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NUMBER 41

New Additions to ABC's Herbal Education Catalog

AMERICAN BOTANICAL COUNCIL

THE GREEN PHARMACY by James A. Duke. 1997. A-Z entries that include more than 120 health conditions and scores of natural remedies that can replace or enhance costly pharmaceuticals. Up-to-date information and traditional folk remedies in an authoritative, entertaining format. Hardcover, 507 pp. $29.95. #B281

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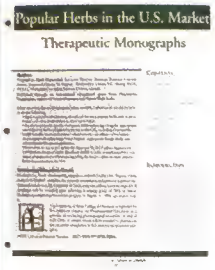
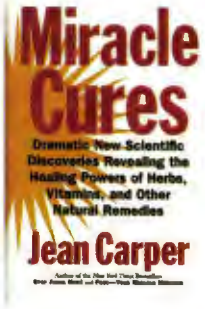
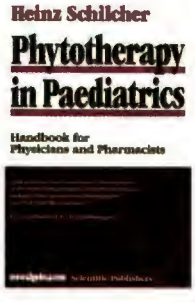


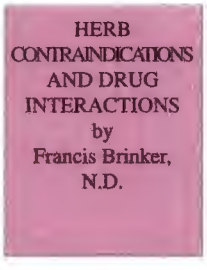
POPULAR HERBS IN THE U. S. MARKET: THERAPEUTIC MONOGRAPHS by Mark Blumenthal and Chance Riggins. 1997. Continuing education course for pharmacists covering 26 herbs popular in the mass market and pharmacies. Includes proper use, safety, dosage and related therapeutic information. Passing grade on test earns two hours of continuing education credit. $15. #B421



MIRACLE CURES by Jean Carper. 1997. Documents the latest findings from leading scientific institutions, research centers and major international scientific journals, along with first-person medically verified accounts of people who have successfully cured themselves with natural medicines. Hardcover, 308 pp. $25. #B280



PHYTOTHERAPY IN PAEDIATRICS by Heinz Schilcher. 1997. As only some of the many diseases of infants and young children can be treated by phytotherapy, this book is intended as an addition to synthetic drug therapy rather than as an alternative. Includes 14 indications for external applications and 30 for internal use. Softcover, 181 pp. $35. #B279



HERB CONTRAINDICATIONS AND DRUG INTERACTIONS by Francis Brinker, N.D. 1997. Information on 181 traditional therapeutic herbs explaining documented contraindications and drug interactions. Appendices identify even more herbs as they affect certain conditions and medicines. Softcover, 148 pp. $14.95. #B282

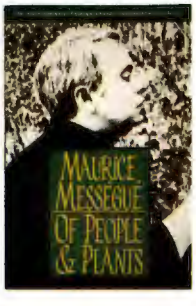
AUSTRALIAN TEA TREE OIL GUIDE by Cynthia Olsen. 1997. 3rd edition. Contains up-to-date clinical research into tea tree oil's effectiveness against conditions including acne, herpes, candida, bleeding gums and more. Includes history, harvesting and production, use with animals, products and case studies. Softcover, 110 pp. $7.95. #B283

ALOE VERA: A SCIENTIFIC APPROACH by Robert Davis. 1997. The first scholarly explanation of how aloe works. Demonstrotes the relationship between the polysaccharide and surrounding active components. Meticulously researched and illustrated by clear, illuminating charts. Hardcover, 320 pp. $21.95. #B284

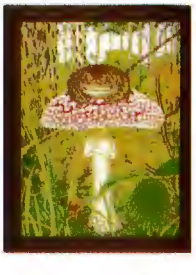
THE ORIGINS OF HUMAN DIET AND MEDICINE by Timothy Johns. 1990. Considers the evolution of the human use of plants, the ways in which humans obtain foods from among the myriad poisonous and unpalatable plants in the environment, and the consequences of this history for understanding the basis of the human diet. Softcover, 356 pp. $19.95. #B285

WILD PLANTS AND NATIVE PEOPLES OF THE FOUR CORNERS by William Dunmire and Gail Tierney. 1997. Profiles of more than fifty individual plant species that have important cultural associations and are relatively easy to find growing in the Four Corners region. Illustrations and descriptions make identification easy. A multitude of uses is covered. Softcover, 312 pp. $22.50. #B286

STRESS AND NATURAL HEALING by Christopher Hobbs. 1997. Addresses the workings of the nervous system, the ways that stress affects it, and the potential health problems that can result. Natural ways to promote relaxation by using proven dietary and herbal programs, as well as visualization, conscious breathing, meditation, and exercise, are explored. Softcover, 240 pp. $16.95. #B287



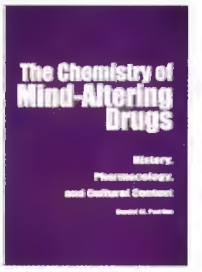
OF PEOPLE AND PLANTS by Maurice Mességué. 1991. A combination of colorful anecdotes from the life of France's most renowned herbalist. Detailed information about the use of specific plants in treating a wide variety of ailments. Comprehensive appendices describe preparations and provide recommendations for use of plants for optimal health. Softcover, 328 pp. $12.95. #B288



TOADS AND TOADSTOOLS by Adrian Morgan. 1995. Compendium of art history, cultural anthropology, pharmacology, herpetology, mycology, ethnology, history, and religion concerning the curious connection between a fungus and an amphibian. Highly detailed color drawings throughout. Softcover, 208 pp. $24.95. #B296

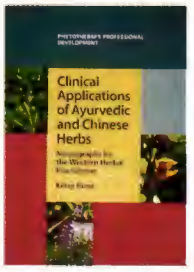
MEDICINAL PLANTS: CAN UTILIZATION AND CONSERVATION COEXIST? by J. Sheldon, M. Bolick, and S. Laird. 1997. Examines the cases of several plant species valued in traditional and contemporary medicine, and the ramifications of their over-harvesting. Explores the impact of discovery and utilization of these and other medicinal plants by the herbal and pharmaceutical industries, and makes recommendations for using these resources wisely. Softcover, 104 pp. $14.50. #B289

THE SACRED MUSHROOM SEEKER Ed. by Thomas Riedlinger. 1990. Tributes to R. Gordon Wosson, trailblazing ethnobotanist who brought increased scholarly attention to the importance of psychoactive plants in the spiritual life of indigenous peoples and had a profound influence well beyond the academic world. Essays by many of the most distinguished names in the fields of ethnobotany, comparative religion, and anthropology. Softcover, 283 pp. $24.95. #B294



THE CHEMISTRY OF MIND-ALTERING DRUGS: HISTORY, PHARMACOLOGY, AND CULTURAL CONTEXT by Daniel Perrine. 1996. A rigorous, scientifically objective, and thoroughly documented exposition of acute pharmacological and psychological effects of nearly every known substance that affects human consciousness. Provides an accessible explanation of drug-receptor interaction and organic chemical structures, as well as descriptions of the discovery, isolation and syntheses of the chemical substances responsible for drug activity. Softcover, 480 pp. $39.95. #B292

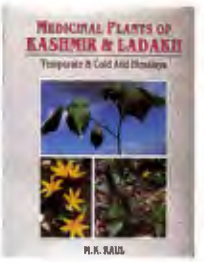
PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON MEDICINAL AND AROMATIC PLANTS Ed. by L. E. Craker, L. Nolan and K. Shetty. 1995. 72 papers on bioactive plants and plant products, pharmaceutical interests, improving food quality, growth and environmental stress, medicinal and aromatic plant molecular biology, and herb production. Softcover, 669 pp. $116. #B293



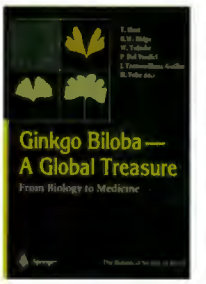
CLINICAL APPLICATIONS OF AYURVEDIC AND CHINESE HERBS by Kerry Bone. 1996. Provides comprehensive monographs on important Ayurvedic and Chinese herbs in a form suited to practitioners of western herbal medicine. The monographs emphasize the large body of pharmacological and clinical information now available for the 32 plants covered. Softcover, 152 pp. $30. #B291

A HAWAIIAN FLORILEGIUM: BOTANICAL PORTRAITS FROM PARADISE Illustrated by Mary Grierson, text by Peter Green. 1996. Contains 43 watercolors depicting native plants of Hawaii as well as Polynesian and modern introduced plants now prevalent in the islands. Text covers the ethnobotany and legends of the early Hawaiians, taxonomic research of botanists and the history that brought such an incredible mix of species to the islands. Hardcover, 102 pp. $45. #B295

FLORA OF NORTH AMERICA VOLUME 3. Ed. by Flora af North America Editorial Committee. 1997. Provides identification keys, summaries of habitats and geographic ranges, distribution maps, pertinent synonymies, descriptions, chromosome numbers, phenological information, and other significant biological observations for each species covered. Hardcover, 616 pp. $85. #B038B

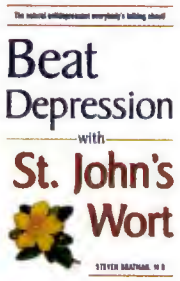


MEDICINAL PLANTS OF KASHMIR AND LADAKH by M. K. Kaul. 1997. Comprehensive information on 111 selected medicinal plants occurring in the temperate and cold arid regions of the Himalayas. Includes a chapter on traditional knowledge of healing properties in 291 plants used ethnomedicinally. 69 color photos. Hardcover, 173 pp. $40. #B290



GINKGO BILOBA – A GLOBAL TREASURE Ed. by T. Hori *et al.* 1997. Latest findings of research on a broad range of topics that include cell biology, biochemistry, morphology, paleabotany, environmental engineering and cultural history, as well as possible applications in chemistry and medicine. Extensive bibliography. Hardcover, 427 pp. $99. #B297

CLINICAL AROMATHERAPY IN NURSING by Jane Buckle. 1997. Contoins an in-depth clinical sectian dealing with the management of common problems such as infection and pain, giving examples of which oils might be used in treatment. Illustrates the application of aromatherapy in specific clinical specialties. Cites more than 700 references. Softcover, 289 pp. $39.95. #B298



BEAT DEPRESSION WITH ST. JOHN'S WORT by Steven Bratman. 1997. Easily readable yet solidly researched, and based on the experiences of his patients as well as the results of clinical studies worldwide, Dr. Bratman explains what St. John's Wort is and how it works, its record of success without dangerous side effects, how to determine if it may be effective for you, and where to buy it and what to look for on the label. Softcover, 212 pp. $12. #B299

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DEAR READER

One result of the explosive growth of herbal medicine into American's mainstream health care in the last few months is the near front page news surrounding the "discovery" by Americans that St. John's Wort (SJW) has been shown to be safe and effective to treat cases of mild to moderate depression. Since this announcement, supplies of SJW have run understandably tight, if not totally unavailable in some areas. SJW offers an excellent example of how the burgeoning herb market for medicinal plants in the U. S. and worldwide can put strains on usual sources of supply—at least in the short run. Fortunately, SJW is a renewable resource, is easily harvested from the wild, and lends itself to commercial cultivation. In fact, some enterprising growers have already planted large fields of the herb.

However, some medicinal plants are still harvested primarily from the wild and if it is the root that is the desired part for medicine, then the plant, once dug up, is not sustainable. Such is the case with goldenseal. For years now, environmentalists, botanists, herbalists, and members of the herb industry have become increasingly concerned about the dwindling population of native wild goldenseal, a plant harvested for medical use in the United States for at least 200 years. This summer, the Convention and Trade in Endangered Species (CITES) officially voted to place goldenseal on Appendix II status, *i.e.*, it is now a threatened species. This is one step closer to being classed as an "endangered" species. In this issue, we present the report by Joy Bannerman regarding this process and the current status of wild goldenseal, a plant indigenous to Eastern North America.

We also present an in-depth report on the Commission for Dietary Supplement Labels, a presidential commission created by the Dietary Supplement Health and Education Act (DSHEA) to review herbs and other dietary supplement and make policy recommendations to the president, Congress, and the Department of Health and Human Services. Rob McCaleb, (President of the Herb Research Foundation and a member of the Commission) and I have presented an overview of the commission's new report which, among other things, recommends that, in addition to their status as dietary supplements, FDA consider and review some herbs for their therapeutic activities under the Over-the-Counter (OTC) Drug Review.

Professor Varro Tyler has contributed a critical editorial on some of the "botanical bloopers" FDA has committed over the past 20 years and still, in his opinion, continues to make.

In this issue, we also present a fascinating account by Dr. Bruce Barrett of the rich flora and cultural diversity of Nicaragua's Atlantic coast and the ethnobotanical use of 200 herbal medicines. In Nicaragua attempts were made by the government to integrate "popular medicine" into conventional health care.

Regarding the economic impact of herbs versus conventional pharmaceuticals, Dr. Larry Kincheloe writes of his use of leading phytomedicines within an HMO and the ensuing savings—a portent of the future of herbs in modern medicine.

Finally, our graphic feature shows some of the beautiful paintings of British botanical artist Margaret Stones, who made frequent trips to Louisiana. Her collected works have been published in the *Flora of Louisiana*, noting, in some cases, the native uses of these plants.

Mark Blumenthal

HERBALGRAM

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Number 41 • Fall 1997

DEPARTMENTS

Ginger,
Zingiber officinale.
Photo ©1995
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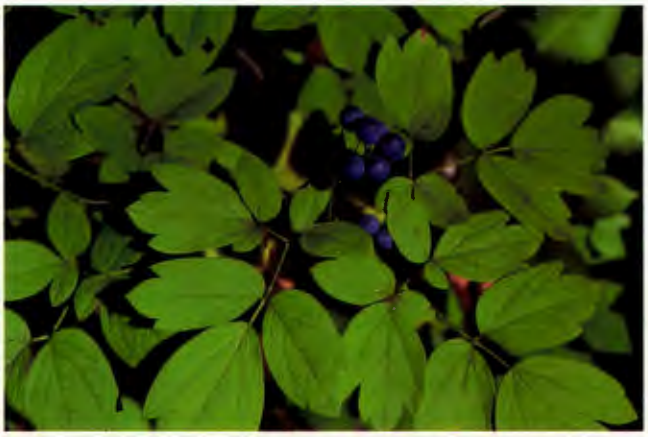
FEATURES



Six ethnic groups from four continents make use of Nicaragua's vast biodiversity for medicines.

Cover: **Goldenseal,** *Hydrastis canadensis.*
Photo ©1997 Steven Foster.
See page 50 for threatened species report and the status of Goldenseal.

HerbalGram is printed on recycled paper.

ABC Plans Annex at Herbal Education and Research Center

ABC's new Herbal Education and Research Center is quickly taking shape. Renovations on the 140-year-old three-story house at the Case Mill site (see *HerbalGram* Nos. 39 and 40) are proceeding with a projected move to the new headquarters at the beginning of 1998. A crucial feature of the center's development in the near future is the Annex, a new building which will enable ABC to immediately expand its educational activities. The Annex will house a book store for browsing, a public-access library in which to do research, and facilities which offer classes on various aspects of herbalism. It will allow these programs to begin before construction of the new 6,000-square-foot Education Building, where they will eventually be housed. The Annex offers a perfect name-dedication opportunity for businesses supporting ABC's work.

The thousand-square-foot building will be just a few steps from the original farmhouse, and fully integrated into ABC's ongoing activities.

The Annex will make a world of difference to ABC's program capabilities over the next three years. For more information about ABC's Herb Education and Research Center please contact Dr. Wayne Silverman at 512/331-8868.

ABC Launches New Pharmacy Education Course

With Monographs on Popular Herbs

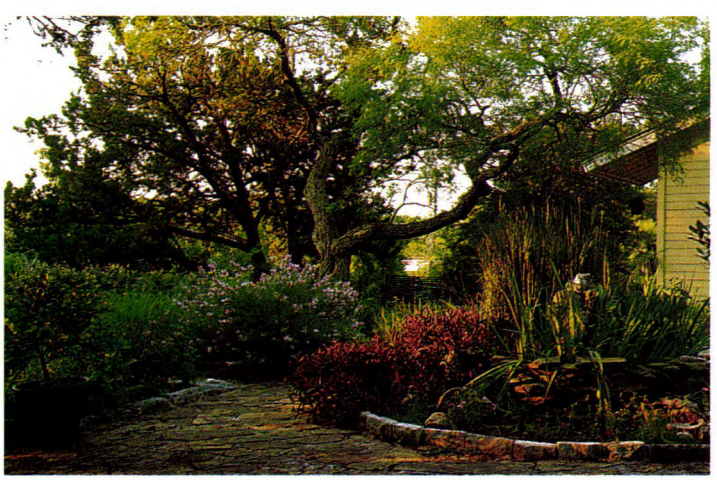
The American Botanical Council has produced a new home study continuing education (CE) herbs and phytomedicines course for pharmacists. The new material consists of a series of brief monographs on 26 of the most popular herbs and phytomedicines sold in the United States. "Popular Herbs in the U.S. Market: Therapeutic Monographs" has been accredited for 0.2 CEUs (two contact hours) of continuing education by The University of Texas College of Pharmacy. The publication includes a table containing some of the primary uses and benefits of the herbs and phytomedicines, as drawn mainly from the bolded text in the Modern Uses section of each monograph. This section is designed as a quick reference convenience for research and educational purposes and does not constitute a complete listing of the therapeutic benefits of each botanical.

The monographs were produced by ABC Executive Director Mark Blumenthal and Chance W. Riggins, a former intern at ABC, now a graduate student of botany at the University of Alaska. The monographs were reviewed by Dennis V. C. Awang, Ph.D., of MediPlant Consulting Services in Ottawa, Canada.

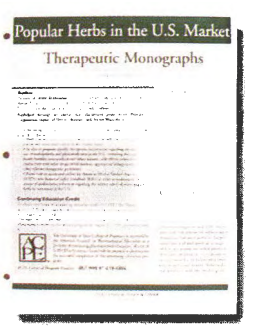
Many of the brief monographs are based on ABC's forthcoming translations of the German Commission E monographs, as well as on other authoritative references. These include the *British Herbal Compendium*, monographs produced by ESCOP (European Scientific Cooperative on Phytotherapy), and other authoritative publications. Each monograph includes information on the modern uses of the herb, dosages, and pharmacological actions, as well as contraindications, side effects, and interactions with conventional drugs. They also include the safety status of the herb as classified by the *Botanical Safety Handbook*, published this past summer by the American Herbal Products Association (AHPA) and CRC Press. (These references are available from the ABC catalog.)

Herbs monographed in this course are bilberry, cascara sagrada, cat's claw, cayenne, cranberry, devil's claw, dong quai, echinacea, evening primrose oil, feverfew, garlic, ginger, ginkgo, Asian ginseng, goldenseal, gotu kola, grape seed extract, green tea, hawthorn berry, kava, milk thistle extract, saw palmetto, Siberian (eleuthero) ginseng, St. John's wort, and valerian.

The new CE course was underwritten by an unrestricted grant from the Pharmavite Corporation, manufacturers of nutritional supplements in the mass market under the brand names NatureMade and Nature's Resource. Pharmavite is distributing the courses to approximately 40,000 pharmacists in the U.S. The course will be available October 1, 1997, from ABC's Herbal Education Catalog for $15 (Item #904). For more information, please call Ginger Webb at 512/331-8868. Fax: 512/331-1924 or email to: custserv@herbalgram.org.



Grounds of the Case Mill Homestead. Photo by Joni McClain for ABC.



The newest module addition to ABC's Pharmacy Continuing Education program.

Pharmacy on Safari

The first African Savannah Workshop, "Pharmacy on Safari," left in June for a 14-day expedition to the lush savannahs of Kenya. This trip was a part of the ongoing series of accredited pharmacy workshops co-sponsored by the American Botanical Council (ABC), Texas Pharmacy Foundation, and International Expeditions, Inc.

Thirty-five participants accompanied James Duke, Ph.D., and Mark Blumenthal, Executive Director ABC, co-presenters of two workshops. The first, "Roots Revisited," was a workshop focussing on African medicinal plants in world trade, Pan-African medicinal plants and uses, and major local Kenyan and Tanzanian medicinal plants. The second, "The Evolutionary Diet," featured discussions about the local African food "farmacy," pantropical food "farmacy," and the medicinal spice rack. Blumenthal presented a workshop, "The Evolution of Herbs in Medicine—the Rational Use of Herbal Therapies." Local scientists and native healers also gave presentations.

Accredited workshops were held at the Delamere Tented Camp (within the Great Rift Valley and on the shore of Lake Elmenteita), the Lewa Downs Conservancy (long range goal: providing protection for the numerous species of plants and animals that inhabit the 170 square miles of the Lewa ecosystem), and the Mara River Tented Camp (includes "The Mara" game preserve and the "Maasai Medicine Trail" which provides insights into traditional medicinal plant uses from the "savannah medicine cabinet").

Since 1994, over 380 individuals, including 190 pharmacists, have participated in these precedent-setting workshops set in the Peruvian Amazon, Costa Rica, and Belize. The expeditions usually last one week and include varied and intensive sessions in small groups led by experts in the fields of pharmacognosy, phytomedicine, ethnobotany, and ethnobiomedicine research.
— *Barbara A. Johnston*

The majesty of the African plains. Photo © 1997 Raymond A. Lukasik for Pharmacy on Safari.

ABC Activities June-October, 1997

HIGHLIGHTS OF PRESENTATIONS AND PAPERS BY ABC EXECUTIVE DIRECTOR MARK BLUMENTHAL

"Pharmacy on Safari" Workshops, Kenya, Africa

College of Physicians & Surgeons of Columbia University, New York, NY, "History of Botanicals in Medicine & Pharmacy"

Acceptance of Otto Richter Memorial Award and presentation of Memorial Lecture, International Herb Association, Boston, MA, "Herbs Out of the Cauldron and Into the Clinic"

The Morris Arboretum of the University of Pennsylvania, Philadelphia. "Market Research and Regulatory Factors Influencing the Growth of Herb Use Today"

continues on page 71

Case Mill Sponsor List

The categories listed below represent giving levels for Phase 1of ABC's Capital Campaign for the new Herbal Education and Research Center. ABC is now seeking multiple-year funding commitments to meet the $1.5 million goal. The companies marked with asterisks have made multiple year pledges as of press time in October, 1997.

