compiled by James J. White, Rogers McVaugh and Robert W. Kiger; Historical Introduction by Rogers McVaugh; Photography, Digital Reproduction, and HTML by Frank A. Reynolds. Produced by the Hunt Institute for Botanical Documentation and The Universal Library; Published by Carnegie Mellon CD Press. 1998. $40.00. ISBN 0-913196-60-6.

The CD-ROM contains 1,989 full-color digital reproductions of watercolor drawings from the 1787–1803 Spanish Royal Botanical Expedition to New Spain in the collection of the Hunt Institute, with catalogue and historical introduction. The CD-ROM is platform independent and requires a color monitor and a Web browser, preferably version 4.0 or higher of Netscape Navigator or Microsoft Internet Explorer.

Hunt Institute publications are available directly from the Institute. The 25% discount for Hunt Institute Associates applies to this offer; the quantity discount on purchases of five or more publications does not apply. For a complete list of our publications, please visit our Web site at huntbot.andrew.cmu.edu.

To order these or other publications, please contact the Institute at 412-268-2434.

Hunt Institute for Botanical Documentation

Carnegie Mellon University

5000 Forbes Avenue

Pittsburgh, PA 15213

Contact: Scarlett T. Townsend

Day Phone: 412-268-7304

Email: st19@andrew.cmu.edu

NATIONAL ACADEMY OF SCIENCES COLLOQUIUM ON *VARIATION AND EVOLUTION IN PLANTS AND MICROORGANISMS*

The papers presented at the NAS-sponsored Colloquium on *Variation and Evolution in Plants and Microorganisms* (January 27-29, 2000) will be published by the National Academy Press as a book. The anticipated date of publication is August 2000. The volume is expected to have about 300 pages. Cost will be $19.95 (paperback) or $49.95 (hardcover), plus handling and shipping. Orders placed by June 30, 2000 can be obtained at the discount price of $14.95 (paperback) or $39.95 (hardcover).

For orders received by June 30, 2000:
Number of paperback copies __ x $14.95 = _____

Number of hardcover copies __ x $39.95 = _____

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Number of paperback copies __ x $19.95 = _____

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Francisco J. Ayala, Walter M. Fitch, and Michael T. Clegg, Editors

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Francisco J. Ayala, Walter M. Fitch, and Michael T. Clegg

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G. Ledyard Stebbins, 1969

Positions Available

Asst. Professor - Plant Molecular Systematics

The Department of Botany, North Carolina State University, invites applications for a 12-month tenure track-track position as **Assistant Professor** in the area of plant molecular systematics. This position will be available August 1, 2000. We are seeking an individual to establish an innovative, competitively funded research program that addresses fundamental questions in evolution, ecology or biodiversity. Participation in the teaching program, including one course in plant systematics, is expected. A Ph.D. is required and postdoctoral research experience in plant systematics is preferred. Interpersonal and communication skills and the ability to participate in multidisciplinary interactions are required.

The Department of Botany is the basic plant science department in the NCSU College of Agriculture and Life Sciences, and is a focal point for several interdepartmental and interdisciplinary interactions. The staff includes 16 tenured faculty, 18 research associates/postdoctorals, and 31 graduate students. Areas of research emphasis within the department include cell and molecular biology, signal transduction, ethnobotany, paleobotany, ecology, and functional genomics. The department houses a Phytotron and Cell and Molecular Imaging Facility. Current extramural funding in the department is approximately $10 M. Research space is available adjacent to the Herbarium, which contains 125,000 specimens of vascular plants, mainly representing North Carolina and the southeastern US. Other available facilities include a genomics research laboratory, electron microscopy center, and a variety of field research stations. The department is part of a Genomics Program involving several academic departments. NCSU faculty also interact extensively with colleagues at nearby UNC-Chapel Hill and Duke University through seminars and symposia, including those sponsored by the NCSU Consortium for Plant Molecular Biology.

Applications received prior to June 15, 2000 will be assured of full consideration, with review of applications continuing until the position is filled. Interested persons should send a curriculum vita, statements of research and teaching interests, and three letters of recommendation to:

Dr. Niki Robertson, Chair

Plant Molecular Systematist Search Committee

Department of Botany, Box 7612

North Carolina State University

Raleigh, NC 27695-7612

North Carolina State University is an Equal Opportunity Employer and operates under Affirmative Action Policy. Individuals with disabilities desiring accommodations in the application process should contact Dr. N. Robertson at the above address.

Asst. Prof. Urban Landscape Management

The University of Nebraska – Lincoln invites applications for a 12-month tenure-leading position at the Assistant Professor rank with a 60% teaching and 40% research appointment located in the Department of Agronomy and Horticulture. Applicants should have an earned PhD in horticulture or closely related field. The instructional responsibilities include courses integral to the horticultural undergraduate core program, including herbaceous and woody plant materials and nursery/landscape management. An additional course, related to the individual's area of research expertise, and possibly at the graduate level, will also be developed. The successful candidate will advise undergraduate and graduate students in academic and research endeavors that relate to her/his areas of expertise. Research should focus on communi-

ty and residential landscapes. An emerging area of excellence within the department is low input/sustainable landscape management. Interdisciplinary and regional research projects are encouraged. Send a letter of application, curriculum vita, a copy of all transcripts and names and addresses of three professional references to Dr. Donald Steinegger, Search Committee Chair, 377 Plant Science, Lincoln, NE 68583-0724. Review of applications will begin on June 15th and will continue until a suitable candidate is found. UNL is committed to a pluralistic campus community through Affirmative Action and Equal Opportunity, is responsive to the needs of dual career couples, and assures reasonable accommodation under the Americans With Disabilities Act. Contact Dr. Steinegger at 402-472-1144 for additional information.

Postdoctoral Positions - Oklahoma

Two-year postdoctoral positions in Microbiology (one position) and in Botany (one position), with an emphasis in teaching, are available beginning August 16 at the University of Oklahoma, Norman. These are both teaching post-doctoral positions in which the successful applicants are expected to participate in introductory level courses, contribute to the development of teaching assistants, as well as revise and create inquiry-based laboratories. In addition, these individuals will help organize a Center for Undergraduate Science Education, which is intended to prepare finishing graduate students, postdocs, and new science faculty members for their first years in an academic position where teaching is emphasized. Candidates must have a Ph.D. in microbiology, botany, or related fields, and should have excellent teaching skills, experience in inquiry-based instruction, and be computer-literate and adept with educational technology, including web-based materials and computer-based laboratories. $23,000/yr with health benefits. Send letter of intent, c.v., and at least two letters of reference to Dr. Gordon E. Uno, Department of Botany and Microbiology, 770 Van Vleet Oval, University of Oklahoma, Norman, OK 73019. (send inquiries about position to guno@ou.edu). Applications accepted until positions are filled.