Architects - $25,000 and greater
Bio Botanica*; Enzymatic Therapy*; Nature's Herbs*; Nature's Way*

Builders - $10,000 to $24,999
Capsugel*; Pharmaton; Stryka Botanics Co., Inc.*; Whole Foods Market*

Planners - $5,000 to $9,999
Mark Blumenthal; Cosmopolitan Trading/ Kava Kompani; ExtractsPlus; Fetzer Foundation; Flachsmann Flavours & Extracts; General Nutrition Centers (GNC); Henkel Corporation; Indena USA Inc.; Lichtwer Pharma US Inc; Nature's Bounty

Supporters - $2,500 to $4,999
Celestial Seasonings; Steven Foster; Haworth Press; Indiana Botanic Gardens; Interweave Press; Madis Botanicals/Pure World; NOW Foods; Pharmavite; Pure Gar

Friends - $1,000 to $2,499
American Ingredients; Chai Na Ta; East Earth Herbs; Euromed; Flora Manufacturing and Distributing; Healthnotes Online; Herb Pharm; Herbs for Kids; Hilary's Distribution; Jason Cosmetics; Metagenics; Müggenburg Extrakt; MW International; New Hope Natural Media; Pharmanex; Pharmline, Inc.; PhytoMed International; Mark Plotkin, Ph.D.; Prince of Peace Enterprises, Inc.; QBI - Quality Botanical Ingredients; Traditional Medicinals; Trout Lake Farm; Tsumura; Wakunaga of America, Inc.; David Winston, Herbalist & Alchemist

* Includes pledges for Phase II
ABC reserves the right to alter the giving levels and/or category names with notification.

HRF NEWS

by Rob McCaleb and Evelyn Leigh

POPULARITY OF ST. JOHN'S WORT REMAINS HIGH WITH PUBLIC AND PRESS

ABC's *20/20* on June 27 extolled the virtues of St. John's wort. HRF was a key contact for the story writers, who offered a favorable presentation of the benefits of Hypericum in the treatment of mild-to-moderate depression. HRF's Natural Healthcare Hotline Information Specialists subsequently have taken more than 4,500 phone calls with questions about the safety and efficacy of St. John's wort. Although the volume of calls has since slowed somewhat, at least half the questions answered each day still relate to St. John's wort.

Clearly, the media is still interested in St. John's wort, too. While at Natural Products EXPO East in Baltimore this September, HRF President Rob McCaleb was interviewed by a reporter from NBC *Evening News* in preparation of a story on the use of St. John's wort "as an alternative to Prozac®." The news team toured the show floor and visited several manufacturers of St. John's wort products. McCaleb provided details on the proven benefits of St. John's wort in mild-to-moderate depression, and suggested that the herb may soon be as popular in the United States as in Germany partly because "people who do not see themselves as clinically depressed and would not consider a prescription drug may be willing to try St. John's wort to see if it can help with depression, anxiety, or stress." The story aired October 6.

HIGH-PROFILE SEMINARS TO EDUCATE MEDIA AND HEALTH PROFESSIONALS

On September 30, almost 50 health and fitness editors from major New York media attended a unique educational seminar designed to keep the mainstream press up-to-date on herb-related research and trends among consumers. The audience included editors from *Cosmopolitan*, *CBS This Morning*, *Good Housekeeping*, *McCall's*, *Parents*, *Women's Day*, and other well known publications and television stations. Participants enjoyed a one-of-a-kind opportunity to learn from some of the nation's foremost experts in the field about herbs that boost immunity. "Herbal Therapies—the New Frontier of Medicine," was held at the Chelsea Market in New York City.

"This is the beginning of a proactive media campaign to reach out to the health editors of major magazines with some of the facts behind the current revolution in modern health care," said Rob McCaleb, a key speaker at the seminar. "The event was especially positive because the public will end up being the beneficiary of this important information. The topic was timely, as magazines with long lead times are already starting to work on features geared toward cold and flu season." McCaleb helped kick off the event by conducting a series of personal "deskside" interviews with editors of a number of magazines.

Actress Lauren Hutton, long an outspoken proponent of complementary health care, served as conference moderator and provided an account of her own experiences with herbal medicines. Rob McCaleb presented clinical research on herbs and other dietary supplements that can help boost immunity, primarily focusing on echinacea and zinc. Other speakers included author, herbalist, and botanist Steven Foster, who spoke on historical and modern uses of herbs in the U.S. and abroad, and Isadore Rosenfeld, M.D., a well-known physician who became interested in herbs when he learned that patients were seeking information on complementary health care from naturopathic physicians. Funding for the project was provided by Warner-Lambert Company.

Also in September, McCaleb participated in a Boston-based continuing medical education seminar for physicians entitled "Cost Saving Strategies and Advances in Hormone Replacement Therapy." The seminar was sponsored by Cambridge Health Resources. One-half day of the two-day seminar was devoted to herbs and other natural alternatives to conventional hormone replacement therapy. According to McCaleb, this segment was extremely popular and well attended. "Physicians pointed out that only 15 percent of American women use conventional hormone replacement therapy. The other 85 percent are looking for natural options, as are many of the 15 percent," he remarked.

VISIT THE UPDATED HRF WEBSITE AT WWW.HERBS.ORG

More than 40,000 visitors have already browsed the pages of HRF's worldwide website, newly revised and unveiled in June, 1997. Updated features and content make the website more user-friendly and informative. "Our website is the newsiest source of herb information available online," noted Rob McCaleb. "We answer questions, offer an herbal medicine discussion forum, provide news about the Foundation as well as access to products and services that go beyond what's available elsewhere. Plus, it's fun."

HRF website departments include "World News and Views," featuring frequently updated research, regulatory, and business news and opinions, and herbal Greenpapers, a unique presentation of the health benefits of individual herbs and herbal topics. Herbs Interactive provides a forum for visitors with opinions on current issues or questions to be addressed by HRF's panel of herb experts. Top HRF supporters are listed in "What Fuels HRF," which provides links to the sponsors' own websites. "This lets people know about the companies and individuals who care about herbal research and education and contribute to it through HRF," McCaleb explained.

Other departments allow browsers to access membership information, shop for information services, and enjoy HRF's custom-designed "random links" program. "This allows visitors to channel-surf the best herb-oriented sites on the web. Also available online are HRF recommended databases, books and magazines," said McCaleb. The recommended links page provides a link to the popular Ask Dr. Weil website. "We're working with Dr. Weil to help him build a database of practitioners, and soon we'll be linked to his site as one of the recommended herb resources."

Access the HRF website at www.herbs.org

Turmeric Patent Overturned in Legal Victory

India's successful challenging of a U.S. patent (No. 5,401,504) on the use of turmeric (*Curcuma longa* L., Zingiberaceae) for healing has been an encouraging victory for Indian activists campaigning to protect indigenous wisdom.

After a complex legal battle, the U.S. Patents and Trademarks Office ruled on Aug. 14 that a patent for turmeric issued to the University of Mississippi Medical Center in December 1993 was invalid because it was not a novel invention.

The patent was contested by India's Council for Scientific and Industrial Research (CSIR), which combined scientific evidence with legal savvy to take on the biopirates. Says an excited R. A. Mashelkar, director-general of the CSIR, "This success will enhance the confidence of the people and help remove fears about India's helplessness on preventing bio-piracy and appropriation of inventions based on traditional knowledge."

The turmeric patent was just one of the hundreds that the North has claimed by ignoring indigenous and existing knowledge. Vandana Shiva, a global campaigner for a fair and honest Intellectual Property Rights system, says patents on Neem, Amla, Jar Amla, Anar, Salai, Dudhi, Gulmendhi, Bagbherenda, Karela, Erand, Rangoon-ki-bel, Vilayetishisham and Chamkura need to be revoked.

This can be done if laws are changed to ensure protection against bio-piracy, activists say, because "chasing every patent based on traditional knowledge will involve huge expenses and efforts," according to farm scientist Devinder Sharma.

Under World Trade Organisation (WTO) rules, patents are provided for inventions that qualify for their novelty, non-obviousness, and utility. The turmeric patent failed to satisfy the criteria of novelty as turmeric paste has been used to treat wounds and stomach infections for centuries by Indians.

It is the WTO which has to protect indigenous knowledge, argues Sharma, who says, "governments of developing countries cannot chase and challenge every indigenous knowledge-based product patent. Patent laws need to be changed, the onus of proof reversed and companies should give an undertaking that the patent they are seeking is not based on traditional wisdom."

Suman Sahai of the New Delhi-based Gene Campaign would like the government to use the turmeric case to "press the North to reform its own laws governing intellectual property rights, instead of pressuring the South to change its laws."

Vandana Shiva points out that "examples of bio-piracy make it clear that it is not just Indian patent laws that need to be changed. The American laws also need to be changed to fit into a fair and honest global Intellectual Property Rights system."

To prove her point, she cites the case of Thailand, which prepared a draft legislation allowing Thai healers to register traditional medicines. But it was challenged by the U.S. Department of State, which said, "such a registration system could constitute a possible violation of TRIPS (Trade-Related Intellectual Property Rights) and hamper medical research into these compounds."

"If we get a ruling in our favour, the problem of bio-piracy will be solved. If the WTO does not respond, it will show the WTO's bias towards the powerful countries," Shiva wrote in *The Hindu* newspaper.

Because two-thirds of the world's plant species—at least 35,000 of which are estimated to have medicinal value—are in the developing countries, the North is determined to keep its business edge over the South.

The U.S. is more obsessed with getting India to comply with the TRIPs Agreement. The reason for this, according to Sharma, is to protect the U.S. biotechnology industry from sharing the benefits with countries from which they draw the plant and animal genetic resources.

This contravenes the Convention on Biological Diversity, but the U.S. has made it clear that it has no intentions of abiding by the regulations.

It is in India's interest, activists say, that the government revise the 1970 Indian Patent Act to recognise "prior art" or existing knowledge, on which both the Indian and U.S. laws are silent. This would protect traditional wisdom in agriculture and horticulture.

"For a start, India must declare its ownership over its own biological wealth," suggests Sahai. "This must be followed with intense lobbying for institutionalizing a dispute redressal mechanism conforming to the Convention on Biological Diversity."

Vandana Shiva says that the WTO must be approached to press the U.S to change its patent laws to ensure protection against bio-piracy. "The WTO should stop the U.S. from attempting to undo the implementation of the Biodiversity Convention by countries that have ratified it. The protection of biodiversity and indigenous knowledge is an international legal obligation and this commitment needs to be upheld by all multilateral bodies."

The loopholes in the U.S. patent laws were first exposed by Mangla Rai, deputy director-general of the Indian Council for Agricultural Research, who is credited with successfully challenging a cotton patent granted to U.S. seed giant Agracetus.

"There is no doubt that their (the U.S.) patent laws are full of shortcomings which the transnationals have a penchant for ex-

Turmeric, *Curcuma longa*. Photo © 1997 Steven Foster.

ploiting," Rai told IPS. "The patent drawn on turmeric shows just how flawed the U.S. law is."

This case is reminiscent of a controversy between nongovernmental organizations (NGOs) in India and multinational corporations over patents taken on "industrial processes" related to the Neem tree (*Azadirachta indica* A. Juss., Meliaceae). The NGOs regard these patents as corporate theft from the Indian people. Corporations argue that they need the patents to justify the financial investments put into research and development. Most fail to recognize or compensate the centuries of unpaid, unaccounted for trial-and-error "research and development" done by the Indian people. Patent concerns are currently holding some pharmaceutical companies back from further developing drugs from artemether.

Artemether is the oral dosage form derivative of artemisinin, a Chinese herbal medicine used for treating malaria (derived from *Artemisia annua* L., Asteraceae). According to John Beutler, Ph.D., of the National Cancer Institute, "The folk use of turmeric constitutes prior art and thus the patent should have been disallowed. On the other hand, the neem patent is, I think, valid. What people don't seem to recognize is that the patent on neem covers a preparation/formulation of neem. It does not interfere with people's rights to use neem in any way that they choose. Monsanto's only right under the patent is to protect the specific industrial process and formulation which the patent covers. If it can be shown that the neem process is essentially a well-known method for processing neem for pesticide use, then that patent also would be invalid. Many patents are awarded which are not sustainable upon challenge. Artemether is a derivative of the natural artemisinin and should be patentable. Whether it is properly protected by patent has nothing to do with its folkloric roots."— *Barbara A. Johnston and Ginger Webb*

[Aharonian, G. Internet Patent Service. Personal communication. November 29, 1996.

Anonymous. India Calls It Patent Absurdity. *Business Week*, August 12, 1996, p. 83.

Basant, B. 1997. IPS. New Delhi. September 4.

Beutler, J. Personal communication. May 23, 1997.

Pressman, L. M.I.T. Technology Licensing Office. Personal communication. December 12, 1996.]

New Dispensatory

Bastyr University has announced *The Natural Products Dispensary Reference*, an authoritative reference guide to the clinical use of natural medicines. The first edition will include a clinical research database with hundreds of studies on listed products, along with research conclusions.

The Natural Products Dispensary Reference will furnish brand-specific information on 30 of the most important botanical medicines and will classify them according to processing methods, product testing, and clinical evidence. A monograph will list each single ingredient botanical including indications, pharmacology, plant parts used, known constituents, and regulatory statutes. The document will contain contact information for all companies listed.

The first edition of *The Natural Products Dispensary Reference* will be published in 1998 and widely distributed to health care clinics, practitioners, pharmacists, HMOs, and libraries. For more information, or for product submission forms, call *The Natural Products Dispensary Reference* office at 425/602-3070 or write to Bastyr University, 1500 Juanita Drive N.E., Bothell, WA 98111. This volume will be available in the ABC Catalog.

Botanical Methods Evaluation Program

Industrial Laboratories (IL), a Denver-based independent analytical and consulting company for the natural products industry, has established a botanical methods validation program (MVP). According to Loretta Zapp, president of IL, "There is a great need in the industry for peer validation programs to make consistent, reliable methods of analyzing botanicals available to the industry."

The initial scope of the MVP is to peer validate methods for fifteen botanicals. An advisory committee will be established, made up of a representative from each sponsoring company, plus representatives from independent testing laboratories, academia, consulting firms, and associations. The role of the advisory committee will be to direct the validation program: to review and recommend appropriate methods, standards, and validation protocol, and to direct spending of resources. To participate as a sponsor, contact Rhonda Hess at IL, 1/800/456-5288 or see the web site at www.scientific solutions.com. — *Barbara A. Johnston*

USP Adopts Ginger Monograph

According to Dr. V. Srinivasan of the United States Pharmacopeia (USP), Ginger (*Zingiber officinale* Roscoe, Zingiberaceae) and Powdered Ginger monographs have been approved by the USP Committee of Revision for inclusion in the *National Formulary* section of the USP23 - NF18. Accordingly, these monographs will appear in *Supplement 7* to the USP23 - NF18. They will become official effective November 15, 1997.

Ginger, the traditional spice, is becoming known for its well-documented benefits for the digestive system and for its anti-nausea and anti-motion sickness activities. This is the first monograph on an herb that has been adopted as an officially recognized standard for identity by USP since its March 1995 Quinquennial Convention Meeting. Eight other monographs are being considered, including one on valerian. The USP contains about 25 other herb-based drugs, including digitalis from foxglove (*Digitalis purpurea* L., Scrophulariaceae), and sennosides from senna leaf and pod (*Senna alexandrina* Mill., Fabaceae), psyllium seed husk (*Plantago major* L. var. *pachyphylla*, Pilger, Plantaginaceae). — *Dawnelle Malone*

[Srinivasan, V. Personal communication, August 2, 1997.]

Ginger, *Zingiber officinale*. Photo © 1997 Steven Foster.

NIH Studies St. John's Wort

The National Institutes of Health's Office of Complementary and Alternative Medicine (OCAM), the National Institute of Mental Health (NIMH), and the Office of Dietary Supplements (ODS) are collaborating to fund research to determine the potential benefits and risks of St. John's Wort (*Hypericum perforatum* L., Clusiaceae), for the treatment of depression. *Hypericum*, a wild-growing plant with yellow flowers (an introduced "weed" in North America), has recently generated media attention. An extract of Hypericum is widely used in some countries to treat mild to moderate depression. The goal of this OCAM-NIMH joint effort is to evaluate the efficacy and safety of SJW as a potential treatment for depression, in order to determine its role in helping many Americans afflicted with depressive conditions.

St. John's (SJW) Wort has become increasingly popular in Germany where physicians routinely prescribe herbal medicines to treat depression and other health conditions, such as anxiety and sleep disorders. An overview and meta-analysis of twenty-three clinical studies of SJW, which included a total of 1,757 outpatients diagnosed with mild to moderately severe depression, were reported in the August 3, 1996, issue of *British Medical Journal* (See *HerbalGram* #39, page 16). The report concluded that although Hypericum has antidepressive properties in cases of mild to moderate depression, more definitive, longer term studies are needed to explore SJW's potential as an effective antidepressant agent.

The impact of depression, a common illness that can occur in any family, is enormous in terms of human suffering and costs to the nation. In 1990, the leading cause of disability worldwide was clinical depression. Estimates of the yearly costs of depressive disorders in the United States range from $30-$44 billion dollars, including medical costs, loss of time and productivity, personnel replacement, and loss of life.

In response to public interest for more science-based information on complementary and alternative health care practices, the OCAM is planning to fund a study to evaluate the efficacy and safety of standardized extract of SJW in treating depression. The goal of this contract is to establish a full-service, centralized coordinating center to manage a multicenter clinical trial to evaluate the efficacy of this botanical product in patients with mild to moderate depression. The NIMH will provide scientific and clinical guidance on the conduct of a clinical trial on depression, in collaboration with the OCAM and the NIH ODS research.

A request for proposals (RFP) was issued June 6, 1997, with proposals due on July 21, 1997. NIMH proposed to issue an unrestrictive competitive solicitation for this requirement, and anticipates the award of a cost reimbursement contract for a period of three years. The RFP was made available electronically June 6, 1997, via the NIH Home Page, the NIH Gopher, or the NIMH Home Page.

Initial technical review of contracts received in response to the RFP was done by a team of outside experts on August 8, 1997, in Bethesda, Maryland. NIH officials said the clinical trial will be coordinated by Johathan Davidson, M.D., at Duke University Medical Center, which has received a three-year contract to conduct the $4.3 million study. Patient enrollment is expected to start next spring. For an extensive up-to-date review of SJW, please see the *American Herbal Pharmacopoeia* monograph in *HerbalGram* No. 40. — *Dawnelle Malone*

[NIH press release, June, 1997.
NIH press release, October, 1997.]

New Company to Advance Calanolide A for AIDS

MediChem Research, Inc., announced April 25 that the privately held biopharmaceutical firm has entered into a joint venture with the State of Sarawak, Malaysia, to form Sarawak MediChem Pharmaceuticals, Inc.

The new company will advance the clinical development of the anti-HIV compound called Calanolide A, discovered in the Sarawak rain forest. Calanolide A is the only naturally occurring anti-HIV compound known to be at an advanced stage of testing; no anti-HIV drug on the market is a natural product. Pending approvals from the FDA and the results of testing with healthy volunteers, the new company could have preliminary findings of Calanolide A's ability to fight HIV in humans by early 1998. Sarawak MediChem Pharmaceuticals, Inc., began clinical trials of Calanolide A in June and will be on a fast-track schedule. The Phase 1A trial is assessing the safety and human tolerance of the compound in approximately 50 healthy volunteers and is taking place in Tacoma, WA. The Phase IB trial is scheduled to begin February 1998, pending FDA approval. Researchers will study the compound's safety, efficacy, absorption, relative benefit, and synergy with existing treatments in approximately 40 HIV-positive volunteers. Phase 1B will likely take place in Chicago. Phases 2/3 could begin in late 1998 and will expand on the investigations of Phases 1A and 1B, and also include variables such as age, gender, pregnancy, pre-existing conditions and ethnicity. It will involve 100 to 500 patients and will take place in several medical centers across the country. The need for additional study will be determined by the Phase 2/3 findings.

The Calanolides are a group of compounds originally isolated from the *Calophyllum lanigerum* Miq., Clusiaceae (Guttiferae) tree. A specimen (Burley and Lee 351) was brought to the Arnold Arboretum and, in 1991, an extract from the sample sent to NCI proved to display "100 percent protection against the cytopathic effects of HIV-1 infection and essentially halted HIV-1 replication." These were discovered through the National Cancer Institute's anti-HIV screening program, with Calanolide A found to be active against the virus in 1992.

When botanists returned to Sarawak to collect material from the original plant, they found that the grove had been cut down several years earlier, perhaps by local people for fuel or building material. Samples taken from other specimens of what appeared to be the same species produced only very small amounts of cananolide. A search revealed trees of *Calophyllum lanigerum* in the Singapore Botanical Garden.

Scientists at the NCI studied Calanolide A, the most potent of the Calanolides, and patented the compound. MediChem Research then developed and

continued on page 66

Shockolate Absorbers: With or Without Almonds?

Relating automobile shock absorbers and chocolate bars would seem to be stretching the bounds of credulity, but research on this relationship is ongoing. James Steffe, Ph.D., a Michigan State University professor of agricultural engineering, and Christopher Daubert, Ph.D., then a graduate student in the same field, now teaching at North Carolina State University, found that when a moderately high electric field is applied to molten Hershey bars, an almost instantaneous change occurs: the thin chocolate liquid becomes a stiff gel. This warm, tasty fluid is transformed into a semisolid within a few thousandths of a second after the electric field is applied, and it reverts to a liquid just as fast when the power is shut off. This behavior is called electrorheology, or the study of changes in the viscosity of fluids in response to electricity.

Illustration by Regan Garrett for *HerbalGram*.

Liquids that undergo this change are called "smart liquids" because they can continuously and rapidly respond, through computer controls, to changes in a machine's environment, including the potholes that disrupt the smooth ride of a car over a road. This capability, named the "Winslow effect" for its discoverer, Dr. Willis M. Winslow, has been under experimentation by various automobile groups with the goal of developing an electrorheo-logical fluid that could be used for clutching in automatic transmissions. Other suggested uses include ultra-fast hydraulic valves with no moving parts, vibration isolation devices to make submarines and automobiles quieter, high-speed control actuators for airplanes and robots, and fast-acting valves for ink-jet computer printers.

Automotive Engineering magazine predicted eight years ago that such applications could become a $20-billion-a-year business. According to Dr. Kathleen Habelka, a chemist who participated in such testing, pure research in electrorheology is being pursued actively in Japan, but funding has practically dried up in the U.S. — *Barbara A. Johnston*

[*New York Times*. 1996. Chocolate: The Stuff of Shock Absorbers? Sept. 24.]

Think Again

Smoother mental function may be just one bite away, according to a number of producers of "brain wave" snacks. Products such as Think!™, an "interactive" candy bar that contains alleged brain food such as *Gingko biloba*, "ginseng" (type not specified), chamomile plus vitamin B-12 (4,166 times the recommended daily allowance), Intellect, offering ingredients such as kava kava root and gotu kola leaves, and Anxiety, which supposedly alleviates that efficiency-robbing state, are being marketed as an aid to such function. The label on the Think! bar suggests that consumers eat a bar and ingest fresh water "30 minutes before using the brain." Fine, but what do we do with our brain in the meantime? — *Barbara A. Johnston* [*New York Times Sunday Magazine*. August 3, 1997.]

Botanical Carnivores

Q. If you invited one of each species of carnivorous plants to a vegetarian dinner, how many meals should you make?

A. There about 450 species of carnivorous plants.

[Ask Marilyn. *Parade Magazine*, June 28, 1997.]

[Ed. note — Further research reveals that there are from 572 to 631 species of carnivorous plants including hybrids. By the way, do carnivorous plants eat vegetables?]

Sun Dew, *Drosera rotundifolia*. Photo © 1997 Steven Foster.

Structure/Function Claims? You Need The Facts

Manufacturers! Make sure you are covered!

The Dietary Supplement Health and Education Act allows herbal product manufacturers to make "structure/function" claims about the effects their products have on the structure or function of the human body. These claims may be made under the following four conditions:

- Claims must be truthful and not misleading.
- They cannot be drug claims (for the cure, treatment, mitigation or prevention of disease).
- They must carry a disclaimer that the claim has not been evaluated by FDA.
- The claims must be based on scientific evidence in your files.

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- Herb safety research

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FEVERFEW TRIALS: The promise of–and the problem with–standardized botanical extracts

by Dennis V. C. Awang, Ph.D., F.C.I.C.

Summary: The potential of feverfew, as a prophylactic treatment for reducing the incidence and severity of migraine headache attacks, has been established for a daily dose of dried encapsulated feverfew leaf contining an average of 0.54 mg of parthenolide. The conviction has been widespread that parthenolide, the dominant sesquiterpene lactone in clinically tested feverfew, is the constituent of the plant chiefly responsible for its anti-migraine activity. The recent trial of an encapsulated alcoholic extract of feverfew leaf deposited on microcrystalline cellulose found ineffective a daily dose containing 0.5 mg of parthenolide. The most reasonable explanation would indicate an insignificant role for parthenolide in migraine prophylaxis; such activity would seem to reside with some other, as yet unidentified, constituent(s) of whole dried feverfew leaf. This research also points to the need to specify preparation differences, as two previous trials on dried feverfew leaf, presumably containing the unknown active component, tested positive for migraine relief.

The publication of a recent trial of a feverfew preparation for migraine prevention highlights a major concern regarding medicinal plant formulations. In this study,[1] the Dutch researchers, de Weerdt *et al.*, used capsules of a dried alcoholic extract of British feverfew leaf containing 0.35 percent parthenolide, which was deposited on microcrystalline cellulose.

Of the initial number of 50 patients, 44 completed the study, satisfying the minimum requirement of 40 established by the International Headache Society Committee on Clinical Trials in Migraine.[2] This statistical criterion was also met by the second U.K. trial of feverfew leaf, conducted in 1988,[3] in which 59 subjects completed that study; the earlier British trial conducted in 1985[4] involved only 17 patients, all of whom were regular feverfew users, thereby attracting the further criticism of self-selection.

In the Summary that precedes the text of the subject publication, the authors propose that the observed lack of a prophylactic effect of their feverfew preparation "...may be explained by the fact that both of the (previous) studies included patients who previously reported positive experiences with feverfew preparations for migraine prophylaxis."

However, in the Discussion segment of the paper, while noting that in the 1988 study, 17 of the 59 patients had used feverfew for a long time and that these had had a more favorable response than the remaining 42 patients who had never before used feverfew, the authors point to another possible explanation of the "nonsignificant effect" in their study. They admit that their alcoholic extract of feverfew leaf, standardized on parthenolide (the hitherto presumed chief active principle), may have lacked or been deficient in other constituents present in whole leaf. These researchers single out as a possible key active constituent of feverfew the essential oil component chrysanthenyl acetate, which is present in much lower concentration in the alcoholic extract than in dried whole leaf (0.017 percent vs. 0.25 percent).

Regarding patient differences, Prof. Stan Heptinstall of the Queen's Medical Centre at the University of Nottingham, one of the authors of the 1988 publication, has stated that while the improvement in the 17 patients who had previously used feverfew was somewhat better, nonetheless, the benefit to the 42 *de novo* patients was unquestionably significant.[5]

As I have stated on numerous occasions, the Canadian regulatory criterion of a minimum of 0.2 percent parthenolide was meant,

Feverfew, *Tanacetum parthenium*. Photo © 1997 Steven Foster.

along with a certificate of botanical authentication, to ensure use of the proper chemotype of feverfew (*Tanacetum parthenium* (L.) Schultz-Bip., Asteraceae).

In face of the results of this Dutch study, I am not quite as confident about ensuring the proper nature of efficacious feverfew leaf outside of the variety grown in the U.K. used in the Nottingham trial. Unfortunately, despite cautions repeatedly expressed by Heptinstall and myself about relying too much on just parthenolide content and on the theory based on inhibition of serotonin release from blood platelets,[6,7] most of the herbal constituencies have been propounding the view that parthenolide is the active migraine principle in feverfew and that 0.2 percent of the sesquiterpene lactone in a preparation will ensure effective migraine prevention. The scientifically competent promoters of a standardized botanical extract (SBE) must surely realize that therapeutic effectiveness of SBEs depend fundamentally either on knowledge of the active constituent(s), and dose-effect relationships (preferably from human trials) or on the ability to reproduce a sufficiently comparable chemical profile of the clinically effective plant preparation—whether or not any of the active constituents can be identified!

The lack of effectiveness as a migraine prophylactic of the alcoholic feverfew leaf extract employed in the Dutch research here examined may be due to the absence of essential therapeutic components of the leaf which either were not sufficiently extracted, or perhaps degraded during the protracted extraction and processing treatment (12 plus seven days). (Clearly, more careful chemical characterization and testing of feverfew constituents is indicated and clinical trials of various sesquiterpene lactone chemotypes of feverfew, including parthenolide-free varieties, as well as the efficacious, British feverfew freed of parthenolide in a process that does not significantly modify its accompanying constituents.)

An interesting initial trial might compare placebo with dried leaf of a parthenolide-rich cultivar of feverfew, morphologically distinct from the British clinically tested variety and with dried leaf of a parthenolide-free variety, such as that employed in Guatemala for treating "female" problems.

The wisdom of the Canadian regulatory authorities in not according Drug Identification Numbers, based on the migraine therapeutic claim, to anything but whole dried feverfew leaf with pronounced parthenolide content, such as was used in the successful 1988 trial, is now abundantly clear.

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Effectiveness of Ginkgo biloba extract in Alzheimer's and multi-infarct dementia

Interest in the use of botanicals for arresting or reversing age-related cognitive deficits is at an all-time high. In numerous well-controlled clinical studies, standardized *Ginkgo biloba* L., Ginkgoaceae extract has demonstrated efficacy in improving memory and other brain functions in healthy individuals as well as in adults with age-related cognitive decline. However, few well-designed studies have assessed the effectiveness of *Ginkgo biloba* in Alzheimer's disease, and some researchers have suggested that Ginkgo may be effective in improving mental function only if the impairment is of vascular or depressive origin.

In this randomized, double-blind, placebo-controlled study, 156 patients with pre-senile or senile primary degenerative dementia of the Alzheimer's type (DAT) or multi-infarct dementia (MID) completed 24 weeks of treatment with either 240 mg/day standardized *Ginkgo biloba* extract (n=79) or placebo (n=77). Disease was classified as mild in 79 percent of patients and moderate in 21 percent. The three primary variables used in evaluating responses were the Clinical Global Impressions (CGI) for psychopathological changes, the Syndrom-Kurztest (SKT) for attention and memory, and the Nurnberger Alters-Beobachtungsskala (NAB) for activities of daily life.

A responder rate of 28 percent for multiple therapeutic effects was observed in the Ginkgo group ($p<0.01$), as compared to 10 percent for those taking placebo. In addition to this general analysis, a separate efficacy analysis was made based on the two different diagnostic subgroups: probable DAT or probable MID. Two ambiguous cases were assigned to the MID subgroup, while the DAT group was kept as homogeneous as possible. Results of this subgroup analysis showed that the differences in mean improvements between the Ginkgo and placebo groups after 24 weeks were consistently slightly higher in the DAT group.

With regard to safety in the Ginkgo study, 63 adverse effects were seen in patients taking Ginkgo, with five of these deemed serious, in comparison to 59 adverse effects (two serious) in the placebo group. A relationship between Ginkgo and adverse events (allergic reactions, gastrointestinal upset, and headache) was considered possible in only five cases. In fact, gastrointestinal upset occurred more frequently and with greater severity in the placebo group. The investigators concluded that *Ginkgo biloba* extract is well tolerated.

The authors assert that positive results with Ginkgo therapy were particularly significant in light of the fact that the parameters for "therapeutic response" in this study were defined so that only responses indicating "much" and "very much" improvement were considered for inclusion. They concluded that standardized *Ginkgo biloba* extract is "of clinical efficacy in the treatment of outpatients with dementia of the Alzheimer type or multi-infarct dementia." — *Evelyn Leigh*

[Kanowski, S., Herrmann, W. M., Stephan, K., Wierich, W., Horr, R. 1997. Proof of efficacy of the *Ginkgo biloba* special extract EGb 761 in outpatients suffering from mild to moderate primary dementia of the Alzheimer type or multi-infarct dementia. *Phytomedicine* 4/1:3-13.]

Clinical Trial Of Fenugreek
For Cholesterol and Blood Sugar Levels of Non-Insulin-Dependent Diabetics

Fenugreek seeds (*Trigonella foenum-graecum* L., Fabaceae) are high in fiber and are used as a condiment in India. In a short-term study conducted with diabetics,* who die of cardiovascular conditions 2-3 times more often than non-diabetics, fenugreek seeds were found to exert hypocholesterolemic (cholesterol-lowering) and hypoglycemic (blood sugar-lowering) effects. A long-term study was undertaken to determine the hypolipidemic (reducing fats in blood) effect of fenugreek seeds. Sixty non-insulin-dependent diabetes mellitus patients underwent a metabolic period of one week as a control, and then an experimental period lasting 24 weeks. During the experimental period, each subject consumed 25 g of powdered fenugreek seed, divided into two servings and consumed as soup 15 minutes prior to lunch and dinner. Blood samples were taken after an overnight fast at the end of the control period and at 4, 8, 12, and 24 weeks. Serum cholesterol, high density lipoprotein (HDL) cholesterol, and triglyceride levels were measured and low density lipoprotein (LDL) cholesterol was calculated.

The results of the study were illustrated in a table, not included here. Serum cholesterol, triglycerides, and LDL and very low density lipoprotein (VLDL) cholesterol levels showed a steady decrease during the 24-week period of the study. HDL cholesterol showed a 10 percent total increase. The selective activity of fenugreek to reduce LDL and VLDL could make it beneficial in preventing atherosclerosis. Because it affects glucose and insulin levels, it can be considered to be of potential use in preventing atherosclerosis and hyperlipidemia in diabetics. No adverse side effects were reported. — *Ginger Webb*

[Sharma, R. D., A. Sarkar, D. K. Hazra, B. Misra, J. B. Singh, B. B. Maheshwari, and S. K. Sharma. 1996. Hypolipidaemic Effect of Fenugreek Seeds: a Chronic Study in Non-Insulin Dependent Diabetic Patients. *Phytotherapy Research*, Vol. 10, pp. 332-334.]

*Cases drawn from Diabetics Clinics, Outpatients Department and Indoor of Postgraduate Department of Medicine, S. N. Medical College, Agra, India.

Fenugreek, *Trigonella foenum-graecum*. Photo © 1997 Steven Foster.

Study Shows Citrosa Ineffective as Mosquito Repellent

The citrosa plant (*Pelargonium* spp., Geraniaceae) is being marketed under the name "Pelargonium citrosum," and promotional literature is making claims that it has been genetically engineered to repel mosquitoes by emitting a citronella scent. A field test was conducted to test the effectiveness of this plant as a repellent against Aedes mosquitoes, in comparison to 75 percent deet and non-treatment (control). In a flat, wooded area at the University of Guelph Arboretum, Guelph, Ontario, twelve volunteers were either treated with 2 ml of deet or 2 ml of deionized water applied to their hands and forearms, or were instructed to stand directly next to a potted citrosa plant. Effectiveness was calculated by counting the number of mosquitoes that bit the participants within each daily twelve-hour test period for five days. Deet was found to provide better than 90 percent protection from mosquitoes after eight hours, and better than 60 percent protection after twelve hours. No significant difference was found between the non-treated (control) subjects and the citrosa treatment subjects. Researchers noted that the citrosa plant did not add any detectable scent to the air unless it was disturbed in some way, e.g., by the wind or a hand brushing up against it. Not only was the plant ineffective at protecting humans against Aedes mosquito bites, the mosquitoes were seen landing and resting on the citrosa plant on a regular basis. This observation supports the test results which indicate lack of repellency.

Promotional literature claims that citrosa has been genetically engineered to produce citronella oil, but chemical analysis has shown that citrosa essential oil contains only trace amounts of citronella (11 percent citronellol, 0.09 percent citronellal), and, in fact, closely resembles the essential oils of the other geranium plants.* The citrosa plant is morphologically similar to the cultivar *Pelargonium* "Rosé" (*P. graveolens* L'Hérit. x Ait., Geraniaceae or rose geranium), which is part of the hybrid complex *P.* x *asperum* Ehrh. ex Willd. = *P. graveolens* L'Hérit. x *P. radens* H. E. Moore. In fact, the citrosa plant is essentially indistinguishable from the *P.* x*asperum* hybrid complex. Despite the marketing, "Pelargonium citrosum" is not a valid taxonomic designation. Based on the results of this study, the authors conclude that citrosa should not be marketed as a mosquito repellent. — *Ginger Webb*

[Matsuda, B. M., G. A. Surgeoner, J. D. Heal, A. O. Tucker, and M. J . Maciarello. 1996. Essential Oil Analysis and Field Evaluation of the Citrosa Plant "Pelargonium citrosum" as a Repellent Against Populations of Aedes Mosquitoes. *Journal of the American Mosquito Control Association*, Vol. 12, No. 1, 69-74.]

(*Oil of Ceylon citronella grass (*Cymbopobon nardus*) has an average of 14 percent citronellal and 12 percent citronellol. The oil of java citronella grass (*C. winterianus*) has, on average 2 percent citronellal and 16 percent citronellol.— Lecture by Tucker, A. and M.J. Maciarello, Is This Plant a Hoax?)

Immunomodulating Compounds from Traditional Chinese Herbs

Immunomodulators are agents that exert a general net effect (positive or negative) on the activity of the immune system or on a specific immune function. Immunomodulators have the potential to be of clinical use in the enhancement (e.g., for treating AIDS) or therapeutic suppression (e.g., for treating organ transplant rejection or autoimmune disease) of immune function. Some compounds that have been isolated from herbs used in traditional Chinese medicine (TCM) have been shown to have immunomodulating activity.

More than 70 compounds have been isolated from the poisonous liana *Tripterygium wilfordii* Hook.f., Celastraceae, largely alkaloids and terpenoids. Many have been shown to be immunosuppressors *in vitro* and *in vivo*. *T. wilfordii* has been used in TCM to treat fever, chills, edema, and inflammation, and extracts of the plant's xylem have been used for rheumatoid arthritis, chronic nephritis, skin diseases, and immunological disorders.

Artemisinin, known as *qing haosu* in TCM, a sesquiterpene lactone isolated from *Artemisia annua* (Sweet Annie, *Artemisia annua* "Qing-Hao" L., Asteraceae), is an antimalarial drug. Recent clinical studies have found it to be an immunomodulator, and that it can be effective in the treatment of systemic lupus erythematosis, psoriasis, and other autoimmune-related disorders. Arteether, a semisynthetic analogue of dihydroartemisinin (an artemisinin derivative), is being developed by the World Health Organization to treat malaria. Another compound, artemether (a homologue of arteether), is proving to have more potent antimalarial activity than artemisinin.

The fruits of *Sophora alopecuoides* (Fabaceae) and the roots of *S. flavescens* are used in TCM for their antipyretic (fever reducing) effects. Alkaloids isolated from these plants have been shown both to be immunosuppressors (at high doses) and immunostimulators (at low doses). Diterpenoid alkaloids isolated from the axial roots of *Aconitum* species used in TCM have shown anti-inflammatory, analgesic, antipyretic and immunomodulatory activity. The sinomenine alkaloids, derived from *Sinomenium acutum* Diels. (Menispermaceae), have been shown to be clinically effective in arthritis and rheumatoid arthritis.

In addition to these compounds, several polysaccharides, such as those from the fruiting bodies of *Ganoderma lucidum* (Reishi mushroom), ling chih (Leyss. ex Fr., P. Karst., Ganodermataceae), the fruits of *Lycium barbarum* L. Solanaceae, the whole plants of *Epimedium koreanum* Berberidaceae nec *pubescens*, the roots of *Panax ginseng* C. A. Mey., Araliaceae, *Acanthopanax obovatus* nec *senticosus*, and *Achyranthes bidentata* L., Amaranthaceae, have been found to be immunostimulators. — *Ginger Webb.*

[Zhang, Ling-Hua, Yi Huang, Li-Wei Wang, and Pei-Gen Xiao. 1995. Several Compounds from Chinese Traditional and Herbal Medicine as Immunomodulators. *Phytotherapy Research*, Vol. 9, 315-322.]

From top: **Sweet Annie**, *Artemisia annua;* **Reishi mushroom**, *Ganoderma lucidum;* **Korean ginseng,** *Panax ginseng;* **Lycium fruits,** *Lycium barbarum.*
All photos ©1997 Steven Foster.

Green and Black Teas Show Antioxidant Activity

The antioxidant action of tea (*Camellia sinensis* (L.) Kuntze, Theaceae) is believed to be due to the presence of polyphenols, secondary plant metabolites shown to have excellent free-radical scavenging properties. Recent research has suggested an association between polyphenol intake and a reduction in risk of cardiovascular disease. Many laboratory studies have documented the *in vitro* (in laboratory tests) antioxidant properties of polyphenols, and antioxidant effects in the body after consumption of beverages high in polyphenols have also been reported. However, the mechanisms of action, metabolism, and bioavailability of polyphenols in the human body remain unclear.

To shed light on the protective benefits of tea polyphenols, Italian researchers evaluated the antioxidant activity of black and green teas in human volunteers and *in vitro* with and without the addition of milk.

Activity in the body was tested in 10 adults who consumed 300 ml of either black or green tea after an overnight fast. The same procedure was repeated on a separate day with 300 ml tea to which 100 ml whole milk had been added. Five adults who consumed 300 ml tap water served as controls in both phases. Responses were evaluated in terms of total plasma antioxidant potential (TRAP), a representation of the number of peroxyl radicals trapped by one liter of plasma. In vitro results were measured via a controlled TRAP-induced peroxidation reaction reactive process developed by the investigators in their laboratory.

Green tea had an antioxidant potency sixfold greater than black tea in *in vitro* tests, but in the body there was a similar level of antioxidant activity for both teas. Adding milk did not significantly alter the *in vitro* antioxidant action of either tea. However, the results in human volunteers showed that the addition of milk totally inhibited the antioxidant activity of both teas.

The authors were "surprised to find that black tea produced a response of the same intensity of green tea" in the body. They speculate that modifications to the molecular structure of black tea polyphenols may take place after ingestion, improving the antioxidant capacity of the tea. They believe that absorption of the modified polyphenols takes place in the upper part of the gastrointestinal tract, probably beginning in the stomach.

The ability of milk proteins to cause complexation of tea polyphenols is well known, but it has not appeared to affect the results of *in vitro* antioxidant tests. To explain the inhibitory effect of milk in the body, the authors suggest that the milk/polyphenol complex may be resistant to gastric breakdown, making the polyphenols unavailable for absorption in the stomach. Another possible explanation is that milk hinders polyphenol absorption by increasing gastric pH.

Black and green teas are both made from the same plant; black tea is produced through fermentation of green tea leaves. Tea leaves are reported to contain more than 35 percent of their dry weight in polyphenols. — *Evelyn Leigh*

[Serafini, M., A. Ghiselli, A. Ferro-Luzzi. 1996. *In vivo* antioxidant effect of green and black tea in man. *Eur J Clin Nutr.* 50:28-32.]

[For more on tea chemistry and pharmacology see "Rediscovering Tea: An Exploration of the Scientific Literature" by R. L. Gutman and B. Ryn, *HerbalGram* 37, 33-48.]

Green Tea, *Camellia sinensis*. Photo © 1997 Steven Foster.

Devil's Claw for Low Back Pain

Extract of the tubers of devil's claw (*Harpagophytum procumbens* (Burch.) DC ex Meissner, Pedaliaceae) has become a popular alternative for treatment of degenerative conditions of the musculoskeletal system, particularly for persons disappointed with, or intolerant of, conventional medical therapies. This study was designed to investigate the effectiveness of devil's claw as an analgesic. While evidence from animal studies has substantiated the analgesic and anti-inflammatory properties of the herb, no human studies have supported these findings. These properties are attributed to the principal active ingredient, harpagoside, an iridoid glucoside. The effectiveness of the plant extract was explored in this four-week, randomized controlled study of back pain sufferers conducted at University Hospital in Heidelberg, Germany.

A total of 118 patients between 18 and 75 years of age with low back pain not attributable to identifiable causes were invited to participate. Criteria for eligibility included the following: a history of at least six months of low back pain, an acute increase of pain that affected both rest and movement, and the requirement of at least four weeks of symptomatic treatment. An appropriate sample size was selected to establish a confidence level of 95 percent.

The principal indicator of the analgesic power of devil's claw was established to be a reduced requirement for the analgesic Tramadol over the last three weeks of the study period. Daily phone contact with the patients allowed investigators to obtain a verbal 5-point rating scale of pain intensity (none, mild, moderate, severe, intractable). Secondarily, the Arhus low back pain index was modi-

fied and employed in an attempt to record the profiles of low back pain as appropriate to this study.