LAB MANAGER/TECHNICIAN

Will assist with the daily operations of molecular systematics facility. Duties will include establishing lab standards & protocols; coordinating & maintaining database of plant tissue & DNA samples; experimenting with new techniques, products & technologies; & training students & visitors in all lab techniques. BS or MS Degree in Biology or Chemistry; one year of practical lab experience; & good computer skills (MS Word/Excel) required. Excellent benefits, including 4 wks vacation. Send resume with salary requirements to: Recruiter –LM, The New York Botanical Garden, 200th Street and Kazimiroff Blvd. Bronx, New York 10458-5126

Other News

NOTABLE AMERICAN WOMEN NEEDS YOUR HELP

Which women have shaped twentieth-century American history? Time is running out for nominations to Volume V of *Notable American Women*, and there are still many women whose stories we have not yet learned. Please share with us your knowledge of women who have formed this century's social, cultural, political, scientific, and intellectual experience. Because so many women whose lives deserve more scholarly attention are not yet included in print resources, we are relying heavily upon nominations to ensure that this biographical dictionary is truly inclusive and mirrors the diversity of outstanding American women.

The first four volumes of *Notable American Women* have played a critical role in fostering teaching and scholarship in American women's history and related fields. Often *Notable American Women* has served as the first substantive source for biographical and bibliographic information about women who have received scant attention in scholarly texts. This volume will identify the contributions of previously overlooked leaders and activists and integrate these individuals' stories into the larger patterns of modern American history. With its wide range of subjects, *Notable American Women* will thus document differences (racial, ethnic, regional, class, sexual orientation, political ideology) that have divided women over the course of the twentieth century at the same time it highlights the potential commonalities of gender in shaping women's lives.

Volume V of Notable American Women will include essays on approximately 500-600 wom-

en who will have died between January 1, 1976, and January 1, 2000, with an expected publication date of 2004. This volume will follow the criteria for selection used in *Notable American Women: The Modern Period* (1980): 1) the subject's influence on her times or field; 2) ability, and innovative or pioneering work; 3) relevance of her career for the history of women. If you wish to nominate a subject (or subjects), please supply a short synopsis of her career and its importance, as well as basic bibliographic sources, both secondary and archival (if known) by June 1, 2000. We also welcome the names of scholars who are interested in writing specific articles or serving as consultants for specialized fields.

Please address all communication to:

Susan Ware, Editor

Notable American Women: Volume Five

The Schlesinger Library

Radcliffe Institute for Advanced Study

10 Garden Street

Cambridge, MA 02138

617-496-0564; notable@radcliffe.edu

The Draft PhyloCode is now Available on the Internet.

A draft of the *PhyloCode*, a formal set of rules governing phylogenetic nomenclature, is now available on the Internet (http://www.ohiou.edu/phylocode). Phylogenetic nomenclature is a new system, fundamentally different from Linnaean nomenclature, that is designed to name the parts of the tree of life by explicit reference to phylogeny. For a general introduction to phylogenetic nomenclature, see *Trends in Ecology and Evolution* 9:27-31 (1994) and *Taxon* 49:85-93 (2000). The *PhyloCode* grew out of a workshop at Harvard University in August 1998, where basic decisions were made about its scope and content. Many of the workshop participants, together with a few other people who subsequently joined the project, have served as an advisory group (participants are listed in the *PhyloCode* preface at the Internet address cited above).

The *PhyloCode* will go into operation in a few years, but the exact date has not yet been determined. Once implemented, it will function in parallel with the *ICBN* and other codes based on Linnaean nomenclature. The current draft represents several years of work but is still provisional. Some rules will undoubtedly change before the *PhyloCode* is finalized, and additional examples will be provided for clarification. Moreover, this draft governs only the naming of clades. Rules governing species names will be added to a later version, but it is not clear at this time whether this will be done before or after the rules for clade names are implemented.

The time has come to solicit comments and ideas from a broad spectrum of biologists. We hope that many members of the scientific community will examine the draft *PhyloCode* and send suggestions for improvement. Although the code has initially been developed by a small group of people, it is intended for the benefit of all biologists who study phylogeny or use clade names. The more people who help to perfect it, the better it will function. The *PhyloCode* website includes an e-mail address to which comments may be sent. It also provides instructions for subscribing to an Internet discussion group focusing on phylogenetic nomenclature.

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The Ecological History of European Forests, K.J. Kirby and C. Watkins, eds. 1998. ISBN 0-85199-256-0 (hard-cover, no price given). 373 pp. CAB International, 198 Madison Ave, New York NY 10016-4314, USA. – I did not choose to review this book because of the depth of my expertise in its subject. Although I have studied tree ecophysiology at the University of Cologne, Germany, my interest in ecological history is that of an amatuer who teaches an undergraduate ecology course at a liberal arts college. I chose to read and review this text to indulge this interest and to familiarize myself with the breadth of possible subjects and techniques in this relatively new discipline of ecological history. I am glad that I did.

Kirby and Watkins have skillfully edited 26 papers, mostly from the International Conference on Advances in Forest and Woodland History held in 1996 at the University of Nottingham, into a single volume which covers a broad spectrum of specific topics. Their Introduction provides a helpful synopsis of this diversity, emphasizing methods for studying the historical ecology of woodland, broad trends in European woodland history, interactions of grazing animals and woodland, variations in woodland, and uses of woodland history to help determine conservation priorities. The geographic scope of the subjects of the 26 papers ranges from Britain to Hungary and from Denmark to Spain. One paper even addresses the development and dynamics of agricultural parks in West Africa.

What I most appreciated about this volume was the variety of topics addressed, and the interdisciplinarity of both the individual papers and the whole collection. Some papers were strictly historical in their perspective; others explored the role of past management practices on the ecology of the woodlands. One paper used fossil trees to providing insight into past climate. Still others used the lessons of history to suggest best practices for the future conservation and management of European woodlands. Most chapters illustrated the interdisciplinarity of this field as they used techniques as varied as pollen analysis, dendrochronology, archaeology, written records, oral records, direct observations, and GIS. The field of ecology is broad by nature, but we scientists need the occasional reminder not to become so focussed on our own specialty or discipline that we neglect the possibly important perspectives of other disciplines. A second strength of this book, for a reader such as myself, is that each of the individual chapters provides a well-referenced entrée to the current research in that field while keeping to the sort of strict length-limit that presenting the papers at a conference imposed.

This brevity is also the most notable weakness of the book. When chapters provide only a taste of the subject without providing a meal, than one is left feeling tantalized rather than satisfied. This was occasionally the case for me, particularly with the chapter entitled "An Insight into Past Climate via a Fossil Tree" by Mesut Inan.

I recommend this text highly for libraries supporting undergraduate through graduate programs in ecology, environmental studies, environmental science, ecological history or interdisciplinary studies. Given the diversity of topics addressed, there are very few readers, I should think, who would not glean some new insight from these collected papers, and be glad that they did. – Jonathan Frye, Department of Biological Sciences, McPherson College, McPherson, KS 67460.

Pollination Ecology and Evolution in Compositae (Asteraceae) M.S. Mani and J.M. Saravanan. 1997. ISBN 1-886106-83-5 (cloth US$93.00) 160 pp. Science publishers, Inc., P.O. Box 699, Enfield, New Hampshire 03748. -In its thirteen chapters, this book attempts a comprehensive review of the evolution of pollination in the Asteraceae. Five chapters are devoted to the morphology of the head, including the florets; the stamens, styles and stigma; the nectary; and the pappus. Numerous drawings depicting the range of variation in each feature are included. Two chapters discuss insect visitors and pollinators and others the floral biology of and sex polymorphism in the Asteraceae. The final chapter hypothesizes evolutionary trends.