Patients in the treatment group received two 400-mg tablets of devil's claw extract three times a day (total 2,400 mg), equivalent to 6,000 mg crude root, calculated at a daily harpagoside level of 50 mg. Patients in the control group received a placebo. All participants completed a general health questionnaire, and were examined, and subjected to a venous blood draw that was analyzed for the conventional biochemical and hematological indices of organ system function.

A total of 109 patients completed the study—54 in the treatment group and 55 in the control group. Groups were matched on several measures, including the Arhus back pain index. A majority of the subjects had been suffering with back problems for about 15 years. Acute attacks lasting longer than three months had caused most of them to seek treatment. Approximately 90 percent had suffered physical impairment for more than 14 days in the previous six months, with pain in one or more other sites a common symptom. Greater pain with physical activity was a prevailing problem for about two-thirds of the group. Almost all patients had previously resorted to some treatment for the chronic condition, either regularly (59 percent) or irregularly (39 percent), and the average duration of treatment was about eight years. Non-opioid analgesics had been tried by about three-fifths of the patients with varying degrees of relief; other types of medications, including opioids, centrally acting muscle relaxants, and anti-depressants, had also been used but to a lesser degree and with more limited relief overall.

Consumption of the supplementary pain-killer Tramadol did not significantly change, regardless of pain intensity; however, the number of pain-free patients increased from 0 to 9 in the treatment over the course of the study, compared to just one in the control group. An insignificant reduction in pain was confined almost entirely to a subgroup of patients whose pain did not radiate to one or both legs. There was a notable absence of identifiable clinical, hematological, or biochemical side effects.

While the primary outcome measure (reduction in Tramadol consumption) was not significantly changed, secondary measures (Arhus index) were impressive. The investigators suggest that, in light of the significant indications of safety and benefit, further trials with devil's claw investigating pain reduction would be worthwhile. — *Anne Tarleton*

[Chrubasik, S., C. Zimpfer, U. Schutt, and R. Ziegler. 1996. Effectiveness of *Harpagophytum procumbens* in treatment of acute low back pain. *Phytomedicine*, Vol. 3(1), 1-10.]

Indian Herb for Chronic Congestive Heart Failure

In a short-term, double-blind, placebo-controlled clinical trial, twelve patients (eight female, four male) with refractory chronic congestive heart failure were given dried extract of the bark of the Indian medicinal plant *Terminalia arjuna* Wight & Arn., Combretaceae, for six weeks in conjunction with conventional therapy. The herb has been used in Ayurvedic traditional medicine of India for heart conditions since the sixth century B.C. Because refractory chronic congestive heart failure is a therapeutic enigma with a high mortality rate, any new therapy with adequate safety margins that can prolong survival and improve the quality of life for these patients is welcome. The results of this short-term trial showed that the herb was useful, and a second phase consisting of long-term evaluation in an open design was then conducted.

In the first trial (Phase I), each patient received both *T. arjuna* and a placebo. Each patient received one 500 mg capsule of *T. arjuna* every eight hours for a period of two weeks. This initial period was followed by a washout period of two weeks (in which no treatment was administered), followed by another two-week treatment with placebo capsules. During this six-week period, patients continued their usual antifailure and supportive therapies. The trial was double-blind, and the sequence of administration of the *T. arjuna* and placebo capsules was not known until the end of the six weeks, at which time an evaluation from baseline to end was carried out for *T. arjuna* and for the placebo, and compared. Regression of signs of heart failure and appreciable improvement in symptoms such as dyspnea (shortness of breath) and fatigue were seen with *T. arjuna* as compared to placebo. A decrease in echo-left ventricular enddiastolic volume and endsystolic volume indices was observed, as well as an increase in left ventricular ejection fractions. It was decided that Phase II of the study would commence.

Phase II, which lasted for a mean of 24 months (20-28 months), was conducted to determine whether the improvements observed in Phase I would be sustained with continued treatment with *T. arjuna*, and to establish the safety of the extract for long-term use. Phase I participants continued with 500 mg dosages of *T. arjuna* every eight hours as adjuvant therapy. They continued to show improvements in symptoms and signs of heart failure as well as in quality of life for about two - three months, with the improvement being more or less maintained throughout the remaining period of the study. Two patients died during Phase II: one at 16 months into the study, of cerebrovascular accident; the other at 14 months, of sudden cardiac death. In neither case did any "significant clinical untoward effect" occur during *T. arjuna* or placebo therapy.

This clinical investigation confirms the short- and long-term benefits and safety of *T. arjuna* adjuvant therapy in patients with otherwise unresponsive chronic congestive heart failure. The mechanism of action of this medicinal plant extract still needs to be determined; it may be related to the cardiotonic properties of the plant's glycoside content or to the free-radical scavenging actions of the plant's tannins and flavones. — *Ginger Webb*

[Bharani, A., A. Ganguly, and K. D. Bhargava. 1995. Salutary effect of *Terminalia Arjuna* in patients with severe refractory heart failure. *International Journal of Cardiology*, Vol. 49, 191-199.

Reichert, R. 1996. *Terminalia arjuna* for Congestive Heart Failure. *Quarterly Review of Natural Medicine*, Fall, 177-178.]

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PLANT PATENTS

By Karen Dean

NEEM OIL

Neem oil as a male contraceptive, invented by Gursaran P. Talwar, Shakti N. Upadhyay, and Suman Dhawan (J.N.U. Complex, Shahid Jeet Singh Marg, New Delhi 110 067, IN), no assignee. U.S. Patent 5,501,855, issued Mar. 26, 1996.

Use of an intra-vas application of neem oil (*Azadirachta indica* A. Juss., Meliaceae) as an alternate approach to vasectomy for long-term contraception in male rats. The immunomodulatory properties of the plant appear to block spermatogenesis without affecting testosterone production. Although reduced in diameter, the seminiferous tubules appeared normal and contained mostly early spermatogenic cells. No antisperm antibody could be detected in the serum. Unilateral administration of neem oil in the vas resulted in a significant reduction of testicular size and spermatogenic block only on the side of application. The draining lymph node cells of the treated side also showed enhanced proliferative response to *in vitro* mitogen challenge. Neem oil and other neem plant extracts have long found varied applications in Ayurvedic and traditional Indian herbal practice. This patent describes one such use, along with the experimental data supporting that use.

EXTRACTS OF *PILIOSTIGMA THONNINGII*

Invented by Ezio Bombardelli, Paolo Morazzoni, and Giuseppe Mustich and assigned to Indena S.p.A., Milan, Italy. U.S. Patent 5,653,185, issued June 3, 1997.

Patent covers novel extracts of *Piliostigma thonningii* (Schumach.) Milne-Redh., Fabaceae, that have antiviral action, protecting the processes for preparing and formulating the extracts, and the use of the extracts to treat the viral infections that cause such diseases as herpes, influenza, bronchopulmonary infections and HIV.

OBTAINING ICE-NUCLEATING AGENT FROM SEA BUCKTHORN

Invented by Alfred Jann (Marin-Thonon, France), Rolv Lundheim (Trondheim, Norway), Peter Niederberger (Epalinges, Switzerland), and Michel Richard (Peney-Le-Jorat, Switzerland). No assignees. U.S. Patent 5,637,301, issued June 10, 1997.

Sea buckthorn (*Hippophae rhamnoides* L., Elaeagnaceae) berries and leaf tissues yield juice and aqueous extracts containing an ice-nucleating agent that has a number of potential industrial applications. An ice-nucleating agent elevates the freezing temperature of a liquid in which it is dissolved. This type of compound occurs throughout nature, and plays a critical role in the annual cycle of deciduous tree leaf changes. As ambient temperatures drop during the autumn, certain types of bacteria that grow on leaves and stems of deciduous trees produce elevated levels of ice-nucleating compounds. When the organisms freeze at a temperature several degrees above the freezing temperature of pure water, the resulting ice crystals sustain the damage that causes the leaves to discolor and fall off. Species of ice-nucleating bacteria are the key to the commercial "snow-making" process at ski resorts, and have applications in the processing of frozen food products. This patent cites several previous patents on ice-nucleating microorganisms, but this appears to be the first patent on ice-nucleating compounds from a plant.

PLANT PROTEIN USEFUL FOR TREATING TUMORS AND HIV INFECTION

Invented by Sylvia Lee-Huang and others, and assigned to New York University (New York, NY), American Biosciences, Inc. (Boston, MA), and the United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C. U.S. Patent 5,484,889, issued January 16, 1996.

A Single Chain Ribosome Inactivating Protein (SCRIP) that occurs naturally in high concentrations in the fruit and seed of Chinese bitter melon plant (*Momordica charantia* L., Curcubitaceae) has shown dramatic anti-tumor and anti-HIV activity in laboratory tests. SCRIPs occur naturally in many different plants, where they serve as an important component of a plant's immune response to invading bacteria and viruses. SCRIPs that have been identified in studies include pokeweed antiviral protein (from *Phytolacca* spp.), wheat germ protein, gelonin, dianthins, momorcharins, and trichosanthin. The *M. charantia* proteins (the momorcharins) selectively inactivate the ribosomes of tumor cells and HIV-infected cells, without damaging healthy cells. The ribosomes are the structures inside the cell where ribonucleic acid (RNA) executes the protein assembly orders from the DNA in the nucleus of the cell. When protein assembly stops, the cell dies.

The patent covers not only the anti-tumor and anti-HIV capabilities of momorcharins, but also the method of extracting them from the *Momordica charantia* plant, the method of purifying them, and a method of producing the proteins recombinantly in other organisms. The importance to this patent of the processing and purification steps points to a significant feature of modern plant patenting strategy: it's not enough to simply identify a botanical lead. A plant-product developer must go considerably beyond the plant itself, to make it into a patentable product.

Bitter melon, *Momordica charantia.* Photo © 1997 Steven Foster.

President's Commission on Dietary Supplement Labels Issues Final Report

Botanicals Are a Key Issue

By Rob McCaleb and Mark Blumenthal

After 18 months of meetings, testimony and long-distance editing by phone, fax, and email, the Commission on Dietary Supplement Labels (CDSL) issued its final report to the President, Congress, and the Secretary of Health and Human Services. The report, released in October, was mandated by the Dietary Supplement Health and Education Act of 1994 (DSHEA), the landmark legislation that dramatically altered the way dietary supplements are regulated in the U.S. The DSHEA also created the CDSL, along with the NIH Office of Dietary Supplements (ODS). Congress left to the CDSL many of the issues unresolved by the debates and compromises made in passing the Act. The CDSL held nine open meetings and received testimony and input from hundreds of people in the general public, the supplement, food and drug industries, members of the scientific community, health professionals, consumer groups, federal and state governmental agencies and others. The Commission released a draft report on June 24 for public comment and held its last meeting August 14-15, 1997, to consider the public comments it had received.

The Commission members were Professor Norman R. Farnsworth, Research Professor of Pharmacognosy and Senior University Scholar at the University of Illinois at Chicago; Robert S. McCaleb, President of the Herb Research Foundation; Annette Dickinson, Ph.D., of the Council for Responsible Nutrition; Malden Nesheim, Professor of Nutrition and former Provost at Cornell University; Shiriki K. Kumanyika, Associate Director for Epidemiology at Pennsylvania State University School of Medicine; Anthony T. Podesta, an attorney and legislative expert on issues relating to food and drug law; and Margaret Gilhooley, Professor of Food and Drug Law at Seton Hall Law School in New Jersey and a former FDA attorney.

A brief overview of the report, with specific emphasis on botanicals, follows:

FORMAT OF THE REPORT

In the DSHEA, Congress mandated that the recommendations of the CDSL be published as proposed rules, which could become regulations after public comment and any necessary revisions. The Commission chose to limit the items in its reports which could be considered proposed rules, making three kinds of statements:

Findings — Conclusions reached by the Commission;

Policy Guidance —Advice to agencies, groups or individuals, not meant as recommended regulatory changes;

Recommendations — Proposals to Congress or governmental agencies (usually FDA) intended to be acted upon.

SAFETY OF DIETARY SUPPLEMENTS

Dietary supplement proponents often claim that they are relatively safe, especially when compared to pharmaceutical drugs, yet one of the primary issues expressed by individuals and groups during Congressional hearings on DSHEA was concern about safety and potential misuse or abuse of dietary supplements, particularly botanicals. During the CDSL public hearings, supplement proponents charged the FDA had abused its authority by improperly classifying herbs as "unsafe food additives." Proponents of stronger regulation—including regulators themselves—claimed that DSHEA hampers the FDA's ability to protect the public. The Act itself states that dietary supplements "are safe within a broad range of intake, and safety problems with the supplements are relatively rare." Congress emphasized in DSHEA that the government should act quickly if a safety problem arises, but that it should not impose unreasonable barriers or restrict access to safe products. The Commission underscored both points, stating the following:

CONCERNING THE SAFETY OF BOTANICALS, THE REPORT STATES:

"There are relatively few reports in the scientific literature that indicate potential or actual toxicity following the use of these products. When such reports are found, they often are single-case reports involving allergenic reactions or toxicity due to improper labeling, adulteration, or an idiosyncratic reaction...."

ON ENFORCEMENT ISSUES:

"The Commission recognizes the importance of having adequate and timely enforcement procedures for products marketed as dietary supplements that are not safe or have a high potential for abuse, while maintaining a regulatory climate that preserves the availability of safe products. The apparent safety of the majority of products now marketed as dietary supplements actually increases the importance of having adequate enforcement mechanisms, because consumers may then assume that a wide margin of safety automatically applies to any product classified as a dietary supplement."

Further, in contrast to the characterization of the FDA, supplement opponents and sometimes the media, the Commission pointed out that the safety standard for dietary supplements is tougher than for food: "Under DSHEA, FDA must show affirma-

tively in court, that there is an unreasonable risk posed by consumption of a dietary supplement. The agency need not show that injury has occurred, only that a reasonable possibility of harm exists."

The Commission made no formal recommendations in the area of safety, but made these suggestions (Policy Guidance):

1. The supplement industry must accept the responsibility of assuring the safety of dietary supplements and take actions to meet expectations expressed in DSHEA that supplements are and will continue to be safe for use by the public.

2. The CDSL urged the FDA, industry, scientists and consumer groups to cooperate in the development of postmarketing surveillance systems so that adverse reactions can be reported and corrected quickly. The report cites examples of how other nations employ such reporting systems, including Australia, England, France, and the World Health Organization (WHO) monitoring center in Sweden.

3. The Commission urged manufacturers to include appropriate warnings on labels, as permitted by DSHEA.

4. CDSL urged the FDA to take swift enforcement action to address safety issues such as those posed by "products containing ephedrine alkaloids."

5. Federal and state agencies are responsible for enforcement actions and may need to be given additional resources to develop the evidence, "*in the context of their overall health priorities.*"

NLEA HEALTH CLAIMS IN DIETARY SUPPLEMENT LABELING

The predecessor of DSHEA was the Nutrition Labeling and Education Act of 1990 (NLEA), a law allowing FDA to approve "health claims" for both conventional foods and dietary supplements. Health claims are statements that characterize the relationship between a nutrient and a disease or health-related condition. These health claims for conventional foods were to be approved only when "significant scientific agreement" exists; Congress left to the FDA's discretion what level of evidence would be required to make health claims for dietary supplements. Supplement proponents argued that a standard of "significant scientific *evidence*" was more appropriate, as it is often difficult to get scientists to agree on fine points in science, especially for the fast-breaking area of nutritional research.

In order to maintain "a level playing field" FDA chose the same significant scientific *agreement* standard for supplements as for foods. The supplement industry feared that many supplements might not pass such a standard, and that the FDA was not maintaining a level playing field, by requiring more "agreement" for supplements than for foods. DSHEA's sponsor, Sen. Orrin Hatch, maintained that nothing is wrong with the standard, but with the FDA's *interpretation* of that standard. The Commission recommended that:

1. "The process of approval of health claims as defined by NLEA should be the same for dietary supplements and conventional foods.

2. "The standard of significant scientific agreement is appropriate and serves the public interest." However, CDSL added a statement that this standard "should not be so strictly interpreted as to require unanimous or near-unanimous support." This seems to echo Sen. Hatch's concern about overinterpretation of the phrase.

3. "The FDA should ensure that broad input is obtained to ascertain the degree of scientific agreement for a claim." The CDSL encouraged using panels of qualified scientists outside the agency and giving considerable weight to the views of other government agencies. This is significant, since other government agencies supported the claim for folic acid against birth defects long before the FDA thought there was "agreement." The Commission is recommending (not just a suggestion) that the FDA stop being so insular in its decision-making.

DSHEA STATEMENTS OF NUTRITIONAL SUPPORT

One of the major changes DSHEA made in food and drug law is that it allows dietary supplements to bear "statements of nutritional support" including "structure and function" claims, which allow some health-related information to be conveyed on product labels. Such claims must be truthful and not misleading and must be based on scientific evidence in the possession of the manufacturer at the time the claim is made. The standards of evidence for such claims are not as strict as those for health claims under NLEA, and they may be made without the FDA's concurrence or permission.

The CDSL report offers the following policy guidelines (not regulatory proposals or "recommendations") in developing and evaluating these statements/claims:

1. "Statements of nutritional support should provide useful information to consumers about the intended use of a product."

2. "Statements of nutritional support should be supported by scientifically valid evidence substantiating that the statements are truthful and not misleading."

3. "Statements indicating the role of a nutrient or dietary ingredient in affecting the structure or function of humans may be made when the statements do not suggest disease prevention or treatment."

4. The terms "stimulate," "maintain," "support," "regulate," or "promote" "can be appropriate when the statements do not suggest disease prevention or treatment or use for a serious health condition."

5. "Statements should not be made for products to 'restore' normal or 'correct' ab-

normal function when abnormality implies the presence of disease." The report cites a claim to "restore" normal blood pressure as an example, if the abnormality implies hypertension.

6. These statements should be distinct from NLEA health claims and should not "state or imply a link between a supplement and prevention of a specific disease or health-related condition."

7. These statements are not drug claims and should not refer to specific diseases, disorders, or classes of diseases and should not use the terms "diagnose," "treat," "prevent," "cure," or "mitigate" — words that are listed in the Food, Drug and Cosmetic Act as part of the definition of "drug."

The Commission recommends that to the extent that financial and human resources are available, FDA should continue to give guidance to manufacturers by responding to letters of notification (i.e., those from the manufacturer notifying FDA of the intent to market a product with a specific claim) when FDA deems a proposed statement to be inappropriate.

SUBSTANTIATION OF STATEMENTS OF NUTRITIONAL SUPPORT

The Commission reviewed over 1,000 claims submitted to FDA by manufacturers and agreed that guidelines are needed to standardize the format of the notification letters that manufacturers send to FDA within the 30-day time period from the date of first offering the new claims. Such letters should include the following: statement of purpose of the product, vendor information (address, etc.), product identification including copy of the label, ingredient statement (including, for botanicals, the common name, Latin name with botanical authority, and plant part used), and intended use, including recommended dosage and appropriate contraindications and warnings.

The Commission initially recommended that the letter include a summary of the evidence used to substantiate the safety and efficacy of the product, and a consumer version of the summary evidence. This recommendation was dropped in the final report and replaced with "policy guidance" urging manufacturers to provide such summaries "in the notification letter or in a separate public notice."

The Commission also made specific suggestions regarding the contents of the manufacturer's substantiation files. They should include the following items: a copy of the notification letter sent to FDA, key evidence to substantiate statements of nutritional support or structure/function claims, "including an interpretive summary of the evidence by individual(s) qualified by training and experience," identity and quantity of ingredients that are the subject of the claim, evidence substantiating safety of the product, assurance that good manufacturing practices were followed in producing the product, and the qualifications of the person(s) who reviewed the evidence for safety and efficacy.

PUBLICATIONS USED IN CONNECTION WITH SALES (THIRD PARTY LITERATURE)

The Commission supports increased use of third party literature "to help consumers use dietary supplements appropriately." It approves the use of summaries of scientific studies that mention a particular brand of product that was used in a study. The report recognizes that "Several organizations [including the American Botanical Council and the Herb Research Foundation] are currently publishing materials specifically intended as 'third party literature.' This literature can provide useful information for consumers, provided it meets all of the requirements of DSHEA, including the requirements that the information be truthful, not misleading, and balanced." The report suggests that the FDA should undertake proactive monitoring and develop regulatory guidance "if necessary."

BOTANICAL PRODUCTS

One of the most controversial and probably most misunderstood recommendations of the draft report published in June deals with the possibility of reviewing and approving therapeutic claims for some herbs as over-the-counter (OTC) drugs. Many people have incorrectly interpreted this recommendation as a move by the Commission members to remove herbs from dietary supplement status and place them back under FDA's more extensive control as drugs. Some public comments claimed that the Commission overreached its mission by dealing with the therapeutic use of botanicals. These comments claim that under DSHEA, herbs and other supplements are defined as foods, and thus any suggestions about potential regulation of herbs as drugs is clearly outside the intention of the Act and the mission of the Commission. Much of this comes from fear that such recommendations will result in herbs being classified as drugs and no longer as dietary supplements. This is *not* what the Commission is recommending.

As many in the botanical community are aware, people use herbs and other supplements in a variety of ways, sometimes for the prevention or treatment of disease. The Commission noted that some supplement uses "are similar to" OTC drug uses. Public testimony before the Commission raised this issue repeatedly, and CDSL commented that "in some cases, current scientific evidence supports such (OTC drug) uses." The report is careful to emphasize that drug-only status for herbs is not under consideration: "the Commission recognizes that DSHEA includes botanicals under the definition of dietary supplements and does not intend to recommend any change in legislation to alter the status of these products as dietary supplements."

Based on prior testimony by ABC and others, the report makes brief mention of the regulation of herbs in foreign countries. CDSL reviewed the World Health Organization (WHO) "Guidelines of the Assessment of Herbal Medicines" as well as regulations in Australia, England, France and Germany, where herbal products are generally marketed as licensed drugs. CDSL also reviewed regulation in Japan, China and other countries; with 18 regulatory schemes reviewed, 12 of which allowed a more streamlined means of approving therapeutic claims for botanicals labeled as drugs.

The Commission suggested that for botanical products that cannot meet FDA OTC review requirements, "more study is needed regarding the establishment of some alternative system for regulating botanicals

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"When Will There Come a Savior...?"

by Varro E. Tyler, Ph.D., Sc.D.