Unfortunately, I can't recommend this book. The writing is obfuscate, and will dissuade all but the dedicated. Their review of pollination ecology reads as gracefully as the Biblical begats. The text is rife with both editorial (e.g. 'the tribe Asteraceae') and factual (e.g. bees cannot see yellow or UV light) errors. As a result, the main tenet of the book, that the Asteraceae is supplanting bee pollination, for which it evolved, with more efficient butterfly pollination, is unconvincing. - Leah Larkin, University of Texas, Austin, TX 78713-7640

Spatial Pattern Analysis in Plant Ecology Dale, Mark R. T., 1999. ISBN 0-521-45227-9 (cloth US$69.95) x+326 pp. Cambridge University Press, 40 West 20th St., New York, NY 10011-4211. — Would that I had owned this book when I was a graduate student sixteen years ago! One of my first projects was a spatial pattern analysis of clone structure in the salt-marsh cordgrass, *Spartina alterniflora*. At that time (1983), there were few general references on spatial statistics, fewer still that were accessible to a beginning graduate student, and scant techniques to apply. A protracted winter spent attempting to write a FORTRAN program to calculate Moran's *I* statistic convinced me that my best approach to a successful dissertation lay in other directions. *Spatial Pattern Analysis in Plant Ecology* fills a much-needed lacuna on my bookshelf: an accessible reference on how to describe and quantify spatial pattern. Unfortunately, my programming problem remains unsolved and awaits an ecological entrepreneur.

Mark Dale has dedicated his entire career to the

mechanics of quantitatively describing spatial pattern, and this book is an excellent summary and synthesis of twenty years of research. He has organized this book into three sections of three chapters each. The first three chapters provide the basic concepts of the book, describe appropriate sampling methods, and present the fundamental methods used to quantify key attributes of spatial scale and pattern. Subsequent sections and their corresponding chapters really can only be appreciated after a thorough reading and understanding of chapter 3, in which the equations for the analysis of spatial patterns of single species in one dimension (e.g., line transects) are presented and derived. The second section (chapters 4-6) extends the methods described in chapter 3 to the analysis of assemblages composed of multiple species in two dimensions. Two of the three chapters of the final section (chapters 7-8) cover ground more familiar to plant ecologists: analysis of point pattern (or mapped) data, and pattern on environmental gradients (e.g., zonation). The final chapter looks forward to more complex and yet unsolved problems in spatial pattern analysis.

The emphasis of all of these methods is on the detection of the *scale* of a spatial pattern, which is defined as the average distance between the centers of adjacent, dissimilar phases. By way of example, consider a line transect in which you sample, in contiguous quadrats, the presence or absence of a single species of plant. This transect then consists of two phases, plants present or absent, and you want to determine if there is some predictability (*pattern*) to the presences and absences. To determine the scale of this entire transect, you could calculate the average linear distance between the centers of each string of presences and adjacent absences (the dissimilar phases). Clearly, the measure of scale depends on your quadrat size as well as the underlying patchiness of the system, which itself is based on the plants' responses to environmental (abiotic and biotic) characteristics. Scale, of course, is not limited to two-phase systems, and Dale discusses methods for determining scale of multi-phase systems as well. Other measures of spatial pattern include: its *intensity* (a measure of the difference in density between different phases); its *dispersion* (arrangement of objects in space); and the degree of *spatial autocorrelation* (spatially-dependent lack of independence among objects in space) that it exhibits. Since most plant assemblages illustrate some degree of spatial patterning, having a quantitative description of this pattern should be a prerequisite to more detailed experimental investigations of the ecological processes determining the pattern. Such a description should also provide a sense of the appropriate spatial scale on which to conduct those experiments.

Because of Dale's focus on analysis of pattern, however, little space is given to a discussion of ecological processes that could give rise to observed patterns. Dale rightly points out the dangers of inferring process from pattern, but the absence of an hypothesis-driven framework for pattern description will leave many plant ecologists puzzled as to how to proceed after they've successfully described a given spatial pattern of interest. A notable contrast can be found in chapter 8 (*Pattern on an environmental gradient*). There has been a great deal of experimental work conducted on the ecological mechanisms that determine plant distribution and abundance patterns on environmental gradients. The rigorous, hypothesis-driven statistical analyses of these experiments are reflected in the ways that Dale describes the methods for testing to see if the patterns are consistent with known processes. For researchers looking to apply the methods of this book to their own experimental work, chapter 8 provides an illustrative framework.

In sum, Dale provides an excellent overview and synthesis of current methods for describing spatial pattern. The book is readable and the mathematics are approachable (no calculus required). *Spatial Pattern Analysis in Plant Ecology* should be read by all graduate students in plant ecology together with their advisors. Each of the methods-oriented chapters (2-8) concludes with a set of concise recommendations for appropriate analysis. Most ecologists will be unable to follow through with these recommendations, however, as software for most of the described methods is not widely available. Most of the recommended methods will require on-the-fly programming, a rapidly-disappearing skill. Regrettably, Dale does not provide programming examples; even pseudo-code would have been helpful. Within the text, only the package S-Plus (MathSoft, Inc., Seattle, WA) is mentioned as having built-in routines for spatial pattern analysis, and then only briefly (basic spatial pattern statistics are also available in Systat [SPSS, Inc., Evanston, IL; version 8.0 and later]). There is a clear opportunity here for enterprising ecologists and programmers.

In the final chapter, Dale provides a look forward to the future of spatial pattern analysis. A sense of the rapidity with which this field is evolving comes from a review of the bibliography: > 70% of the references date from after 1980, with nearly half being from the last 9 years. Yet, we have no tested methods for analyzing pattern in three dimensions (e.g., arrangement of fruits on a tree or epiphytes in a canopy), although Dale presents some good extensions of the two-dimensional techniques described in earlier chapters. Similarly, the analysis of how spatial patterns change through time is in its infancy. And finally, we are a long way from understanding the ecological processes that give rise to the spatial patterns that we can measure. Dale closes with a set of questions and hypotheses about the interplay between pattern and process; there are dozens of dissertation topics in these last three pages alone. I expect this is not the last book we will see on the topic of spatial pattern. — Aaron M. Ellison, Dept. of Biological Sciences, Mt. Holyoke College, South Hadley, MA 01075.

Urban Soils: Applications and Practices. Phillip J. Craul. 1999. ISBN 0-471-18903-0 (cloth US$79.95). 366 pp. John Wiley & Sons, 605 Third Avenue, New York, NY 10158—Urban environments are home for much of the world's human population. The soils found in cities support both the built (houses, roads, etc.) and grown (gardens, parks) environments. Thus, the quality of life for many people is in part affected by these soils and the ecosystem services they provide. This volume by Phillip Craul attempts to provide a self-contained reference for professionals needing information useful for landscape architecture, horticulture, and related endeavors such as urban forestry. Presumably those designing and preparing for plantings would find this book especially helpful, as there are extensive lists of criteria to employ, the environmental parameters to consider, and methods to ameliorate soils. Specific information is provided for the considerations involved with rooftop gardens, street plantings, dry environments, and the control of soil erosion. A section giving five detailed case studies provides examples of how all these items can be considered during the planning process. This is followed by an appendix listing appropriate tests for analyzing soils, a glossary, and a list of references.

Craul begins by demonstrating the follies of inadequate planting media and of ignoring the biophysical factors that affect survival of plants. Because of costs and other concerns, he points out that (p. 7) "the soil characteristics desired by the engineer and architect are nearly diametrically opposite of those desired by the landscape architect". The bulk of the book provides the information needed to correct for this dilemma during pre-construction planning. There are detailed chapters on how sites and in particular their soils should be evaluated, on how solar radiation and the resulting heat budget affect plants in particular locations, and on how soils can be designed and constituted to permit appropriate plant growth by soil amendments. This is followed by a chapter on what should be specified in site plans for soils used with particular goals. The parameters include the texture, particle sizes, and pore spaces of the mineral portion of the soil, plus the carbon:nitrogen ratio, pH, and abundance of the organic material in the soil. The chapter on rooftop soils not only points out the need for decreasing the weight of soils used, but provides the formulae needed to make calculations of soil weight given certain soil textures and mixes. Another concern on rooftops is the great influence of wind on tree growth.

There is a chapter on drainage techniques, with strategies for improving drainage strengthened by a discussion of how water moves through the soil. There are formulae and worked examples of how to design drainage systems. This is followed by a similar chapter on irrigation design, from how plants use soil moisture to the specifics needed to plan irrigation types and rates. Another chapter looks at tree planting criteria in particular, with the soil-related concerns discussed and much additional information on the situations under which the trees will grow and special concerns when large trees are to be transplanted. The chapter on soil erosion similarly takes a broad perspective, from the causes and types of erosion, through the use of the Universal Soil Loss Equation, to the design of sediment control practices.

At times the author provides information that would typically appear in introductory textbooks on soils, hydrology, ecology, and horticulture. The advantage would be that all the topics he judged useful for designing plantings in urban soils appear in condensed form in one book. It is likely that the busy professional will find this a useful resource. Students of horticulture, landscape architecture, and forestry will consider this a useful reference.

Given the author's goals and the practicality of the resulting book, I would not criticize the approach taken. However, I would point out that many concerns that are highly relevant to urban soils are not discussed. There is no mention of contaminated soils near industrial facilities or the remediation of soils with hazardous wastes. Movements of water-borne contaminants through soils in urban contexts are not mentioned. There is little on fauna and essentially nothing on air pollution impacts. Finally, an opportunity is lost to discuss how urban and suburban sprawl transforms soils and alters conditions for the living organisms associated with those soils.—Kenneth R. Young, Department of Geography and Environmental Systems, University of Maryland, 1000 Hilltop Circle, Baltimore, MD 21250.

Biologically Active Natural Products: Agrochemicals. 1999. H.G. Cutler and S.J. Cutler Eds. CRC Press LLC. 299 pages. -It's relatively easy to overlook the fact that for most organisms, chemicals mediate their interactions with other organisms because humans – like all larger organisms - rely primarily on other

modes of sensory perception - sight and sound. Smallish creatures use chemicals to screen potential mates, seek out conspecifics, find important resources and, ultimately defend those resources (and themselves) from aggressors or competitors. A couple of examples serve to illustrate; a fungal spore that has landed in a suitable area for growth may secrete chemicals to inhibit faster-growing bacteria but may tolerate a conspecific that is a potential mating partner. And plants are notorious producers of unusual chemicals that serve to defend their acquired resources from bacteria, fungi and herbivores. We're just beginning to get a handle on how other organisms perceive and respond to their environment, and other organisms in that environment, through chemistry. Our understanding of the roles played by chemicals was, not long ago, limited by time and expense in the isolation and identification stages. Time and expense are becoming less of a problem and the pace of chemical discovery continues

to increase; a trend powered by faster computers, increasingly refined analytical techniques, and better equipment. Our ability to truly 'know' the function of these chemicals is still limited, but more by the lack of suitable, discrete bioassays that would help us to decipher their functions. This book outlines some truly remarkable success stories of identifying novel functions of important natural chemicals, isolating, identifying, discovering their mode of action, and ultimately finding ways to make them work for us - in agriculture.

This work is one of two books that derive from the 1997 (Las Vegas) American Chemical Society symposium on chemistry in the fields of Agrochemicals and Pharmaceuticals (a companion book covering Pharmaceuticals is also available). As the editors point out in the preface, we are entering an unusual phase where natural products chemistry, which has traditionally been applied to pharmaceutical problems, can now be applied to agricultural problems. Until recently, only pharmaceutical applications had any potential for economic viability (what is the value of a human life?). Any agricultural application involving chemistry could not exceed the value of the crop to be protected. Subsequently, the early days of agrochemicals focused on synthetic (hence cheap and easy to mass-produce) chemistry such as DDT and methyl bromide. More recently, as the environmental and human health costs of synthetics have been factored in, synthetics have become less viable and many have been or will soon be removed from our agrochemical arsenal. This has spurred the search for novel pesticides with high toxicity, high specificity (non-toxic to animals), and short time of residence in the environment. The relatively recent success in genetically engineering *Bt* toxin into crop plants shows that even major projects can be profitable; though the long-term viability of genetic engineering is not yet certain given the recent wave of fear and distrust fostered by the anti-genetic engineering protests.

When searching for natural agrochemicals, the logical sources include bacteria, fungi, and plants, while logical target organisms include bacteria, fungi, plants, insects, nematodes and animals. Four examples serve to illustrate the breadth of approaches outlined in this book. A chapter by Robert Hoaglund addressed phosphinothricin (PPT), a tripeptide found in *Streptomyces* bacteria that has broad herbicidal activity but is non-toxic to animals. A gene for PPT production has been used to transform plants allowing for effective control of weeds. Transgenic PPT plants also have the potential to reduce plant-pathogenic bacteria and fungi, though microbes rapidly develop resistance. Two other chapters illustrate that there are a number of other bacterial peptides (cyclic oligopeptides) with potent herbicidal and pesticidal activities that are currently being explored. A chapter by a group of NC State researchers illustrates their work to find ways that will maintain tobacco as a cash crop to benefit small-scale farmers. Their approach is to use tobacco as a bioreactor to produce a wide variety of valuable products (interestingly, low nicotine plants are preferred for this type of work). A group of Japanese scientists present an excellent idea to suppress biosynthesis of aflatoxin (a known carcinogen) by *Aspergillis* fungi commonly found on crops like peanuts and corn. This research highlights the successful use of bacterial aflastatins and blasticidins, both complex polyketides, to specifically block aflatoxin biosynthesis without harm to the fungus, thereby avoiding problems with emergence of resistance. Finally, a group of New Zealanders address problems of plant disease control through the use of beneficial biological control agents that serve to either 1) induce natural plant defenses, 2) parasitize pathogens, 3) control pathogen growth through antibiotic production, or 4) competitively exclude pathogens. One thing to note is that though chemistry is central to the theme of this book and many of the chapters provide detailed examinations of chemical compounds, the other theme is agriculture so there is a great deal of interesting biology as well. This book is very well written and each chapter is richly illustrated with chemical structures, raw data, summary data, HPLC traces, pictures, tables and graphs. Each chapter is thoroughly referenced, editing was exceptional, and the writing was overall of very high quality.