Many past and present actions of the United States Food and Drug Administration with respect to herbal products should be a matter of concern to every thinking citizen. These began long before the passage of the Dietary Supplement Health and Education Act of 1994 (DSHEA) and have continued ever since. They represent the thinking of an agency that, for whatever reasons, cannot adjust to the fact that nearly 60 million Americans, one-third of the adult population, now use herbal products. Instead of fostering conditions that would preserve and protect the health of these consumers, the FDA seems determined to hinder their sensible use of herbal remedies. Examination of the recent record supports this contention.

Nearly 20 years ago the FDA compiled and published a list of "Unsafe Herbs."[1] Included with such obviously toxic plants as belladonna (*Atropa belladonna* L., Solanaceae), poison hemlock (*Conium maculatum* L., Apiaceae), and jimson weed (*Datura stramonium* L., Solanaceae) were some that certainly did not merit inclusion in that category. Horse chestnut (*Aesculus hippocastanum* L., Hippocastanaceae), a widely used treatment for varicose veins in Europe, was listed as was bloodroot (*Sanguinaria canadensis* L., Papaveraceae), a popular ingredient in toothpaste and mouthwash. But perhaps the crowning insult to herbal medicine was the categorization of St. John's wort (*Hypericum perforatum* L., Clusiaceae) as unsafe. That herb is currently the best selling prescription drug in Germany for mild to moderate depression. It has recently enjoyed a huge wave of popularity as an herbal dietary supplement in the United States.

In November 1988, the FDA instructed a U.S. marshal to seize two barrels of black currant oil (*Ribes nigrum* L., Grossulariaceae) on the grounds that because it was to be placed in gelatin capsules, it was a "component" of food and therefore an unapproved food additive.[2] The case was summarily dismissed in U.S. District Court, but in 1992, the FDA appealed to the U.S. Seventh Circuit Court of Appeals. In finding for the defendant, Judge Cudahy of that body noted that under the FDA's definition, any food to which water was added could become a food additive. He called their contention an "Alice-in-Wonderland approach" that would allow the FDA to make "an end-run around the statutory scheme."

During the early 1990's, there was considerable interest in this country in obtaining approved food additive status (GRAS listing, generally recognized as safe) for stevia.[3] The leaves of this plant, *Stevia rebaudiana* (Bertoni), Asteraceae, and its principal constituent, stevioside, are now widely used in Asian rim nations as non-caloric sweeteners. The safety of both products is unquestioned there. Years of use in multi-ton quantities have not resulted in any significant toxicity being reported. Nevertheless, in May 1991, the FDA embargoed the importation of stevia leaves, stevioside, and food containing them on the grounds that the herb was an unapproved food additive and not GRAS listed.

I have personal knowledge of two excellent petitions, both comprehensive, detailing the widespread use of stevia and the safety of its constituents that were submitted to the FDA in the early 1990's. Both were rejected on the grounds of questionable safety, citing references in foreign scientific journals of questionable quality that dealt with purported toxic effects of the plant. If these same references had supported the safety of stevia, they would never have been considered by the Agency because of their questionable quality.

The rejection of GRAS status for stevia became moot with the passage of DSHEA in 1994. The FDA import embargo was lifted in 1995, so long as the herb was intended to be sold as a dietary supplement.[4] Stevia is now readily available in health food stores and pharmacies and is widely used. Interestingly, no adverse effects have been reported from its use in this country, supporting the contention that the FDA erred in refusing to grant the herb approved food additive status. In fact, the original position of the herb industry was that stevia was a safe food, not a food additive—a position FDA was unwilling to accept.

Passage of DSHEA also caused the agency to lift a number of previously im-

Bloodroot, *Sanguinaria canadensis.*
Photo © 1994 Steven Foster.

Belladonna, Deadly nightshade, *Atropa belladonna.* Photo © 1992 Steven Foster.

posed import alerts and import bulletins affecting herbal products. These included an import ban imposed on evening primrose oil (*Oenothera biennis* L., Onagraceae) in 1990, as well as long-standing restrictions on ginseng and ephedra (*Ephedra sinica* Stapf., Ephedraceae).[5]

In 1977 FDA questioned the inherent safety of ginseng products when it issued Import Alert 66-02. This action challenged the GRAS status of ginseng products by suggesting that ginseng was only safe as a water infusion (i.e., as an herbal tea) and that ginseng in any other form was considered unsafe a priori. "The import alert was intended primarily to preclude ingestion of ginseng other than as a water infusion."[6] For several years after this alert was issued, importers of Chinese or Korean ginseng (*Panax ginseng* C. A. Mey., Araliaceae) products had them relabeled in the country of origin as "ginseng tea capsules" for products containing dried ginseng powder in gelatin capsules or "ginseng tea extract" for liquid or semi-liquid concentrated extracts. The inherent absurdity of this policy was patently obvious to most observers of the scene during that time and appears to be all the more ludicrous and irrational in retrospect 20 years later. Of course, there were few if any substantiated reports of adverse reactions to ginseng products at that

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FDA Proposes Health Claim for Psyllium

The FDA has proposed a rule that would amend the regulation permitting food labeling bearing a health claim on soluble fiber for a lower risk of coronary heart disease (CHD) to include soluble fiber from psyllium husks (*Plantago asiatica* L., Plantaginaceae). The qualifying level of psyllium fiber is proposed to be 10.2 g per total daily intake (about 7 g of soluble fiber). This proposal, published in the May 22 *Federal Register*, is a result of Kellogg Co. filing a petition in June 1996 requesting that foods which contain a certain amount of psyllium become eligible for the reduced CHD risk claim. The cereal manufacturer's petition contained data from 57 clinical studies (1965-1996—including 21 human studies) on psyllium's effects in lowering cholesterol and the risk of coronary heart disease.

Psyllium, a harvestable grain mostly grown in France, Spain, and India, is cultivated in small amounts in the southwestern United States. The FDA is not certain whether it will consider psyllium husk in grain-based food applications as generally recognized as safe (GRAS), which Kellogg requested. According to the FDA, a preliminary review of the GRAS affirmation petition reveals that it contains significant evidence supporting the safety of the use of this substance at the levels necessary to justify a health claim. The FDA refers to a 1993 report from the Federation of American Societies for Experimental Biology's (FASEB) Life Sciences Research Office determining that psyllium is safe at levels up to 25 g per day.

However, the FDA expressed "some concern" about psyllium's long-term risk, in which high levels of psyllium husk "may enhance epithelial cell proliferation in the gastrointestinal tract or cause allergies in some people. There is no agreement in the scientific community, however, whether such an increase in cell proliferation is related to an adverse health effect."

Psyllium husk can also cause allergic reactions in some people, FDA notes. Increasing the purity of the husk by mechanical sieving can reduce the allergy-causing substances; therefore, FDA is proposing specifications for purity of no less than 95 percent and requests comments on them. In addition, the notice asks, "Are other steps such as requiring that a psyllium-containing product that bears a health claim declare on its principal display panel that psyllium is present in the food, necessary?"

FDA is asking for comments on the subject. Two other companies, Procter & Gamble and Ciba-Geigy, have tried to receive FDA approval for a cholesterol-lowering claim on their psyllium-based laxatives, (Metamucil® and Perdiem®, respectively), but have not received it. — *Barbara A. Johnston*

[Health Supplement Retailer. 1997. p. 35.
Federal Register 1997. May 22.
F-D-C Reports — "The Tan Sheet." 1997. p. 15. May 26.]

German Government Limits Ginkgolic Acid Levels in Ginkgo Leaf Extracts

By Mark Blumenthal

In Germany the standardized extracts of *Ginkgo biloba* L., Ginkgoaceae, leaf are approved by Commission E for increased peripheral circulation and related cognitive benefits. The approved Commission E monograph for Ginkgo biloba leaf dry extract notes several parameters for the quality of the extract: the drug (herb)/extract ratio must be from 35-67:1, averaging 50:1; the extract must be characterized by 22-27 percent flavonone glycosides and 5-7 percent terpene lactones, with specified ranges of ginkgolides A, B, and C as well as a specified range of bilobalide.

The monograph also notes that the level of ginkgolic acids must be below 5 parts per million (ppm).

In the preparation of ginkgo biloba leaf extracts by some manufacturers, ginkgolic acids are normally kept to a minimum level. This is done because they are chemicals classified as alkylphenols of the urushiol type, related to compounds in poison ivy (*Rhus toxicodendron*, [Small ex Rydb.] Greene, Anacardiaceae), and are associated with contact allergic responses, especially dermatitis. Ginkgolic acids are found in relatively high concentrations in the seed cover of *Ginkgo biloba* but are also found in lower concentrations in ginkgo leaf. Their presence in the leaves is the reason why some authorities consider ginkgo leaves unsuitable for use in herbal teas (Thiele, 1997).

In May 1997, the German Institute for Drugs and Medicinal Products (BfArM) sent a letter to manufacturers of *Ginkgo biloba* leaf extracts and other ginkgo preparations regarding the levels of ginkgolic acid in these products.

The communication stated that, based on the present level of knowledge, the BfArM considers it necessary to reduce the content of ginkgolic acid in finished ginkgo preparations to a maximum level of 5 ppm.

In a letter to the leading producer of Ginkgo biloba standardized extract in Germany, the Dr. Willmar Schwabe Co. of Karlsruhe, Dr. A. Thiele of BfArM wrote that if proof of the 5 ppm maximum level cannot be documented, "the registration for these pharmaceuticals will be canceled since in this case, there is the well-founded suspicion that the pharmaceuticals—when used in accordance with the instructions [in the Commission E monographs]—produce damaging effects which exceed a justifiable degree according to the knowledge of medical science." (Thiele, 1997)

"The *Ginkgo biloba* extract produced by Schwabe, known in the pharmaceutical industry as Egb 761, does not contain more than the maximum amount of ginkgolic acids, because these compounds are eliminated during manufacture of the extract. All of our products thus comply with the positive Monograph I [i.e., the approved Commission E monograph], as well as the draft monograph of the WHO [World Health Organization], so that no action is necessary from our side." (Busse, 1997)

It is not clear how this new regulatory enforcement action will affect other ginkgo products sold in Germany. After Schwabe's Tebonin®, the second best-selling ginkgo extract is Kaveri®, marketed by Lichtwer Pharma GmbH of Berlin, which reduces ginkgloic acids below 5 ppm in the manufacturing process. Reduction or minimization of ginkgolic acid content is not an industry or regulatory issue in the U.S. at this time. There does not appear to be any significant reports of adverse reactions to ginkgo extracts related to ginkgolic acid content. ❑

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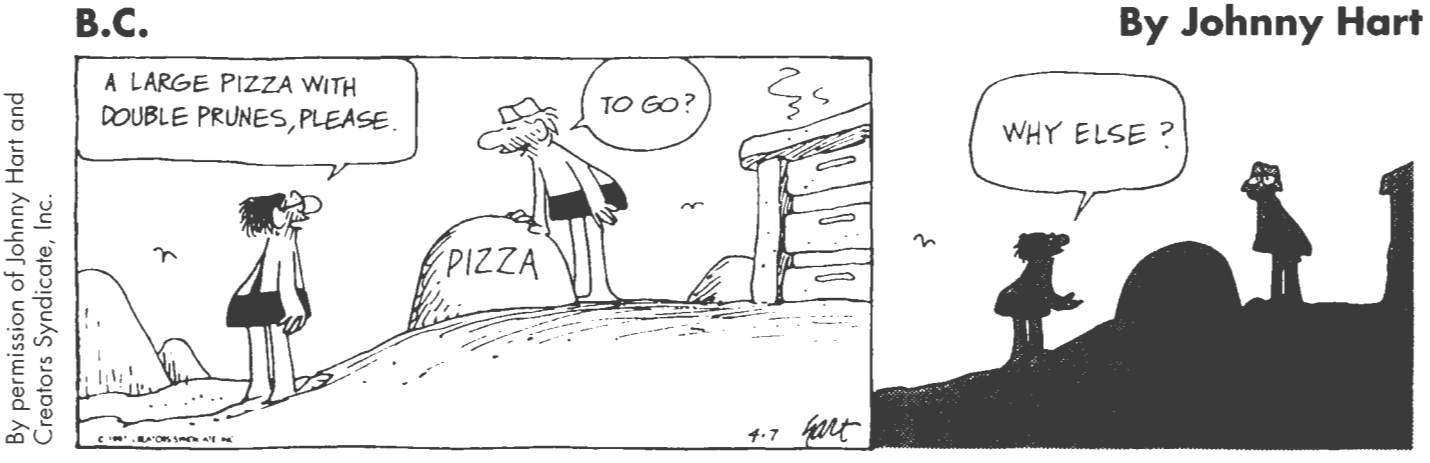


Sassafras

⚜*Sassafras albidum* (Nutt.) Nees,
Lauraceae (Laurel Family)
Sassafras

Sassafras occupies a prominent position among our native culinary plants. Filé, a fine powder of ground sassafras leaves, imparts a distinctive flavor to gumbo, a popular South Louisiana dish. Sassafras tea, made by steeping pieces of the root or bark, has been a popular drink since the early colonization of this country. Sassafras oil, distilled from the bark of the roots, is used to flavor medicines and candy and in scenting some perfumes. Unfortunately, safrole, one major component of sassafras oil, has been shown to be mildly carcinogenic in laboratory animals. Sassafras is a deciduous, dioecious tree common in old fields and woodlands of Louisiana and the eastern United States. Leaves, especially of young trees, are mitten-shaped, and both right- and left-handed "mittens," as well as ones with two thumbs, are produced. Leaves of older trees—which incidentally can become one hundred feet tall with trunk diameters of three to four feet—tend to be unlobed. Both the male and the female flowers are small, yellowish green, and radially symmetrical with six perianth segments. Male flowers have nine stamens and release their pollen by means of tiny, flaplike doors, a feature characteristic of the laurel family. Sassafras fruits are purple drupes supported by a fleshy, enlarged, reddish petiole. [The Choctaw used it to "thin the blood," and for treatment of measles. The Houma also used it in cases of measles. Used by other Native American groups also.]

Flora of

Yellow Lady's Slipper

⚜*Cypripedium kentuckiense* C. F. Reed
[Syn. *Cypripedium calceolus* L.]
Orchidaceae (Orchid Family)
Yellow Lady's Slipper

Yellow lady's slipper orchid is rare in the rich, deciduous woods of central Louisiana. The unusual yellow, pouchlike slipper is formed by the lower petal, or lip, which differs considerably from the other two lance-shaped, spirally twisted, purplebrown petals. Contained within the slipper is the column, composed of two functional stamens, the stigma, and the style. The three sepals are similar in color to the lateral petals but are broader. Three to five pleated leaves are supported on stems that may reach two feet tall. Until recently, the yellow lady's slippers in the eastern United States had been called *Cypripedium calceolus*, but investigations suggest that the plants found from Louisiana to Kentucky make up a distinct species that should be called *C. kentuckiense*. Beautiful and unusual, the yellow lady's slipper is difficult to grow because of its specific requirements. [Like all other native orchids, Lady's Slipper is listed as a threatened species under CITES (Convention in Trade in Endangered Species). The root was formerly used in Eclectic Medicine of the 19th and early 20th centuries as a sedative. *C. acaule* was used by Native Americans in the Northeast and *C. parviflorum* by the Cherokee.]

Illustrations by Margaret Stones

Louisiana

Reprinted with permission from Flora of Louisiana, *1991. Botanical descriptions by Lowell Urbatsch. Louisiana State University Press. Information from Daniel Moerman, Ph.D., and* HerbalGram *staff shown in [ ].*

Southern Magnolia

⚜*Magnolia grandiflora* L.,
Magnoliaceae (Magnolia Family)
Southern Magnolia

The southern magnolia, perhaps the grandest of our [Louisiana] native trees, is a traditionally recognized symbol of the South. Because of its beauty and abundance, this tree's blossom was designated in 1900 as the state flower by the Louisiana Legislature. Southern magnolia is easily distinguished by its glossy, evergreen leaves whose undersides are typically rust colored. Prized for their fragrance, the beautiful, creamy white flowers bloom from April to June. In true magnolia fashion, each flower is composed of several showy, spoon-shaped petals and numerous stamens and pistils disposed in spiral ranks. Fruits, which mature from September through October, are conelike aggregates of follicles. Lustrous, bright red seeds remain suspended for a time by thin threads after the fruit opens and present a colorful display. Southern magnolia, slow growing and long lived, may attain a height of nearly one hundred feet. Along with American beech, it forms a unique climax forest association on the moist, fertile ravine slopes of the Lower South. [The Choctaw used a plant or bark decoction for treatment of prickly heat and the bark in a steambath for treatment of dropsy.]

Tulip Tree

⚜*Liriodendron tulipifera* L.,
Magnoliaceae (Magnolia Family)
Tulip Tree or Yellow Poplar

Easily recognized by its apically truncate, four-lobed leaves, tulip tree is widespread on mesic sites [sites that tend to be moist and wet] in the eastern United States. In certain habitats, it may be a predominant forest species and a giant as well. The national champion tree, growing in Virginia, is reported to have a height of 124 feet and a trunk circumference of 30 feet 3 inches. Its scientific name, which literally means "tulip bearing tulip tree," seems redundant but emphatically calls attention to the tree's attractive flowers. Six yellowish green perianth parts, the same number as in the tulip flower, are each highlighted with a vivid orange basal spot. Three greenish, reflexed stamens unfurl below the petals, and within occur numerous stamens and pistils. The rather conelike aggregates of winged fruits persist on the tree after its leaves have been shed. Tulip tree is an attractive ornamental because of its pyramidal form, its ash gray bark of interlacing ridges, and its unusual flowers and foliage. It is also a useful timber species. [The Cherokee had many uses for this herb—treatment of gastroenteritis and as a febrifuge, vermifuge, and snakebite remedy.]

Purple Coneflower

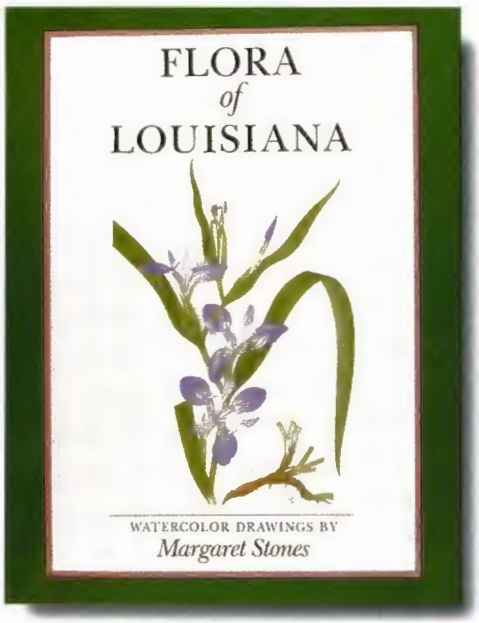
⚜*Echinacea purpurea* (L.) Moench
Asteraceae (Sunflower Family)
Purple Coneflower

Purple coneflower is perhaps the best known and most widely grown species of *Echinacea*. Its natural geographic distribution centers in Missouri and Arkansas, but the popularity of this plant has led to its introduction throughout the eastern United States. Native [i.e., in Louisiana] populations of purple coneflower grow only in Caldwell Parish. Other reports for this species in Louisiana are probably from cultivation or garden escapes. This species has broader leaves and showier heads than those of the pale coneflower. Purple coneflower's disk is orange to gold, and its rays are broader and may vary in color from nearly white to purple. The popularity of tincture of Echinacea, extracted from the roots of various species in this genus, and used as a medicinal treatment for a variety of ailments, has waxed and waned during the last 150 years. [The herb is presently enjoying unprecedented popularity. The Choctaw used this for cough and dyspepsia; also many more uses for *E. angustifolia* and *E. pallida*.]

Prickly Pear

⚜*Opuntia humifusa* (Raf.) Raf: [*Opuntia compressa* (Salisb.) J. F. Macbr.], Cactaceae (Cactus Family)
Eastern Prickly Pear

The elliptic to obovate, flattened pads of the prickly pear are modified stems. Branches are represented by the clusters of spines that arise from the regularly spaced nodes, called areoles, of the stem. Also associated with the circular areoles are hairlike, often barbed spines called glochids, which will lodge in the skin, causing considerable irritation. Leaves of the eastern prickly pear may subtend each node and are tiny, shortlived, often triangular-shaped bits of tissue. Flowers of the prickly pear are produced around the upper margins of the pads. Their bright, lemon yellow perianth segments are about one and one-half inches long and surround masses of showy stamens. Fruits of this and of most species of cactus are edible. [These are called "tuna" in Spanish.] However, they need to be singed to remove the glochids [fine hairs]. Although not common in Louisiana, the eastern prickly pear grows in dry, sandy soils and dunes sometimes associated with streams. [The primary use by Native Americans is as a bread. Many groups around the U.S. eat the fruits. The Dakota use the stems on wounds and snakebite.]



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Herbs and Healing on Nicaragua's Atlantic Coast

Article and photography by
Bruce Barrett, M.D., Ph.D.

Large leaf: Headache leaf; plant at top: *albahaca*; plant at bottom: *scorpiantil* .

Because of its ethnic diversity and botanical splendor, the Atlantic Coast of Nicaragua provides an excellent arena for the study of medicinal plants. Six ethnic groups deriving from four continents maintain healing traditions using a vast array of herbal and spiritual medicine. Living in the largest rain forest north of Amazonia, these people use as medicines more than 200 of the estimated 7,000 plant species available in the region.

In a world of biodiversity, ecological awareness, and expanding markets for medicinal herbs, it is no wonder that there have been more and louder voices calling for an integration of ethnomedical preservation with environmental conservation.[1,2,3,4] Successes in this area could have lasting value for humanity as a whole.[5,6,7,8] Voices calling for preservation of indigenous knowledge now include discussion of ownership, noting that the peoples who originally research and develop medicinal plants are rarely included once profits begin to accrue.[9,10,11]

From Chiapas to Panama, indigenous peoples struggle to preserve their linguistic, cultural, and ethnomedical traditions.[12,13,14,15] Guatemala, with 22 Mayan languages and more than 50 percent of

Left: **Sorosi,** *Momordica charantia,* right: **Cilantro,** *Eryngium foetidum*

its population indigenous, is home to a series of efforts to document and preserve plant knowledge.[16,17,18,19] Studies from Belize, Honduras, El Salvador and Costa Rica have likewise contributed to medical ethnobotany.[20,21,22,23] Still, and I admit that my viewpoint is biased, Nicaragua, and particularly Nicaragua's Atlantic Coast, may be the most promising area for the study and preservation of traditional medicine.[24]

Nicaragua's Atlantic Coast stretches nearly 300 miles from Costa Rica to Honduras, and is divided geographically into the North and South Atlantic Autonomous Regions. "The Coast" comprises more than half of Nicaragua's territory but is home to less than 10 percent of the nation's people, about 400,000 in all. Six distinct ethnic groups deriving from Africa, Europe and the Americas live in the region. Mestizo (Ladino), Creole (Afro-English), and native Miskitu are the most prominent. Sumu are the most traditional Native Americans, Rama the least populous. Garífuna (Afro-Indian, also known as Black Carib) are perhaps the most interesting, anthropologically, as they derive from African and Red Carib Americans, with bits of French, English, and Spanish in their culture and language.