There are a few improvements that I would suggest for any similar project. The editors provided no walk-through summary of the book and never put the chapters into any kind of context. A couple of chapters didn't seem to fit well into the overall theme of the book, or if there was a connection I could have used some help to see it. Other than a grouping of allelopathy (plant-plant interaction) chapters, there seemed to be little attempt to organize the chapters in any significant way, making the lack of context more glaring. The vast majority of chapters dealt with plant-plant (8 chapters) and plant-insect (6 chapters) interactions but plant-based work is relatively new compared to work with microbial metabolites so all of these chapters tend to end by saying 'there is potential'. The most impressive chapters dealt with bacterial and fungal chemicals used (or potentially useful) against bacteria, fungi, plants and/or insects. I thought the book would have benefitted from a greater balance of chapter topics, with reduced emphasis on plant-plant and plant-insect interactions and maybe a little more on basic research and biotechnology issues. Many authors did a fine job of placing their study into a larger perspective but several chapters were highly technical and would have benefited from a broader introduction. Some of the more chemical-laden chapters mentioned Latin binomials of their organism but I had to delve into the literature to find whether this referred to a bacterium or fungus. Other chemical chapters talked of *in vitro* alterations to specific carbons but failed to provide the numbering scheme for the parent molecule that would let a non-specialist figure out what they are talking about. Overall, these criticisms are minor and the book is excellent. The chemistry can get pretty heavy at times, but this book will appeal to a much wider audience.

I highly recommend this book for institutional libraries and the personal library of those interested in the future of biotechnology. –Timothy Morton, Department of Ecology and Evolution, University of Chicago, Chicago, IL 60637-1573.

Maples for the Garden. C.J. van Gelderen and D.M. van Gelderen. 1999. ISBN 0-88192-472-5 Timber Press, Portland, Oregon — In a previous book, "Maples of the World", D.M. van Gelderen was the principle author. This more recent effort provides a photographic companion to the previous book. It is an accurate horticultural text written by a world authority. I am pleased that so much information on maples has been accurately placed in a single text.

Although the book contains brief sections on taxonomy and culture its main purpose is the photographs and descriptions of hundreds and hundreds of maples. Most of the photographs are high quality "close ups". If you were looking for an Acer from an architectural standpoint, the book would be of little use. Each photo contains a brief but informative botanical description giving the taxonomic section for the species, a description of the tree size, flowers, and fruits. The species list is exhaustive. Yet, the strength of the book is the amazing compilation of photographs of the mutations and natural variations that are presently cultivated. A large section of Acer palmatum mutations is presented but the strength of the book is its broad scope. For an American, the 'down side' to this text is that almost all of the photographs are of European origin and many if not most of the cultivars are unobtainable in the United States. Many of the more unusual maples listed here are prone to reversion, require grafting onto rootstocks, or are not adaptable to most US climates. However, if you are a rare plant enthusiast, I suggest you buy the book just for the challenge. For example, the book contains an excellent photo of a great red bark mutation ('Erythrocladum') of our native green bark moosewood (Acer pensylvanicum). The tree was isolated in 1904 in Germany but is difficult to propagate. So impressed was I, that after a lengthy search, I was able to locate a US source. The warning here is that the cost of this book is minimal when compared to the price you may pay for a maple discovered in this book.

The book contains other very nice features. A rather lengthy list of European and American gardens where maples are featured will make it easy for a frequent traveler to visit some of these interesting trees. In addition, the appendix contains a section called "Maples for Particular Purposes" which would assist a gardener in making the right selection. A great glossary, a wonderful index, and European and US plant hardiness zone maps complete the book. This is a fine example of a reference book. Throw away your "coffee table" horticultural books to make room for this gem. If you love maples (and who doesn't) this book is a treasure and a must book for the rare tree collector. It should be on the shelf of every arboretum. — Michael Marcotrigiano, Dept of Plant and Soil Sciences, Univ of Massachusetts, Amherst, MA 01003 USA

Sold on Plants; plant physiology and university life in retrospect. Alfred M. Mayer. 1999. ISBN 0-86689-052-1. Balaban Publishers, Rehovot Israel. — This short and personal autobiography of Alfred Mayer makes very good reading. In part, it makes good reading as it gives such a personal report of the life of a distinguished plant scientist, and in part as it describes so many issues and choices that are almost characteristic of the academic profession in the biological sciences.

During the rise of Hitler and Naziism in 1933, Alfred Mayer's parental family fled from Germany to Holland, leaving all of their possessions behind. Then as the German threat increased, the family fled again from Holland to England in 1940. But they arrived in England only in time to witness the Battle of London. After the war, Alfred attended University College, London, earning the PhD in 1949. He then moved to Israel in 1950, living through the various Israeli wars. These were troubled times.

One principal message I get from the book is the profound effect of strong mentors on the development of a scientist. Mayer's admiration for Botany Professor W.H. Pearsall at University College was of major importance to his development. This man's strength and patience brought Mayer through difficult times and strongly molded his scientific outlook. After moving to Israel, a somewhat parallel but more contentious interaction was had with Professor Michael Evanari. Each of these two mentors molded the scientific foci that lasted for the rest of Mayer's professional life - i.e. an enduring enthusiasm for the physiology of plants.

As Alfred takes the reader through the 50 years of his professional life, he records a litany of findings about being a professional plant biologist. These have pervasive relevance to our profession, and deserve recounting here. As a short-cut, I will use a numerical listing of some major findings in Mayer's experience.

1. He speaks of struggling with the need to exercise objectivity in research. This is a struggle we all contend with. Such objectivity is often somewhat bent when we tend subjectively to describe our progress as though it were done in a straight-line logical manner, when it really involved a scattering array of probes in various directions.

2. He speaks often about appraising the importance of our own work. Collectively, his comments seem to me to say that it may be a nice happenstance when our research results are of importance to scientists in other specialties, or to people generally, but that the central importance was our own commitment to the work and our own sense of reward

that comes from doing it.

3. For Alfred, the involvement with teaching was a keen source of fresh ideas as well as a sense of stimulus in his science, and finally as a reward in terms of the influence he himself perceives he had on his students. Most of us can resonate with his feeling that teaching is a truly important component of one's intellectual growth.

4. As he gained in stature, his invitations to other universities brought new vistas as well as new opportunities to his mind. I find it notable that he shows less enthusiasm for large national or international meetings with their multiple simultaneous sessions than he found in small meetings or personal interactions. I interpret his repeating enthusiasms for his professional visits, as defining the importance of personal interactions with colleagues. Personal visits to other laboratories was an order of magnitude more beneficial than the more impersonal interactions at science meetings.

5. His attitudes toward university administration were complex. He seemed to adapt well to a modest level of administrative duties, but then he became downright frustrated by the hassle of administering large academic units and making long-term plans. I can resonate with his sense of disappointment with administrative duties.

The last parts of the book dwell particularly on his personal life, and his devotion to his wife, Nitza. Altogether by combining the story of his personal dedication with the story of his professional growth, he gives the book a strong sense of the reality of Alfred Mayer as a person.

Alfred Mayer has clearly led an interesting and productive life as a person sold on plants. His principal message is that there is a great deal of satisfaction in doing and directing research. He recognizes the brief longevity of credit that a scientist gets for having done the work, but this brevity does not erase the sense that it has been fun. This is an interesting analysis of the life of a distinguished scientist. —A Carl Leopold, Boyce Thompson Institute of Plant Research, Ithaca, NY 14853, USA

Late Cretaceous and Cenozoic History of North American Vegetation. Graham Alan, 1999. ISBN 0-19-511342-X (cloth US$95.00) 350 pp. Oxford University Press, 198 Madison Avenue, New York, NY 10016-4314. The vegetation of North America comprises 17,000-20,000 species of vascular plants or about 7% of the world¹s flora. The author embarks in this book in a cross-disciplinary exercise describing the environmental and biotic changes occurring in the last 70 million years (late Cretaceous Period/ Cenozoic Era) to the North American Flora. The region under consideration here is north of Mexico including the United States and Canada.

Sixty-five Ma ago the Rocky Mountains were only ~1km above sea level; the Coast Ranges, Sierra Nevada and Cascade Mountains would not attain substantial heights until late in the Tertiary. The North Atlantic connection had only begun to fragment in the Maastrichtian (69-66 Ma). An entire new flora started to develop in the early Cenozoic as an asteroid collided with the earth, leaving in its wake the Chicxulub crater now buried under the Yucatan Peninsula. About 44% of the genera and 70% of the species comprising the marine plankton, large terrestrial animals (dinosaurs) became extinct at this time. This asteroid had such an impact, we had to create a major break in the geological time line coined the K-T boundary. The description of vegetation for such an extensive area involves the recognition and characterization of units called formations, which are named with reference to composition, habit, distribution, and climate. The author recognizes and describes seven plant formations in this book (tundra, coniferous forest, deciduous forest, grassland, shrubland/ chaparral-woodland-savanna, desert, and tropical.

In the first chapters of the book the author lays the goal of the survey by cataloguing the current modern vegetation found in the area studied. The next chapter is indeed devoted to what drives the arrangement of vegetation on a landscape such as plate tectonics, climate, terranes. I wish the author would have spent more time describing the diagrams outlining the feedback relationships of a particular external upon the vegetation. Paleotemperature and sea level changes are emphasized in the next chapter in terms of the proxies and the methodologies used. The Geoflora concept fundamental to paleobotany is outlined. Chaney (UCB) defined it as "a group of plants which has maintained itself with only minor changes in composition for several epochs or periods of earth history, during which time its distribution has been profoundly altered". An interesting chapter follows where methods of paleovegetation analysis are outlined. The author critically divides these methods in two categories. Those that use plant microfossils for reconstructing terrestrial vegetation and those that use plant megafossils. This critical overview is very well detailed. Scanning electron micrographs are presented illustrating the diversity in pollen morphology. It might have helped in this methodology section to present radiometric dating crucial to paleoenvironmental studies. In the next chapters the record of North American vegetation is discussed in detail. The author outlines four stages emerging from three major climatic changes producing effects evident in the plant record. Prominent among those are global decreases in temperature and associated extinction -diversification- migration events in the biotic realm. This provide a convenient framework in the development of the North American vegetation: Late Cretaceous and Early Eocene, Middle Eocene and the Early Miocene, the Middle Miocene and the Pliocene and the quaternary. The author obviously chose the geologic time scale to describe events in Earth history. Another important context is faunal history, which reflects prevailing vegetation types and general environmental conditions. The last chapter traces the origin of current biogeographic relationships of the North American flora, primarily with the Mediterranean region, the dry regions of South America, eastern Asia, and eastern Mexico.

I strongly recommend this text to readers having a strong background in the biological and geological sci-

ences. For the specialist, species list are provided for the major fossil floras and a list of technical papers is included after each chapter. For the general reader, terms are defined, specialized units of measurements are explained, and widely used common names for familiar plants are given as they are encountered in the text. At the end of each chapter a supplemental bibliography of General Readings is also provided. These include relevant articles in *American Scientist, Natural History, Scientific American, Smithsonian Magazine,* and other sources, as well as reviews in *BioScience*, *Nature*, and *Science*. Terms of nomenclature are explained at the end of the Prologue and are repeated the first time the symbols are used. A thorough index is provided at the end of the text.—Laurent M. Meillier, U.C. Santa Barbara, Department of Geological Sciences, Santa Barbara, CA. USA.

Bibliography on Seed Morphology Jensen, Hans A. 1998. ISBN 90-5410-450-3 (cloth, US$79, EUR68.50) 310 pp. A.A. Balkema, P.O.Box 1675, 3000 BR Rotterdam, The Netherlands. – Knowledge of seed morphology is of great importance to plant ecology and systematics, quarantine work, weed management, archeology, etc. The published information on seed morphology is extensive, but widely dispersed in many books, journals, and 'gray literature'. Therefore, the objective of this annotated bibliography is to provide a tool for those working with seed identification and morphology. It is divided in two parts: Handbooks (299 references) and Monographs & Articles (3476 references). The latter is organized by families. More than 3900 genera are covered. The book is supplemented with 368 original line drawings of seeds.

This bibliography is useful but very far from complete. Only very few references from the last 15 years are included. Some omissions are understandable (Delcourt et al. 1979, Lhotská 1968), others are more surprising (Bachiller 1991, Niembro Rocas 1989). The major surprise is no reference to Barton's (1967) *Bibliography of seeds*. — Marcel Rejmánek, Section of Evolution and Ecology, University of California, Davis, CA 95616.

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Orchids of Papua New Guinea Andrée Millar, 1998. ISBN 0-88192-438-5 (hard cover $34.95).118 pp. Timber Press, 133 S. W. Second Avenue, Suite 450, Portland, OR 97204-3527. -Andrée Norma Millar (ca 1914-1995) arrived in Papua New Guinea (PNG) in 1947 with her husband, a mining engineer. She stayed there until ca. 1992 and became part of the country as an explorer, patriot, a person in love with its people, gadfly, disciplinarian and a botanist synonymous with its orchids. I knew Andrée from the mid 1960s until her death and counted her among my friends. Therefore this will be as much an obituary as it will be a book review.

For Andrée life in PNG started in a "place of eternal spring, the gold mining camp of Bulolo" (Millar, 1994) where she discovered the land and its people and a country she "loved . . . all [her] life" (Millar, 1994). And, that is where she also started her orchid collection in a garden which looked like a "fairyland when they all flowered" (Millar, 1994). It did not take long for her to become known as "*long-long Misis bilong plaua,*" PNG pidgin English for "slightly mad [white] woman who collected flowers, useless flowers which were fit for nothing . . ." (Millar, 1994). This nickname was to remain hers for the rest of her life and become the title of her short autobiography (Millar, 1994).

Over the years Andrée moved all over PNG in whatever conveyances were available, boats, small planes, helicopters, motor vehicles and on foot. The country was wild, dangerous and unexplored, but she felt endangered only once: "a spear suddenly landed in front of us, just a few feet from me . . . I was frankly terrified, and we all stood like statues, watching it quiver in front of us . . . the spear thrower was the first of a welcome party, demonstrating that we were . . . welcome. If we had not been, the spear would not have fallen short . . ." (Millar, 1994). She later that it would have been nice to know this in advance.

This was not the only time she was brave. Once when I was in PNG there was a riot. Most expatriates hid in their houses. She faced the rioters. "Why?" I asked."To yell at the bloody bastards," she answered in her pseudo gruff talk (she liked to use rough but not terribly crude language) "and you should have seen them run." She was still yelling next morning while two of her workers sat behind us cradling their long sharp knives between their knees and literaly shaking with fear. I was shaking, also with fear wondering if the two guys would be angered enough by her harangue and strike us. "They wouldn't dare," she said. They did not.