Subsistence is for the most part based on fishing and slash-and-burn agriculture. Shrimp, crab, fish and turtle complement starchy staples—corn, rice, plantain, cassava and dasheen. Water permeates all, with several meters of annual rainfall swelling streams into rivers, pouring into lagoons and mixing through mangrove littoral to the omnipresent sea.

The people of the Coast—the *costeños*—have developed their ethnomedical traditions over centuries, perhaps millenia. Boom-and-bust economies and a series of armed conflicts have left their mark on politics and culture, yet ethnomedicine has survived relatively intact. The *costeños* have shown that they are more likely to adopt a new health behavior than they are to lose an old one.[25] During the 1980s, the expansion of health care services allowed *costeños* better access to modern medicine, but this trend did little to diminish the respect for or use of traditional practice. In fact, as modern medicine became more available and less costly, it may have lost some of its symbolic power. And, as minority ethnic groups rediscovered their cultural heritage, traditional practices gained in favor. As a result, there is today a thriving tradition of ethnomedical practice among the various peoples of Nicaragua's Atlantic Coast.

THE HERBS

Serendipity often acts as master of ceremonies. In the summer of 1988 a duffel bag was stolen en route from Managua to Bluefields. The bag contained 500 copies of a public health survey that I had brought from Wisconsin to Nicaragua in the hopes of gathering data useful both to the regional health ministry (MINSA-RAAS[26]) and to my efforts to gain a doctorate in anthropology. On hearing of the loss, the regional director for MINSA-RAAS asked me to help analyze medicinal plant data, data that MINSA-RAAS had collected during interviews with traditional healers from 1986 to 1988. I spent the next four months analyzing the data already collected, interviewing healers on my own, and helping the head of MINSA-RAAS's Division of Education and Popular Communication write a report, a report which was finally published as a booklet in 1992.[27] The report was finished just as Hurricane Joan (Juana) swept in from the east, reducing 90 percent of the structures in Bluefields to rubble. I helped nail a few walls and roofs together, then returned to Wisconsin.

My second major venture to Nicaragua's Atlantic Coast began in October of 1989. Armed with 800 copies of a new-and-improved public health survey, I arrived in Bluefields with a growing interest in medicinal plants. Over the next 10 months I kept busy looking into both traditional and modern aspects of the pluralistic[28] *costeño* health system. The 1986-88 MINSA-RAAS research had revealed a list of 109 identifiable botanical herbs and 1,504 individual plant/illness associations. My 1990 survey resulted in a list of 2,135 plant/illness associations and 162 identifiable plants, only 77 of which had been named in the MINSA-RAAS project. Combined with two smaller previous investigations,[29,30] there is now documentation of the use of well over 200 medicinal plants on Nicaragua's Atlantic Coast.

My third major venture to eastern Nicaragua consisted of gathering plant specimens for positive identification and deposition in

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- Disseminate accurate, responsible, scientific information on herbs and herbal research.
- Increase public awareness and professional knowledge of the historic role and current potential of plants in healing and medicine.
- Contribute information to professional and scientific literature that helps establish accurate, credible toxicological and pharmacological data on numerous types of plants and plant materials.
- Promote understanding regarding the importance of preserving native plant populations in temperate and tropical zones.
- Provide the public with original research and reprints of plant-related articles, audio/video tapes, books, and other educational materials.
- Assist the Herb Research Foundation in achieving its non-profit research and educational goals.

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HERBALGRAM

HerbalGram is a quarterly publication that includes feature-length articles, research reviews, conference reports and book reviews. Features focus on herbs and medicinal plants, the history of their use, ethnobotany, modern clinical research that confirms historical usage, and legal and regulatory development regarding the marketing and sale of medicinol plant products. This highly acclaimed four-color journal of the American Botanical Council (ABC) and the Herb Research Foundation (HRF) has received wide acknowledgment for its accuracy, credibility, scope of subject matter, and beauty. Each issue of HerbalGram is peer-reviewed by the Advisory Board of ABC. This board consists of some of the leading research scientists in the area of medicinal plant research in the United States, as well as other related professionals. In this way, we maintain a high level of textual accuracy and credibility. ABC makes HerbalGram available to journalists, editors, and free-lance writers for scientific, medical, health, pharmacy, and garden publications. Estimated readership at the end of 1996 was over 50,000.

ASSISTANCE TO MEDIA

A vital aspect of ABC is its increasingly important role as a source of herbal information for writers, publications, and the media. Publications for which ABC has provided assistance include *Cable News Network, Longevity, Reader's Digest, American Health, The New York Times, The Washington Post, The Chicago Sun-Times, Cosmopolitan, Good Housekeeping Consumer Reports, Family Circle, and Newsweek*. ABC has also been active in providing articles for the health retail and trade press, including *Natural Foods Merchandiser, Delicious!, Health Food Business, Let's Live, Whole Foods, and Vegetarian Times*. In addition, ABC's Executive Director has appeared on more than 200 radio and television talk shows in the past eight years.

ETHNOBOTANICAL TOURS

ABC hosts ethnobotanical trips to Costa Rica, the Peruvian Amazon, and Africa in association with Texas Pharmacy Foundation, International Expeditions, Inc. and ACEER (Amazon Center for Environmental Education and Research). Accredited for pharmacy Continuing Education, these workshops and field experiences are designed to foster an appreciation for and an understanding of the vital role these prolific ecosystems and their medicinal plants and natural products play in past, present, and future global healthcare. Workshop leaders represent some of the world's foremost "Pharmaceutical Prospectors" and experts in the fields of phytomedicine, pharmacognosy, ethnobotanical, and ethnobiomedical research.

GINSENG EVALUATION PROGRAM

In 1993, prompted by concern over possible mislabeling and/or adulteration, ABC initiated a study of commercial ginseng products sold throughout North America—the Ginseng Evaluation Program (GEP). This is the first time a study of this magnitude has been conducted on ginseng or any popular herbal product. Through GEP, ABC seeks to set a standard for future studies, increase consumer confidence in the natural products industry, and increase awareness and responsibility on the part of the manufacturers of natural products.

Working with two leading university laboratories, ABC developed cutting edge methodologies for analyzing ginseng.

We also established strict administrative and testing protocols to ensure confidentiality and accuracy. When published in 1997, GEP will have analyzed hundreds of commercial ginseng products for content and verification of manufacturers' claims of ginseng levels.

The results will be published in HerbalGram and disseminated through an extensive program of public education. In addition, scientists involved in the project will publish several papers in leading medical journals on this testing methodology.

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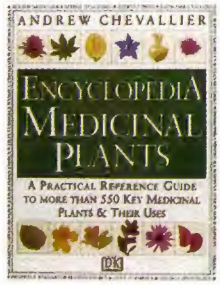

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GERMAN COMMISSION E MONOGRAPHS

In the fall of 1997, ABC will publish the German Commision E Monographs. The Commission E of the German Federal Health Agency is the group responsible for researching and regulating the safety and efficacy of herbs and phytomedicines (plant medicines) in Germany. It has been called the world's most rational system for assessing the traditional uses and modern scientific research on herbal medicines. We have already translated into English and edited all of these monographs that assess and approve (or disapprove) herbs for sale in Germony. ABC and many of the leading medicinal plant experts in the US are strongly convinced that the availability of these monographs in English for the first time will have a strong impact on increasing the acceptance of legitimate medical uses of phytomedicines among physicians, pharmacists, regulators, journalists, the pharmaceutical and herbal industries and the general public.

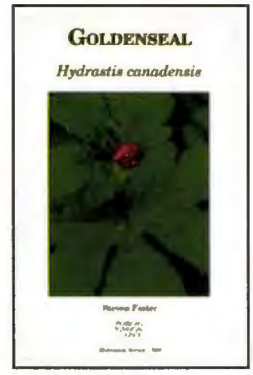
Initiated by ABC in the summer of 1993, the work features the translated text of the monographs. In addition, ABC's publication includes reference tables of pharmacological actions, clinical indications and contraindications, and taxonomic cross-references. ABC received donations from foundations and industry and prepaid orders for the monographs to complete the translations and produce the material in publishable form.

PHARMACY CONTINUING EDUCATION

In a historic development in 1996, ABC began offering a homestudy course for pharmacists, approved for pharmacy education credit for pharmacists from anywhere in the United States. Through the support of a grant from the Moody Foundation, the program called "Herbs and Phytomedicines" includes three modules that are drawn from our Classic Botanical Reprint Series and provide an overview of herbal medicines, including the history of their use, how they are assessed, and ways in which various countries view their importance. We have also been offering educational credit for courses set in the rainforests of Costa Rica, Belize, and Peru. Of the 100 participants in the October 1995 Peruvian expedition, 62 were pharmacists receiving a full year of continuing education credit. ABC also provides direct training and resource materials to pharmacists associated with mass market corporations.

THIRD PARTY LITERATURE

ABC produces and distributes third party literature as provided for in the Dietary Supplement Health and Education Act of 1994 (DSHEA). Section 5 of the Act permits, for the first time, the use of information from books, publications and scientific literature in connection with the sole of dietary supplements if the information is not false or misleading, does not promote a particular manufacturer or brand, presents a balanced view of the scientific information, is physically separated from supplements if displayed in a retail store, and does not have any other information appended to it. ABC is a leader in providing this type of literature. Offerings include the Botanical Booklet Series, eight-page booklets profiling twelve individual herbs; the Research Review Series, four-page color reprints of "Research Reviews" from HERBALGRAM; literature reviews on echinacea, tea and kava; and Common Herbs, a peer-reviewed color pamphlet describing 29 medicinal plant and their use.



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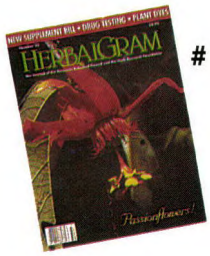

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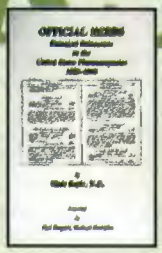

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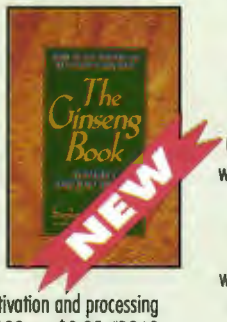

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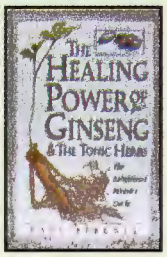

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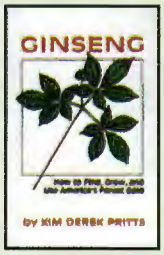

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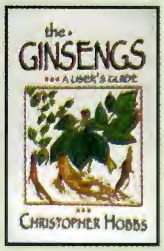

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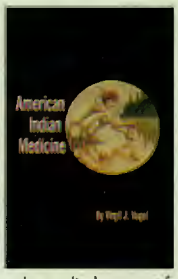

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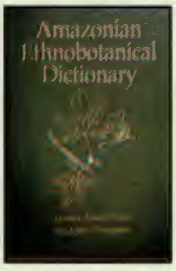

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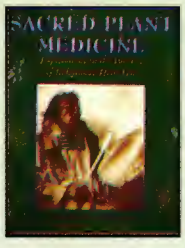

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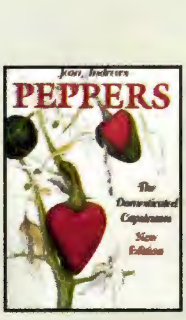

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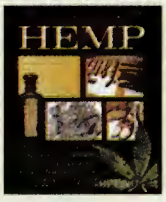

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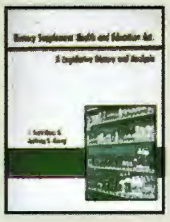

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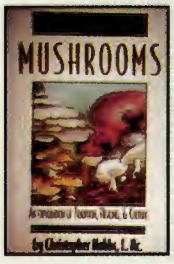

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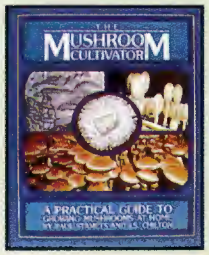

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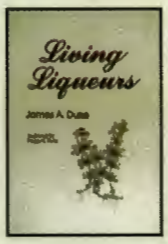

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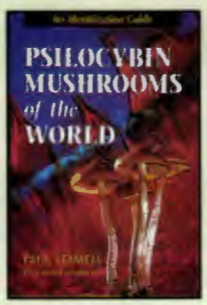

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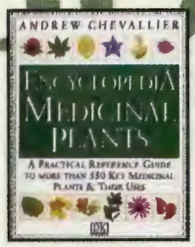

THE ENCYCLOPEDIA OF MEDICINAL PLANTS
by Andrew Chevallier. 1996. Profiles more than 550 key medicinal plants, systematically detailing their history, cultivation, key constituents and actions, research, and traditional and current uses. Shows how to make different types of herbal preparations and recommends safe, effective remedies for a wide range of common health problems. Full-color illustrations throughout. Hardcover. 336 pp. $39.95. #B250

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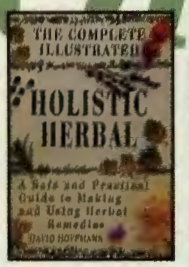

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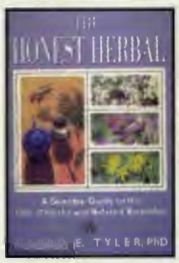

ENCYCLOPEDIA OF HERBAL MEDICINE
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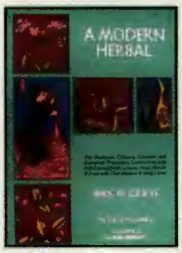

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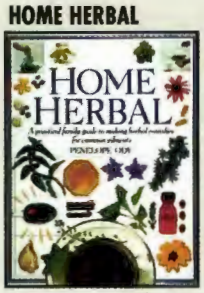

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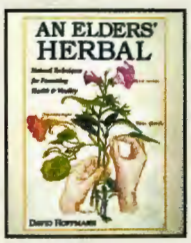

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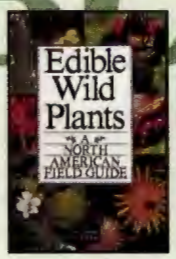

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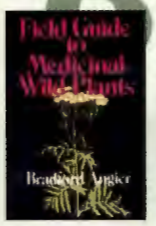

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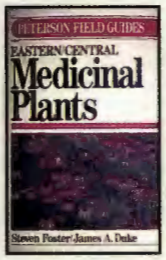

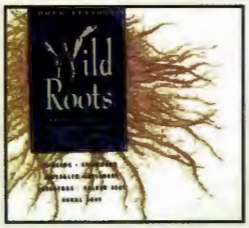

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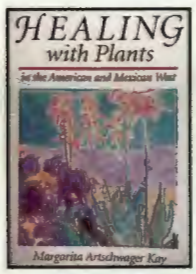

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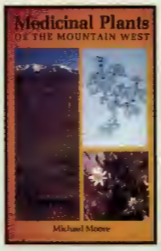

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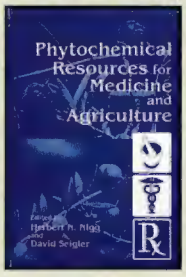
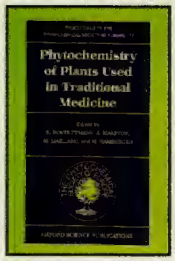


PHYTOCHEMICAL RESOURCES FOR MEDICINE AND AGRICULTURE Ed. By Herbert Nigg and David Seigler. 1992. An introductory text in natural products. Topics covered are plant poisons, antiparasitic agents, antifungal, nematicidal, herbicidal, and insecticidal compounds, medicinal uses and compounds, and others. Some chemical structures provided. Hardcover, 445 pp. $115. #B138



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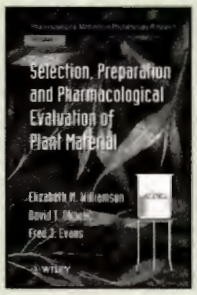

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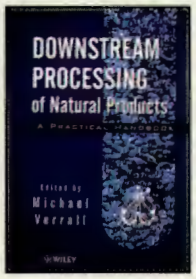

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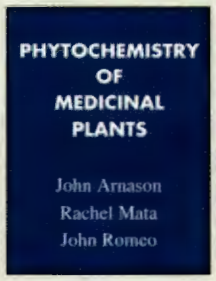

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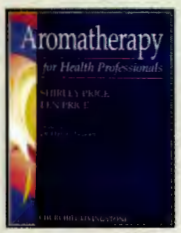

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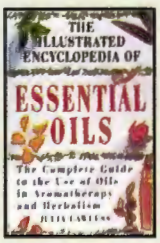

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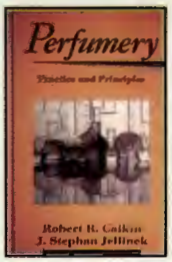

by Robert Calkin and Stephan Jellinek. 1994. Comprehensive, easy-to-use guide to the basic techniques and evolving technology of manufacturing perfumes as well as providing guidelines for actual formulation and analysis. Hardcover. 287 pp. $69.95. #B108

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by E. A. Weiss. 1997. Addresses growing essential oil plants profitably to obtain an aromatic derivative. Each chapter covers a different family. A brief history of the use and economic development is given, and cultivation, harvesting , and distilling described. Results of current research and recommendations for improved agronomic practices, together with methods of adding value to the crop are also discussed. Hardcover, 600 pp. $135. #B255

AROMATHERAPY: SCENT AND PSYCHE

by Peter and Kate Damian. 1995. With a thorough exposition of the ancient practice of aromatics in China, India, Persia, and Egypt and a modern scientific understanding of the psychology of scent, and based on research, clinical studies, and the authors' professional experience, this book is a guide to mastering the use of essential oils. Includes profiles for 44 essential oils and specific instructions for creating blends. Softcover. 244 pp. $16.95. #B245

AROMATHERAPY: A COMPLETE GUIDE TO THE HEALING ART

by K. Keville and M. Green. 1995. Topics include the history and theory of fragrance; therapeutic uses of aromatherapy for circulation, digestion, respiration, immunity, and more; instructions for creating personal beauty and skin-care products; techniques for the home distillation and blending of essential oils; and a materia medica listing the origins and uses of commonly available essential oils. Softcover. 156 pp. $14.95. #B179

ESSENTIAL OIL SAFETY

by Robert Tisserand and Tony Balacs. 1995.

Up-to-date research findings. Practical, comprehensive guide. Detailed profiles of 95 essential oils, including constituents, hazards, dosage, toxicity data and contraindications; brief safety profiles of 311 essential oils and 135 essential oil components; safety guidelines, details of essential oil absorption, metabolism and excretion; oils which may react adversely with certain drugs; extensive references. Hardcover, 279 pp. $42. #B169

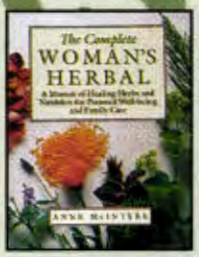
THE BOOK OF PERFUME

by E. Barille and C. Laraze. 1995. Beautifully illustrated volume includes sections on how the sense of smell works, the design of perfume bottles, legendary perfumers, and sources of raw materials. Describes the history, creation, and selection of a fine fragrance, detailing the people and processes involved in the composition and the marketing of its image. Hardcover. 224 pp. $55. #B186

BOOKS BOOKS

Women's Topics

HERBAL HEALING FOR WOMEN by Rosemary Gladstar. 1993. Common disorders and the herbs that are effective for treating them, how to select and store herbs, preparation of hundreds of herbal remedies (including teas, tinctures, salves, and ointments), and an alphabetical listing of herbs, including a brief description of the herb, the general medicinal usage, and when necessary, warnings about potential side effects. Softcover, 303 pp. $12. #B257



THE COMPLETE WOMAN'S HERBAL by Anne McIntyre. 1994. Safe, simple, and effective herbal remedies; practical advice on stress management, first aid, and health. A dictionary of herbs and ailments; full-color illustrations; directory of herb suppliers; and a glossary of terms. Softcover, 287 pp. $25. #B144

THE ROOTS OF HEALING by Deb Soule. 1995. Designed especially for women of all ages, and written from the author's personal perspective as an herbalist and feminist, this book provides herbal remedies passed down over the years in the form of tinctures, tonics, and teas for a large variety of women's health concerns. Simple and practical herbal guidelines along with an extensive resources section make this an invaluable asset for anyone interested in the historical and current use of herbs for women's health issues. Softcover. 306 pp. $12.95. #B246

Top 10 Sellers

January through April 1997. Previous standing shown in ( )

1. German Commission E Monographs: Blumenthal, Gruenwald, Hall, Riggins and Rister, eds., Klein and Rister, trans. (1)(in press)
2. Herbal Prescriptions for Better Health: Brown (new listing)
3. Herbs of Choice: Tyler (3)
4. Herbal Prescriber Database: Hobbs (new listing)
5. Cancer and Natural Medicine: Boik (5)
6. Herbal Medicine: Weiss (6)
7. Herbal Medicines: A Guide for Health-Care Professionals: Newall, Anderson, and Phillipson (new listing)
8. Encyclopedia of Herbs and Their Uses: Bown (2)
9. Encyclopedia of Herbal Medicine: Bertram (new listing)
10. Cat's Claw: Healing Vine of Peru: Jones (new listing)

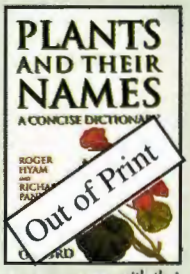
General Botany

DICTIONARY OF PLANT NAMES by Allen Coombes. 1995. More than 1000 plants arranged alphabetically with common names cross referenced for easy access. Botanical nomes, country of origin, meaning and pronunciation, and other interesting facts. Hardcover, 194 pp. $10.95 #B273

THE EVOLUTION AND CLASSIFICATION OF FLOWERING PLANTS by Arthur Cronquist. 1988. 2nd edition. Taxonomy, speciation, the origin of angiosperms, evolution of characters, subclasses, orders ond families of monocotyledons and dicotyledons, and fossil records. Hardcover, 555 pp. $42. #B265