Workers and rioters were not the only people Andrée would yell at. Minsters, including the Prime Minister at the time and the Minister of Health were not spared either. And they took it. Why? Because she raised at least one of them and loved them all like a strict, but impatient mother (for a more detailed biography-obituary see Arditti, 1996).

There were also people Andrée did not like. They

included Margaret Mead and an unfortunate Indonesian botanist who dared talk about the orchids of Irian Jaya (Indonesian New Guinea) at an orchid meeting. She stood up just as the man started to talk and yelled that he had no right to talk about "our orchids." Like many people in PNG and elsewhere she felt that the Indonesians had no place in New Guinea. No matter what she did Andrée was colorful.

Andrée started to send plants to the Lae Herbarium and Botanical Garden where her sometime friend and occasional antagonist (but an excellent host for me) John S. Womersley was the Director. In 1955 Andrée joined the staff of the botanical gardens in Lae and by the late 1960 she had moved to the Port Moresby to work at the National Botanic Gardens at the University of PNG in Port Moresby.

That is when I visited her for the first time. To ensure a large audience for my seminar she ordered all or her workers to attend. I faced a roomful of people, some fresh from the hills with various decorations in their hair, ears and noses who clearly sat there because she ordered them to. They probably did not even understand what I said (pidgin English is not at all like American English) but endured the ordeal. After the talk Andrée told me with a straight face that they loved it. Pretending to believe her was the best and safest reaction and that is what I did.

In 1971 Andrée became director of the garden and remained there until ill health forced her to leave. She collected many honors including the PNG 10 Year Independence Medal, the Gold Medal of the Orchid Society of South East Asia (formerly the Malayan Orchid Society in Singapore), an Award of Honor from the Australian Orchid Council, an OBE from Britain in 1975, an honorary doctorate, and even a chance to be presented to the Queen of England. She did not refuse the latter but sent her assistants instead to honor them and because "I am an old lady now and it will mean more to them."

For a while Andrée and I met every 2-3 years at orchid meetings around the world and usually managed to share a meal. She did not seem to age over the decades. However she did not look well when I last saw her in 1993 or 1994 in Brisbane. A year or so later she died. When the end was near and obvious there was a last and emotional telephone call to Port Moresby in which she said good bye to her assistants who gathered for the occasion in the director's office. It is said that during Andrée's many years in PNG even grizzly old former cannibals cried after not seeing her for a long time. The same was probably true when she died. Some of many of her friends must have cried also and probably so did several of her antagonists.

The current book is not a completely new work. It is an update and revision of a previous volume (Millar, 1978). That book was not a complete monograph of the orchids of PNG. Rather, it was collection of descriptions of taxa Andrée wanted to write about. It had good pictures, interesting text and according to Womersley, many errors. Not being a taxonomists I did not see the many errors (what is in a name?) and liked the book. So did others especially because it illustrated many of the wonderful orchids of PNG.

Andrée worked on her proved to be her last (i. e., this) book and off for many years. In fact it was not complete at the time of her death. It was completed by her photographers and long time friends Roy and Margaret Mackay. That is probably why it has no preface and why the dedication is identical to the one in her fist book. It is to "the people of Papua New Guinea . . . and . . . their native land that I love so dearly." The dedication is accompanied by a photograph showing the author and some of her entourage during a long expedition on top of the Wahgi-Sepik Divide.

The book starts with a short history of PNG "the colonial prize" as she calls it. Over the years the French, Dutch, Germans, Portuguese, British and Indonesians tried to colonize all or part of PNG. Fortunately for the inhabitants the British acquired most of it and after two world wars the Australians became the trustees. I say "fortunately" because British-Australian part became the independent PNG. Dutch New Guinea became part of Indonesia as Irian Jaya or Irian Barat and in effect is still a colony – one in revolt to this day.

A short history of the orchids of PNG follows. It includes an appreciation of Rudolph Schlechter, the German orchid specialist whose book on the orchids of New Guinea is still the definitive work on the subject (the Australian Orchid Foundation paid for a translation into English). A discussion of "where the orchids grow" is next. This is important because PNG is variable (I recall being chilled to the bone in the highland and sweltering in other areas). A list of groups and genera concludes the preliminary sections. Descriptions of individual orchids occupy most of the book (pages 11-100). They are written simply and clearly and are not the usual dry, herbarium specimens-driven pedantic elaborations, The discourses are lively and based on personal observations and experiences which include "several cliff faces on the road to Munmeg . . . almost covered in flowering plants" of *Coelogyne asperata*.

Descriptions are accompanied by usually excellent photographs even if some do not show much detail (*Podochilus australiensis*, p. 23), are diffuse (*Dendrobium engae*, p. 24, the official flower of Enga province according to Peter O'Byrne himself an author of an excellent book

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about the orchids of lowland PNG), and out of focus (yellow form of *Vanda hindsii*, p. 94). On page 69 the green background does not do justice to *Dendrobium taurinum*.

I am sure that taxonomists will find some names to quibble about (they always do: "my name is more valid than your name"), but for me the descriptions are interesting and read well. They also bring up memories of an old friend. And, most of all they are excellent examples of phytography based on life and experience not dead plants stuck on paper.

There are problems here and there. On page 31 descriptions of *Dendrobium* species continue after *Cadetia* without a new title. The birth year of A. Hawkes "orchidologist, USA" is given as 1961 on page 122. This is not correct. By 1961 Alex Drumm Hawkes was already active and in the midst of constant vitriolic attacks on most major orchid systematists of the time. And, pod is used on page 82 for fruit when the correct term is capsule. Perhaps if Andrée would have been alive, she might have caught these slip ups, and may be not. But, would I have been brave enough to point them out if there was a prospect of facing her later . . . ? Maybe not. No matter, Andrée's last book is an excellent presentation of some of the most interesting orchids in PNG. It also a fitting memorial to the slightly eccentric flower lady, an intrepid explorer and a truly liberated woman who called a prime minister of PNG "boy" not because he was a local male (as some expatriates did) and not because he was a *boi* (pidgin English for worker or a local male) but because "he was my boy when he wet my lap years ago and is still my boy, and I can yell at him any time I want." Looking back at Andrée's life, her achievements, her last book, her love for the people of PNG and her dedication to that island's orchids it is best to conclude this obituary-review with "Thank you *plenty too much*" [pronounced *planti tu mus* which is pidgin for "a lot"] *long-long Misis bilong plaua* for your books and for your life.

Comments

1. I used the very few Pidgin English words in my vocabulary to retains some of the flavor of Andrée's life and environment. To those steeped in or dedicated to political correctness words like *boi* and *Misis* may be offensive. Perhaps they would be offensive as words in English language. But here they are not English words. They are words in a derived language, Pidgin English. As such they have their own meanings, which have nothing to do with their origin, history, colonialism, racism or political correctness. The very use of Pidgin English may also be considered to be politically incorrect by some. Those who think so should bear in mind that Pidgin English is an official language in the independent country of PNG. As such it is no more and no less offensive as any other official language in any other country.

2. In my view Andrée's disdain for Mead is justified in view of her explanation. It is also supported by at least one anthropologist who reviewed Mead's work in Samoa in a book. However the subject does not belong in a book review in a botanical publication and is very controversial especially since Mead is an icon of American feminism. I would be glad to respond to questions on the subject (jarditti@uci.edu).

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– Joseph Arditti, Department of Developmental and Cell Biology, University of California, Irvine, CA 92604-2834.

Wildflowers of New York in Color. Chapman, William , Valerie Chapman, Alan Bessette, Arleen Rainis Bessette, and Douglas Pens. 1998. ISBN0-8156-2746-7 (cloth US$59.95) 168 pp. Syracuse University Press, 1600 Jamesville Avenue, Syracuse, NY 13244-5160. -The team of authors responsible for this new guidebook aim it at the casual reader. Rather than using keys, species are divided by flower color into six parts – white, pink-to-red, yellow-to-orange, green, blue-to-violet, and dark purple. Within parts, floral symmetry, petal and leaf characters further divide color groups. A "How to Use this Guide" essay explains symmetry and discusses problems with judging color. A brief visual glossary illustrates basic terms such as pinnately compound, and a helpful glossary of other terms even includes "threatened" and "endangered." Separate indices for Latin and common names are among the book's few weaknesses. To me, a combined index is more helpful, and would not intimidate the novice.

This new book compares favorably with *The Audubon Society Field Guide to North American Wildflowers*. Its 350+ photos are better, and look less cramped in the larger format and against a white background. Photo captions feature *both* common and Latin names. Rather than exiling notes to a separate section, facing pages detail flowering season, habitat, and size ranges, essential for interpreting some photographs. Family names — again both Latin and common — are listed, perhaps to inspire novices to reinforce or deepen their botanical knowledge. This is a slim paperback. It slides easily into a pack, but would require a very roomy pocket.

The book is especially helpful for when the botanically naïve ask for help in identifying flowers that they've seen recently. I also used it during springtime walks in the New York City metropolitan area. Coverage is selective. I easily found dwarf ginseng (*Panax trifolius*), trailing arbutus (*Epigaea repens*), and wild-oats (*Uvularia sessilifolia*), but to find pale corydalis (*Corydalis sempervirens*) I had to turn to my Audubon Guide to find a blurry but informative photo. Many non-native species are covered, including common periwinkle (*Vinca minor*) and garlic mustard (*Alliaria petiolata*). But this coverage is also selective. To

find shepherd's purse (*Capsella bursa-pastoris*) I again turned to my Audubon Guide for a drab but useful photo of its infructescence. This selectivity persists across the growing season, but the photos and the accompanying notes included are consistently excellent.

Wildflowers of New York in Color is a fine publication, but the coated paper and color printing make it necessarily expensive ($24.95 paperbound; $59.95 clothbound). It should appeal to field guide addicts, and would make a nice gift for friends living in New York's urban areas. It is a pleasure to leaf through the photos during winter or whenever one is confined to the urban jungle.— Hilary Callahan, Barnard College

The World of Catasetums. Arthur W. Holst. 1999. ISBN 0-88192-430-X (hard cover $34.95). pp. 306. Timber Press, Inc. The Haseltine Building, 133 S.W. Second Avenue, Suite 450, Portland, Oregon. 97204. It is so exciting to see a whole book dedicated to the genus *Catasetum*! Holst shows much of the diversity of these unique orchids. *Catasetum* is unlike any other genus in the family Orchidaceae in that the plants have separate male and female flowers. The male flowers have bold colors and morphology that vary widely among the members of the genus. Female flowers, however, are consistently yellowish-green and similar in their morphologies. The plates, black and white photographs, and the drawings taken from *Flora Brasilica* show us very well the exquisite nature of these plants.

In the preface, A. Holst tells us that he is not a botanist, but a hobbyist and speaks of his enthusiasm for this genus. Both his enthusiasm, and his hobbyist perspective are borne out throughout his book. Particularly the hobbyist flavor comes across in the first chapter dedicated to the popularity of *Catasetums* to orchidists and chapters 5-7 dedicated to the culture of adult plants.

The second chapter is an interesting account of the history of the study of this genus from the 1600's up until today. These descriptions remind us of the previous taxonomic confusion surrounding these plants, due to the separate male and female inflorescences on different plants. He also briefly mentions some of the current day scientists that are working on the taxonomy and systematics, particularly of Brazilian and Peruvian species. Unfortunately, there are no citations in this whole chapter, thus making it difficult for the reader to investigate further the work of any of these scientists. As most orchid books, there is a general discussion of the plants themselves, with an extensive section on the 'Miracle of Pollination' (which lacks the scientific rigor of Romero and Nelson's, 1986 description of pollination; or the discussion of general biology of orchids of Dressler, 1981).

The next three chapters of the book displays the practical expertise of the author, the culture of *Catasetum*. He describes his own success with growing these orchids based on specific environmental requirements (He creates his own system of classifying life zones, which is superficially similar to Holdridge's classification). The details in these chapters are exactly what orchid enthusiasts/orchid growers would like to know, how do I grow different species of *Catasetum* myself? Unfortunately, although the author indicates that the seedlings of this species are fast growing, he does not include a guide to culturing from seed. Overall, helpful advice for growing these plants, at home, or in a scientific greenhouse are extensively discussed.

The majority of the book is dedicated to species descriptions. For each species, descriptions including etymology, citation of the original species description, general morphology, distribution, habitat, synonyms, field/greenhouse general identification tips, date of flowering in North America, culture tips and comments primarily from the author's own experience with the plants are included. Brief discussions are noted for an additional 62 species. Unfortunately, unlike Dressler's 1993 book, references to other papers in the literature are not included. What makes this section particularly useful to field botanists and orchid hobbyists alike, is that for each species for which there is a long description, there is either a plate or a line drawing or both included in the book. The beautiful plates include a few of the hybrids created by orchid enthusiasts as G. Monnier describes in an invited chapter.

The final chapter is by H. G. Hills, N. H. Williams and W. M. Whitten summarizing their many years of scientific research into the fragrances of Catasetums. A list of sources for purchasing Catasetum plants, a glossary of botanical terms, a selected bibliography, a selected bibliography and an extensive index conclude the book.

This handsome, well produced book should attract more attention to the genus *Catasetum*. -Courtney J. Murren. Department of Ecology and Evolutionary Biology and Department of Botany, University of Tennessee, Knoxville, TN 37996.

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Books Received

If you would like to review a book or books for PSB, contact the Editor, stating the book of interest and the date by which it would be reviewed (15 February, 15 May, 15 August or 15 November of the appropriate year). Send e-mail to <sundberm@emporia.edu>, call or write as soon as you notice the book of interest in this list, because they go quickly!—*Ed.*

*** = book in review or declined for review**
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Annotated Checklist of the Vascular Plants of the Washington-Baltimore Area. Part I, Ferns, Fern Allies, Gymnosperms, and Dicotyledons. Shetler, Sanwyn G. and Sylvia Stone Orli. 2000. 186pp. Department of Botany, National Museum of Natural History, Smithsonian Institution, Washington, D.C., 20560-0166.

Australian Rainforests: Islands of Green in a Land of Fire. Bowman, D.M.J.S. 2000. ISBN 0-521-46568-0. (Hard US$85) 345pp. Cambridge University Press, 40 West 20th Street. New York, NY 10011-4211.

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Pirone's Tree Maintenance, 7th ed. Hartman, John R., Thomas P. Pirone, & Mary Ann Sall. 2000. ISBN 0-19-511991-6 (cloth US$49.95) 560pp. Oxford University Press, 198 Madison Avenue, New York, NY 10016-4314.

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