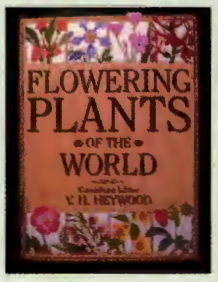
MANUAL OF VASCULAR PLANTS OF NORTH-EASTERN UNITED STATES AND ADJACENT CANADA by H. Gleason and A. Cronquist. 1991. 2nd edition. Guide for identifying plants of the area, incorporating the results of modern taxonomic research. Includes in-depth glossary, descriptions of plants, index, and room for notes. Hardcover, 910 pp. $69. #B266

PLANTS AND THEIR NAMES by Roger Hyam and Richard Pankhurst. 1995. A complete reference source to 16,000 of the more commonly occurring scientific and vernacular plant names. Family names, genus names, and species names, as well as common names with their origins and characteristics arranged in alphabetical order. Key features of families and genera. Hardcover. 545 pp. $35.00. #B148

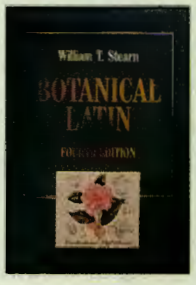


BOTANY—AN INTRODUCTION TO PLANT BIOLOGY by James D. Mauseth. 2nd Ed. 1995. Emphasis on evolution by natural selection, analysis of botanical phenomena, and diversity of organisms. Color photos and transparencies. Glossary and index, Hardcover, 800 pp. $67. #B036

FLOWERING PLANTS OF THE WORLD by V. H. Heywood. 1993. Authoritative reference on angiosperms. Taxonomically arranged and generously illustrated, including entries on over 300 families consisting of distribution, diagnostic features, classification, and economic uses. Over 200 illustrations. Hardcover, 335 pp. $45. #B089



BOTANICAL LATIN by William Stern. 1992. 4th edition. Summarizes the grammar and syntax of botanical Latin, and covers the roots and origins of Latin and Latinized geographical names, color terms, symbols and abbreviations, diagnoses and descriptions, the formation of names ond epithets, and more. Hardcover, 546 pp. $39.95. #B143



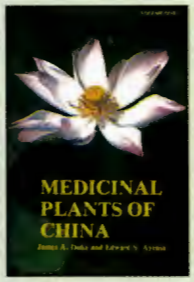
Asian

CHINESE HERBAL MEDICINE MATERIA MEDICA
by Dan Bensky and Andrew Gamble. Revised 1993. Extensive sourcebook about the most commonly used substances in Chinese herbal medicine. Each herb is illustrated and identified by its pharmaceutical, botanical, and family names. Hardcover, 556 pp. 380 illustrations. $75. #B003

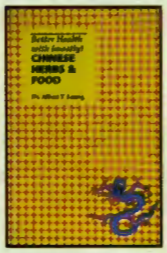
CHINESE HERBAL MEDICINE FORMULAS AND STRATEGIES
by Dan Bensky and Randall Barolet. 1991. The first book of Chinese medicinal formulas in English. 600 Chinese medicinal formulas in 18 functional categories. 18 illustrations, Hardcover, 562 pp. $85. #B004

ORIENTAL MATERIA MEDICA
by Hong-Yen Hsu *et. al.* 1986. A standard reference. Covers 768 Chinese herbs, combining traditional properties and effects with reports on developments in botanical and biochemical research into their structures and actions. Hardcover, 932 pp. $69.95. #B157

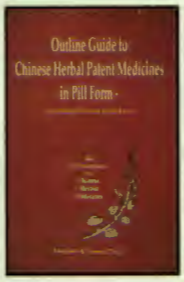
MEDICINAL PLANTS OF CHINA
by James Duke and Edward Ayensu. 1985, Two volumes. Covers 1,240 species with line drawings, names, uses, chemical constituents, and parts used for each herb. Intended for the use of biologists, chemists, and laypersons. B/W illus., Hardcover, 705 pp. $94.95 #B048



BETTER HEALTH WITH (MOSTLY) CHINESE HERBS AND FOODS
by Albert Leung. 1995. Sixty herbs and foods, not primarily used as medicine, that supply certain unconventional nutrients which may be missing from modern diets. Includes Latin binomial and family name of plant source, parts used, properties, most common traditional uses, and full-color photographs. Softcover. 105 pp. $9.95. #B218



OUTLINE GUIDE TO CHINESE HERBAL PATENT MEDICINES IN PILL FORM
by Margaret Naeser.1991. 2nd edition. Over 175 patent medicines. Organized with Chinese characters and English translation and Pinyin spelling, function and clinical application, ingredients with explanation of clinical function of each herb, pictures of packaging. Softcover, 371 pp. $29.95 #B099

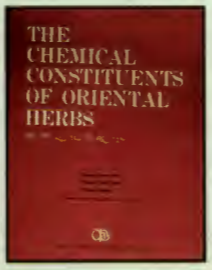


CHINESE HEALING FOODS AND HERBS
by Albert Leung. 1984. Describes 48 traditional Chinese herbs, their sources, history, components, dosages, safety precautions, effects, and recipes. Illus., Softcover, 192 pp. $10.95 #B054

AN ILLUSTRATED DICTIONARY OF CHINESE MEDICINAL HERBS
by Wee Yeow Chin and Hsuang Keng. 1992. Over 270 Chinese medicinal herbs, including scientific and common names (with indexes), physical attributes, and historical use. Color plates, Hardcover, 184 pp. $32.95 #B041

CHINESE HERBAL PATENT FORMULAS
by Jake Fratkin. 1986. Complete guide to 225 Chinese herbal patent medicines organized according to traditional categories, with discussion of their energetic applications, symptoms, cautions and precautions, and ingredients with percentage composition. Includes 49 American products made with Chinese herbs, Chinese characters and pinyin pronunciations, and a complete index by symptom and Chinese pathology. Softcover. 352 pp. $17.95. #B215

THE CHEMICAL CONSTITUENTS OF ORIENTAL HERBS
by Hong-Yen Hsu, Yuh-Pan Chen, and Mina Hong. 1982. A compilation of most of the natural products found in Oriental herbal drugs reported in scientific periodicals and books published before the end of 1978. Includes structure, common name, systematic name, molecular formula, melting point, boiling point, optical rotation, plant source and portion of the plant source in which the component is located. Hardcover, 2 vol. set, 829 pp. $125. #B132



PHARMACOPOEIA OF THE PEOPLE'S REPUBLIC OF CHINA
Ed. by Tu Guoshi. 1992. This English edition contains 1211 monographs on traditional and modern Chinese medicines, compiled separately to facilitate access. Extensive appendices on requirements for preparations and biological products, chromatography, tests, radio-pharmaceutical analysis, statistical methods in biological assay, infra-red reference spectra, and more. Hardcover. 654 pp. $260. #B221

PHARMACOLOGY OF CHINESE HERBS
by Kee Chang Huang. 1993. 473 herbs, describing the chemical composition, pharmacological actions, toxicity, and therapeutic uses of each herb. Lists scientific and experimental data. Hardcover, 388 pp. $179. #B046

THE ILLUSTRATED CHINESE MATERIA MEDICA
by Kun-Ying Yen. 1992. Over 240 of the most commonly used agents in Chinese medicine, arranged in pharmacognostic style according to plant part used. Included are names, origins, characters, quality, production area, properties and actions, indications, chemical constituents, and representative formulas. Appendices include drug function comparison tables, a short description of drug processing, 356 formulas with ingredients and indications, and a glossary of Chinese medical terms. Plants are indexed by English, Latin, Pinyin, Japanese, and Chinese names. Hardcover, 383 pp. $79.95. #B158

Middle East

MEDICINAL AND POISONOUS PLANTS OF QATAR
by A. Rizk and G. El-Ghazaly. 1995. Constituents, uses, and effects of 184 plants in 68 families, easily identified with the help of 250 color photographs and brief descriptions that include flowering period, habitat, and distribution. Alphabetically by family, genus and species. Hardcover. 306 pp. $70. #B224

BOOKS BOOKS

African

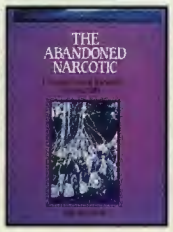
MEDICINAL PLANTS OF WEST AFRICA
by Edward Ayensu. 1978. 187 plants that occur in West Africa, their uses, local names, and standard scientific binomials. Bibliography, glossary of medical terms, medical and botanical indexes. 127 illus. Hardcover, 330 pp. $39.95 #B094

ZULU MEDICINAL PLANTS: AN INVENTORY
Compiled by Hutchings, Scott, Lewis, and Cunningham. 1996. Covers more than 1,000 plants based on a survey of the literature from the late nineteenth century to the present. Includes updated botanical names, synonyms, common English and Afrikaans names, an extensive list of Zulu names, data on the medicinal usage of the plants by the Zulu and other ethnic groups, known physiological effects, chemical compounds, and biological properties. Softcover. 450 pp. $114.95. #B247

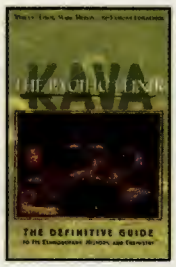
MEDICINAL PLANTS OF NORTH AFRICA
by Loutfy Boulos. 1983. Authoritative, systematic, and wide-ranging work, illustrated with 103 line drawings. Over 500 species. Medical, common name, and botanical indexes. Hardcover, 286 pp. $39.95. #B125

The Pacific

FIJIAN MEDICINAL PLANTS
by R. C. Cambie and J. Ash. 1994. Describes 450 species of plants, arranged by family, that are either endemic or have been introduced into Fiji. Information includes Fijian or local name, a botanical description, medicinal uses, lists of the known chemical constituents. Color photographs or water color engravings illustrate many of the plants. Hardcover, 365 pp. $100. #B178

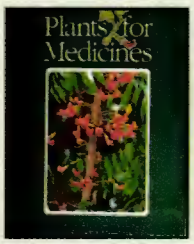


THE ABANDONED NARCOTIC: KAVA AND CULTURAL INSTABILITY IN MELANESIA
by Ron Brunton. 1989. Taking the varying fortunes of kava on the island of Tanna, Vanauta, as his starting point, the author suggests that kava's abandonment can best be explained in terms of its association with unstable religious cults and is part of a broader problem of why many traditional Melanesian societies were characteristically highly unstable. Hardcover, 219 pp. $54.95. #B134



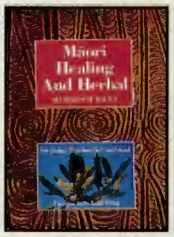
KAVA-THE PACIFIC ELIXIR
by Vincent Lebot, Mark Merlin and Lamont Lindstrom. 1992. Research on botany, chemistry, ethnobotany, pharmacology, social usage, distribution, and economic potential. B/W photos, illus. Softcaver, 255 pp. $19.95. #B032

KAVA: MEDICINE HUNTING IN PARADISE
by Chris Kilham. 1996. A journey through the mystical legends, outlandish history, and exciting science surrounding kava. With a thorough analysis of kava research and information on where to find the best kava, a must-read for those interested in adventure, plant medicines, or the cultures of Oceania. Softcover. 166 pp. $12.95. #B202



PLANTS FOR MEDICINES
by D. J. Collins *et. al.* 1990. Chemical and pharmacological survey of plants in Australian region. Details of alkaloid and anti-tumor screening of nearly 2,000 species, pharmacological testing of alkaloids of selected species, and chemical fractionation with reproducible tumor-inhibiting properties. Hardcover, 303 pp. $110. #B164

TONGAN HERBAL MEDICINE
by W. Arthur Whistler. 1992. Provides an overview of traditional Tongan medicine, including causation of illness, medical problems, and practices of priest and lay healers. Discusses modern Tongan medicine in depth, including concepts of sickness and health, types of ailments, and contemporary herbal medicine. Includes descriptions and uses of 77 commonly used herbs. Softcover. 122 pp. $13.00. #B204

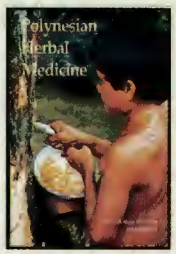


MAORI HEALING AND HERBAL
by Murdoch Riley. 1994. The first half of this New Zealand ethnobotanical sourcebook discusses 85 Maori healing and health topics, from mundane things like arthritis and backache to topics like drowning and tattooing. Part two presents over 200 medicinal plants with color photographs, description, relationships, external and internal uses. Hardcover. 528 pp. $65. #B222

India

THE INDIAN MATERIA MEDICA
by Dr. Kim Nadkarni. Two volumes. 1993. This updated classic, known as the Ayurvedic Bible, contains about 2,000 herbs by botanical name, common Indian name in seven languages (including English), habitat, parts used, varieties, action, and common historical uses. Hardcover, 2,286 pp. $100. #B070

MEDICINAL PLANTS OF INDIA
by S. K. Jain and Robert DeFilipps. 2 vol. set. 1991. Surveys the medicinal plant resources of India (including Nagaland) and Sikkim, covering 860 species, and listing plants used in Western, Unani, and Ayurvedic medicines. Includes medicinal common names, botanical indexes, bibliography, and 133 full-page illustrations. Hardcover. 848 pp. $94.95 Set. #B121

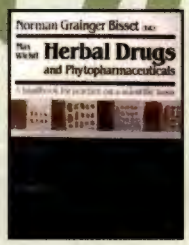


POLYNESIAN HERBAL MEDICINE
by W. Arthur Whistler. 1992. Discusses the use, past and present, of medicinal plants in Tonga, Samoa, Tahiti, Hawaii, and the Cook Islands. Includes descriptions, uses, and color photographs of 90 previously and currently used plants. Softcover. 236 pp. $33.00. #B205

FLORA OF AUSTRALIA, VOL. 16
Ed. by Orchard and McCarthy. 1995. The first of two volumes to describe the family Proteaceae (and one species of Elaeagnaceae) contains identification keys and full descriptions of 488 taxa in 2 families and 7 subfamilies. Discusses the affinities of Proteaceae, morphological features, the fossil record, pollination biology, and utilization. Hardcover. 522 pp. $79.95. #B223

Pharmacopeias

HERBAL DRUGS AND PHYTOPHARMACEUTICALS



Ed. by Max Wichtl, translated by Norman Bisset. 1994. References, pharmacopeial monographs, sources, synonyms, constituent indications, side-effects, preparation of tea, commercially available phytomedicines, regulatory status, authentication using macroscopic, microscopic, and chromatographic techniques. 181 detailed monographs. Color prints of the dried part and whole plant in natural habitat. Hardcover, 568 pp. $190. #B080

MARTINDALE: THE EXTRA PHARMACOPOEIA, 30TH EDITION

Ed. by James Reynolds. 1996. First published in 1883. 5,132 monographs organized by uses and actions. Contains a list of countries where monographed herbs are currently official. Lists toxicity of numerous international drugs. Includes a section describing 46,000 proprietary medicines from 14 countries, the active ingredients, a summary of information,and much more! Indexed, full cross reference. Hardcover, 2,363 pp. $299. #B065

HERBAL MEDICINES: A GUIDE FOR HEALTH-CARE PROFESSIONALS

by C. Newall, L. Anderson and J. Phillipson. 1996. Covers 141 herbs commonly present in herbal remedies sold by pharmacies in the UK, providing botanical names, synonyms, parts used, pharmacopeial monograph listing, legal category, constituents, food use, herbal use, dose, pharmacological actions, side effects and toxicity, contraindications and warnings, pharmaceutical comment, and references. Also appendixes by interactions, ingredients, and actions of ingredients. Hardcover. 296 pp. $77. #B198

BRITISH HERBAL COMPENDIUM

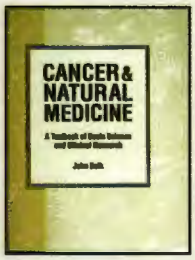
Ed. by Peter Bradley. 1992. Monographs on plant drug constituents and therapeutics with chemical scientific literature and excerpts from available regulatory guidelines of European countries. Hardcover, 239 pp. $90. #B017

BRITISH HERBAL PHARMACOPOEIA

by the British Herbal Medicine Association. 1996. Now with 169 monographs on definition, description, identification and standards for plant materials commonly used in herbal products on the market today. Hardcover, 212 pp. $90. #B018

Cancer Research

CANCER AND NATURAL MEDICINE

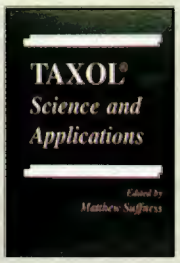


by John Boik. 1996. Known effects of natural therapies on key biomechanical processes active during cancer progression. Based on published scientific data obtained from over 1,200 references. Comprehensive review of cancer physiology, covering such topics as differentiation, angiogenesis, apoptosis, invasion, metastasis, and immune and hormonal interactions. Natural therapies reviewed include herbs, vitamins, minerals, enzymes, cartilage, Chinese medicine, electrotherapy, antioxidants, flavonoids, and others. Softcover, 315 pp. $45. #B161

CAMPTOTHECA ACUMINATA DECAISNE, XI SHU: A PROMISING ANTI-TUMOR AND ANTI-VIRAL TREE FOR THE 21ST CENTURY

by Shiyou Li and Kent Adair. 1994. Covers camptothecins: drug discovery history, comparisons with taxol, mechanisms of action, preclinical and clinical trials in cancer treatment, antiviral activity, other uses, and drug sources. Hardcover, 249 pp. $45. #B145

TAXOL® SCIENCE AND APPLICATIONS



Ed. by Matthew Suffness. 1995. Covers the discovery and development of Taxol, supply, biology (including biosynthesis and biopharmaceutics), chemistry (including structure, detection and isolation), and clinical studies. Hardcover, 426 pp. $149. #B142

Pharmacognosy

DRUGS OF NATURAL ORIGIN: A TEXTBOOK OF PHARMACOGNOSY

by Gunnar Samuelsson 1992. Describes the origin of natural drug compounds, their chemistry and biochemistry, as well as their employment in medicine. Arranged according to biosynthetic principles. Hardcover, 320 pp. $59. #B093

TREASE & EVANS' PHARMACOGNOSY

by W. C. Evans. 13th Edition, 1989. Standard text in Great Britain. A must for the research library and quality assurance labs of herb and dietary supplement companies worldwide. Hardcover, 832 pp. $75. #B015

PHARMACOGNOSY, PHYTOCHEMISTRY, MEDICINAL PLANTS

by Jean Bruneton. 1995. Organized in four parts (primary metabolites, phenols, terpenes and steroids, and alkaloids). Phytochemical generalities, distribution, biosynthesis, extraction and quantitation methods, and biological properties. Origin, identity, production, composition, uses, processing, and optimization for each raw material. Therapeutical indication and recommended usage specified for each product. Hardcover, 915 pp. $196.50. B149

PHARMACOGNOSY AND PHARMACOBIOTECHNOLOGY

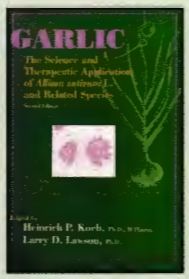
by Robbers, Speedie, Tyler. 1996. US text on natural product drugs, arranged mainly by biosynthetic and chemical relationships, including biotechnology-derived pharmaceuticals, a comprehensive treatment of antibiotics, and important herbal drugs in current use. Hardcover. 337 pp. $42.95. #B008

Research

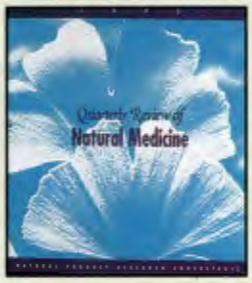
DIRECTORY FOR MEDICINAL PLANTS CONSERVATION by M. Kasparek, A. Groger, and U. Schippmann. 1996. Aims at providing information for policy makers, scientists, and technical experts in the management of medicinal plant resources. Provides information on more than 200 networks, orgonizations, and projects worldwide dealing with research, management, policy making, and conservation. Key journals and databases in the field are highlighted. Softcover, 156 pp. $12. #B253

MEDICINAL PLANT CONSERVATION BIBLIOGRAPHY, VOL 1 by Uwe Schippmann. 1997. Systematically reviews about 60 journals for papers with relation to medicinal plant conservation issues. Includes approximately 774 references mainly from 1990-1996 and 71 reviews, indexed by general, geographic and taxonomic keywords. Ringbound, 61 pp. $12. #B254

TRADE SURVEY OF MEDICINAL PLANTS OF GERMANY by Dagmar Lange and Uwe Schippmann. 1997. This study, conducted on behalf of the *Bundesamt fur Naturschutz* describes the national and international structures of the trade in plant drugs. An overview of the plant species identified, their trade commodities and uses is given. The analysis of imports and exports from 1991 to 1994 emphasizes the important role of Germany in the international trade regime. Softcover, 128 pp. $12. #B252



GARLIC: THE SCIENCE AND THERAPEUTIC APPLICATION OF *ALLIUM SATIVUM* L. AND RELATED SPECIES. Ed. by Heinrich Kock and Larry Lawson. 1996. 2nd edition. Most complete scientific work on garlic. Updated and expanded. Complete history, chemistry, and scientific review of the therapeutic effects of garlic on the cardiovascular system, comprehensive tables, ecological hazards caused by contamination of garlic crops, the creation of transgenic garlic plants, the discovery of new garlic-derived organosulfur compounds, and an update of the methodological approaches. Softcover, 329 pp. $34.95. #B159



QUARTERLY REVIEW OF NATURAL MEDICINE Ed. by Donald Brown, N.D. 1994. Set. A comprehensive guide to current information in natural healthcare. Includes research summaries of clinical studies in the fields of nutrition, herbal medicine and natural healthcare, from over 3,000 professional journals. Binder.
1994: $85 #B122;
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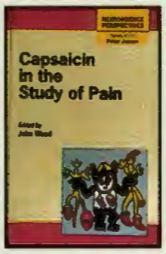
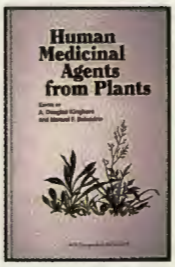
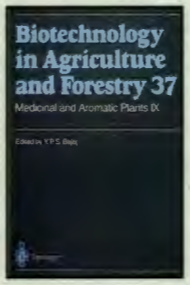


CAPSAICIN IN THE STUDY OF PAIN Ed. by John Wood. 1993. Recent progress in understanding the mechanism and site of action of capsaicin, its significance in the study of pain and development of navel analgesic and anti-inflammatory drugs. Hardcover. 286 pp. $69.95. #B104



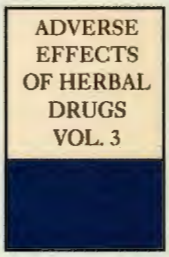
HUMAN MEDICINAL AGENTS FROM PLANTS Ed. by A. Douglas Kinghorn and Manuel F. Bolandrin. 1993. Papers presented at symposium of same name, San Francisco, April 1992. Hardcover, 356 pp. $94.95 #B020

NEEM, A TREE FOR SOLVING GLOBAL PROBLEMS BOSTID. 1992. Medicinal uses, chemical constituents, growing and propagation, habitats, insecticidal use, cultural use, safety tests, reforestation, and industrial products. Softcover, 141 pp. $19. #B098



BIOTECHNOLOGY IN AGRICULTURE AND FORESTRY 37: MEDICINAL AND AROMATIC PLANTS IX Ed. by Y. P. S. Bajaj. 1996. Survey of the recent literature on distribution, importance, conventional propagation, micropropagation, tissue culture studies and the *in vitro* production of important medicinal and pharmaceutical compounds in various species. Hardcover. 414 pp. $339. #B230

PLANT ALKALOIDS: A GUIDE TO THEIR DISCOVERY AND DISTRIBUTION by Robert Raffauf. 1996. Positive and negative results obtained in the screening for alkaloids of more than 20,000 plant species (approximately 400 genera of plants found primarily in zones beneath 45º N Latitude) in a 40-year search for new medicinal agents and other pharmacological substances. Hardcover. 298pp. $69.95. #B242



ADVERSE EFFECTS OF HERBAL DRUGS VOL. 3 by De Smet, Keller, Hansel, and Chandler. 1997. Eighteen comprehensive monographs about specific medicinal herbs and plant constituents important for their prominent place in phytotherapy (e.g., *Valeriana* spp.), clinical expectations about therapeutic potential (e.g., *Tripterygium* spp.), and recent concern about a serious adverse reaction (e.g., *Teucrium chamaedrys*). Softcover. 250 pp. $74.95. #B231

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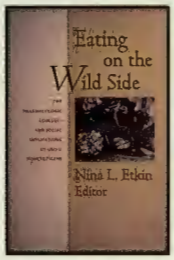
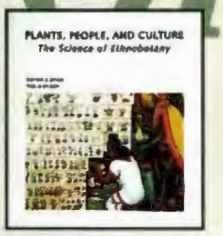
EATING ON THE WILD SIDE: THE PHARMACOLOGIC, ECOLOGIC, AND SOCIAL IMPLICATIONS OF USING NONCULTIGENS by Nina Etkin. 1994. Studies by anthropologists, paleobotanists, primatologists, and ethnobiologists that explore issues such as the consumption of unpalatable and famine foods, comparison of aboriginal diets of colonists and later arrivals. Hardcover. 305 pp. $40. #B118



Ethnobotany

PLANTS, PEOPLE, AND CULTURE



by M. Balick and P. Cox. 1996. Beginning with the prehistoric use of plants by hunter-gatherers and the development of agriculture, the authors reveal how studies of plant use by indigenous peoples is the key to understanding the history of human civilization. Intriguing firsthand stories of fieldwork in remote villages deep in the rainforests of South America, Africa, and the islands of the South Pacific reveal the vast amount of knowledge indigenous peoples possess that worrants preservation. Hardcover. 228 pp. $32.95. #B196

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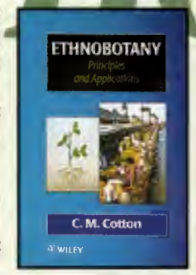

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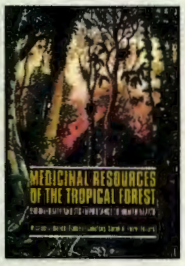
by Gary Martin. 1995. First in a new series of practical manuals in plant conservation, this book provides a detailed overview of this emerging discipline. Primarily for researchers beginning field studies. Descriptions of the skills and methods employed by ethnobotanists. Field work ethics, data collection, hypothesis testing, and practical ideas on applying ethnobotanical results to conservation and community development initiatives. Softcover, 268 pp. $39.95. #B163



MEDICINAL RESOURCES OF THE TROPICAL FOREST

Ed. by M. Balick, E. Elisabetsky, and S. Laird. 1996. Covering a wide spectrum of subjects in biodiversity, ethnomedicine, ethnobotony, and pharmacognosy, and including regional work ranging from Africa to Asia to South America, the 29 popers in this volume offer the most comprehensive survey available of the current literature on the subject of medicinal uses of tropical plants. Softcover. 440 pp. $35. #B197

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by Palmer, Sánchez, Mayorga. 1991. An environmental treatise from Costa Rica's KékölDi Indigenous Reserve, this book shows how the rainforest provides the KékölDi people with everything they need to live, as long as they respect Sibö's (God's) laws governing the use of natural resources. Income from book sales goes directly to the KékölDi people, to support their rainforest conservation efforts and their cultural school. Softcover. 96 pp. $12. #B225

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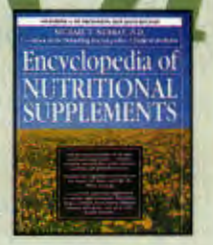

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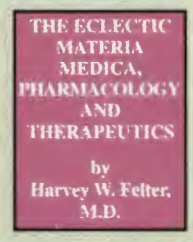

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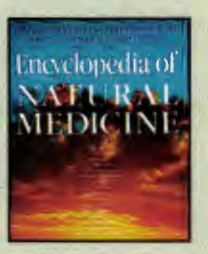

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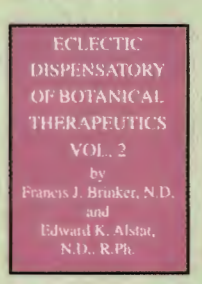

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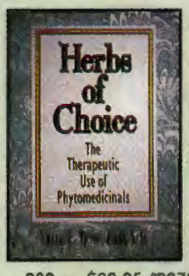
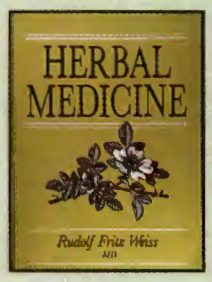


HERBS OF CHOICE by Varro E. Tyler. 1994. Authoritative text providing information of traditional use, regulatory history, current status, bioactive constituents, pharmacology, current clinical applications, safety precautions, and dosages. Arranged by therapeutic indication. Hardcover, 209 pp. $39.95 #B079; Softcover, $14.95. #B0795



HERBAL MEDICINE by Rudolf Fritz Weiss, M.D. 1985. The now classic text used by M.D.s in Germany. An indispensable modern text in medical herbalism. Many herbs are illustrated. Plant drugs are arranged by clinical diagnoses relating to particular systems. Softcover, 362 pp. $55. #B006

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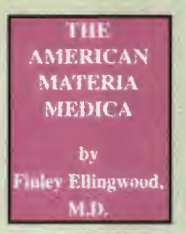

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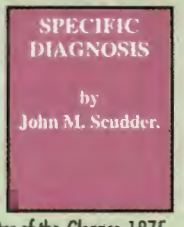

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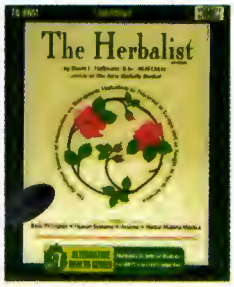

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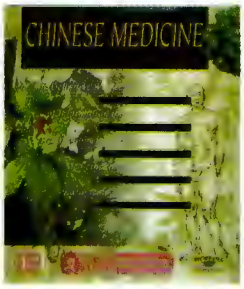

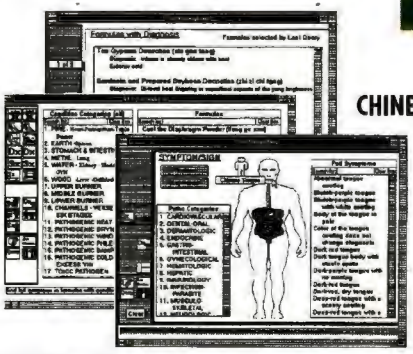

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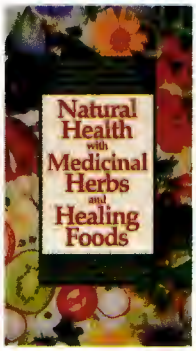

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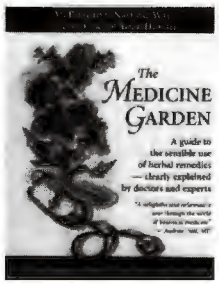

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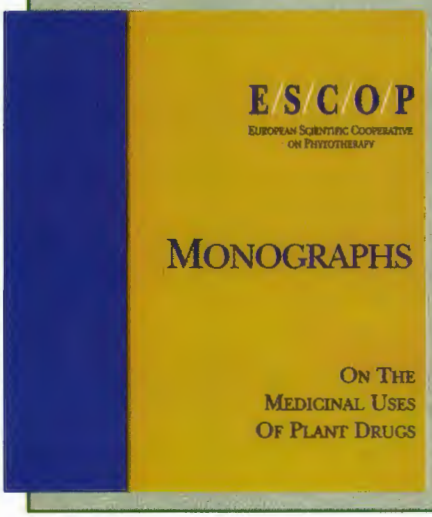

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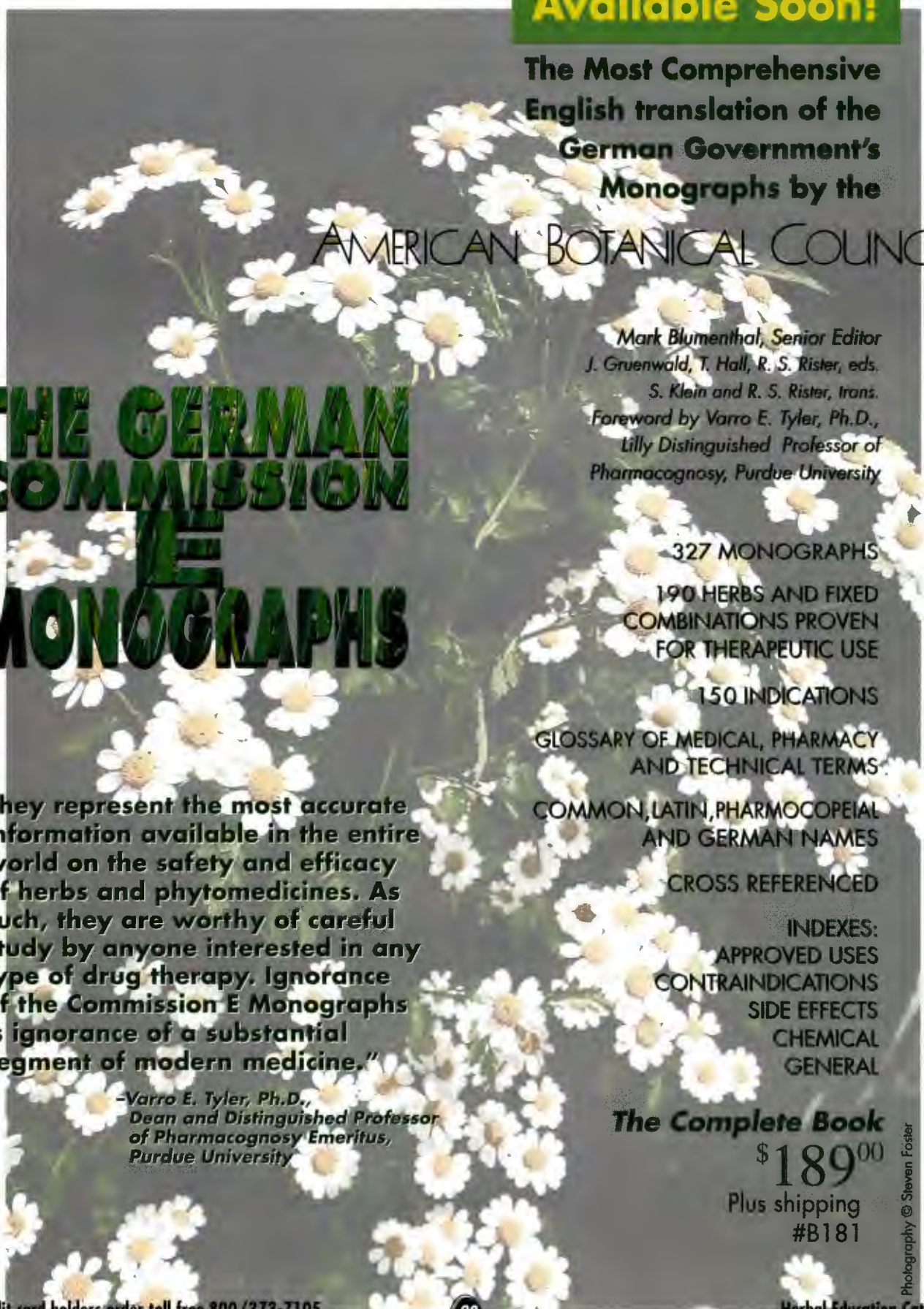

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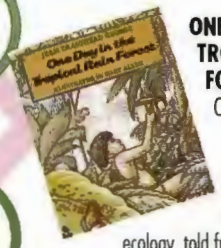

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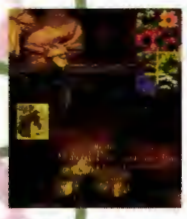

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The dugout canoe, or dory, is the mainstay of transportation on Nicaragua's Atlantic Coast.

herbaria in Managua and Madison. This journey took me through villages I was already familiar with in the south-central Coast, but also to Puerto Cabezas in the north and Waspam, a Miskitu village on the Honduran border. More than 300 specimens were collected, pressed and dried, either over a small gas camping stove or a light bulb in a cheap hostel. Letters of support from MINSA and from the University of Wisconsin-Madison allowed me to transport the specimens not left in Managua out of Nicaragua and into the United States. Botanists at UW-Madison and the Missouri Botanical Gardens were gracious enough to assist with identification and mounting.

Although many of the plants identified are used medicinally in other areas of Latin America and the Caribbean, there appear to be several unique to this region. As might be expected, certain plants are used for specific illnesses by nearly everyone, while others are used exclusively by one ethnic group for one disease. Table 1 lists all medicinal plants mentioned to me by at least 10 informants. Table 2 portrays these plants in more detail, with common names in several languages, parts of plants used, and specific medicinal uses.

The diversity of medicinal properties attributed to eastern Nicaragua's flora makes it difficult to predict which plant or plants would be most interesting to study, either from an ethnomedical or a pharmacological point of view. Of the common plants, soursop (*Annona muricata*) and sorosi (*Momordica charantia*) were attributed the widest range of medicinal properties. Soursop was said to be useful in the treatment of 16 different ailments by 114 informants, while sorosi, mentioned by 65 people, was attributed 9 different medicinal uses.

Guava (*Psidium guajava*), lime (*Citrus aurantiifolia*) and malva (*Malachra alceifolia*) were ascribed more limited medicinal properties. About half of the 147 people mentioning lime as a medicinal used it for diarrhea, while an additional 42 said it was useful for bellyache. Fully 29 of the 35 informants mentioning malva said it was useful against headache. Forty-four of 57 people mentioning guava described its use in treating diarrhea.

Christmas blossom (*Senna alata*) was mentioned as a medicinal plant by 120 informants. Almost half of these described its use as a purgative. Another 26 said it was used for the kidneys, while 27 mentioned its utility against various skin diseases. Following similar information gathered in 1986, MINSA-RAAS chose Christmas blossom as its first plant of clinical study. A double-blind clinical trial of the efficacy of a leaf extract against skin fungal infection was begun in 1987-88, but the destruction of the Bluefields health center and the MINSA-RAAS building by Hurricane Joan in October 1988 stopped the experiment in midstream.

Evidence of clinical efficacy and/or pharmacological activity consistent with indigenous use can be found in the scientific literature. Back in Wisconsin, David Kiefer and I used NAPRALERT,[31] the world's largest data base on medicinal plants, in order to track down relevant findings and references.[32] Of the 162 plants identified in my research, 67 showed similar uses throughout the world. Some 34 had been studied in the laboratory and/or clinic, usually with results supporting their usage in eastern Nicaragua.

Soursop, for instance, is used for childbirth in the Dominican Republic [33] and Curaçao[34] as well as in eastern Nicaragua, and has been shown clinically to have a uterine stimulant effect.[35] Sorosi,

Left: **Christmas blossom,** *serocontil* (Spanish), *Senna alata (Cassia alata).* Right: **Guava,** *Psidium guajava.*

used for pain and for diabetes in my survey (and in many other regions of the world), displays analgesic and hypoglycemic activity in the lab.[36,37] Guava is used throughout the world to combat diarrhea, and has been found to decrease intestinal smooth muscle activity, thereby alleviating abdominal symptoms.[38] Christmas blossom, as a final example, is used as a cathartic or purgative in places as far removed as Tanzania[39] and Mexico,[40] and has been shown to have a laxative effect in randomized blinded clinical trials.[41]

There are many more examples, but the point that traditional use of plant medicines may be supported by scientific investigation should not come as a surprise to readers of *HerbalGram*. What might be of interest, however, is the complex and interactive nature of the cultures and individual healers using those plant medicines.

THE HEALERS

Traditional healers on the Atlantic Coast of Nicaragua are known as *curanderos*, bush doctors, and *sukyas*, terms respectively from the Spanish, Creole English, and Miskitu languages. The terms are usually interchangeable, and more often than not are used by people outside of their language group. For example, one Miskitu healer I know calls himself a *curandero,* while the premier Garífuna healer is known as *sukya*, a Miskito term. In addition, healers are sometimes called science men or *obeah*-men, the latter a term deriving from the somewhat prevalent belief in Caribbean-derived *obeah.*

Most, but not all, healers take care to differentiate themselves from modern medicine. One traditional healer I know calls herself a pediatrician (*pediatra*). She assumes the manners and some of the terminology of Western medicine, but treats her patients, mostly children, with herbal remedies. She says that she used to practice *obstetrica,* but got tired of the unpredictable hours that accompanied attending childbirth.

The most widely known Miskitu *sukya* shared with me the following words concerning his initiation to healing:

"For awhile I was sitting down like this. I get up. Can't sleep now ... I see plenty lightning. I feel funny in my body. For awhile I see that house, it just like catch afire ... Then I hear that thunder. And it hit me. I was standing in that door. And it hit me from that door. I went right in that room. It shoot me right in that room. I dead. Done. I don't know which part I went. Until eight days time... So I get up, and I heard a voice, says:

'Now you will try to help your people... All these things I bring for you. But I cannot give you everything. So I give you half that you can help your people. Without price. Try to help your people and your people will try to help you.'"

In this quote, the medicine man describes how as a youth he was hit by lightning, thrown into a coma-like sleep, contacted by a spirit-man, saved from the coma, and allowed to return to normal village life. He was thus initiated into the role of healer in his small lagoon-side community on the Atlantic Coast of Nicaragua. For almost 60 years since he has worked as a healer, and has built a widespread reputation as a skilled and honest man. He usually asks

Walagayo house and dugout canoe (dory) with cassava bread (*bamí*). Preparation for Walagayo healing ceremony. Spring 1990.

his patients to sleep a night in his home while he waits for advice from the spirit-man in his dreams. The dream spirit-man wears pretty, silver-like clothes, sports a golden cross around his neck, and comes with specific orders about the treatment of patients. This healer's pharmacopoeia includes dozens of plant-based treatments applied in the form of vapor baths, "anointing," and various teas and potions. Other options include patent medicines, referrals to other healers, or advice to visit the doctor or nurse at the nearest health center.

Another well-known healer, a Garífuna called by the Miskitu word *sukya*, told me about his medicine stone:

"Sometime the thunder light and bust the earth. And you go and find it ...You use the thunderbolt. A rock. When the thunder light he left that rock. And you use that rock. You cook the rock and take the water... You drink it... It cure all kind of sickness. A baby born and it no healthy. Bathe him with that. And he get fat."

In this quote the healer describes his palm-sized "thunderbolt stone." Thunder stones are known throughout Central America's Caribbean Coast, and are thought by archaeologists to be ancient Mayan hand axes. This healer found his stone when he was young, and emphasizes that it takes special properties to recognize and use a thunder stone. To protect its powers, he keeps it hidden from sight and away from menstruating women. Unlike the first man introduced, this healer usually charges for his services. For a small charge, he will make up potions to increase his patients' luck or to ward off enemies, bad spirits or accidents. And, unlike the first, he was trained by a great healer, his grandfather, rather than being called by the spirits. However, he is visited in his dreams by Garífuna ancestor spirits, who help him make decisions about his curing practice.

A third and final quote from a Creole healer: "I like to tend babies... Baby make up his face, get a severe pain... The wine, the sorosi (*Momordica charantia*) kill the fever and it give appetite and at the same time it bring up the blood ... As long as the blood is up, it can fight any sickness, but if the baby blood poor, it can't fight no sickness... Some children strain for what you call the breeze ... the strength of a person strain... Sometimes I use the cobweb with the baby navel string, the same navel string what drop. Boil the cobweb with it."

Map of Nicaragua showing medicinal plant collection sites.

Below left: Kukra Hill health center. Outlines of Sandino and Sandinista soldier adorn the walls. Right: The Prophet Florentine Joseph, Miskitu healer, and his wife.

This quote from a Creole midwife names four healing agents—wine (homemade), the medicinal plant sorosi, cobwebs, and umbilical cord. This quote also demonstrates the power of "strong blood" to prevent or cure illness. This healer has delivered more than 50 babies in her 16 years as a lay midwife. Although she prefers to work with women during childbirth and with young children, her knowledge of herbal medicine has occasionally been applied to older children and adults. Sometimes people pay her, but it is not a requirement for treatment. She has a strong belief in bush medicine, and thinks that in most cases it is superior to doctor medicine. She does not receive any help from spirits or her dreams.

THE ILLNESSES

In general, there are three lines of defense against disease. Herbal-based home remedies are the first level in the "hierarchy of resort."[42] For more acute illnesses with perceived physical causes, an initial trip to the health center or hospital may be in order. If home remedies fail, a patient might instead elect to go to a *curandero*, especially if witchcraft, sorcery, or malevolent spirits are suspected. Healers might begin with simple herbal treatments for suspected natural causes, then proceed to magical or spiritual interventions if necessary. People living in rural areas tend to resort to traditional healers more readily than their counterparts in Bluefields. Doctor medicine is usually seen as complementary to herbal medicine. Patients often choose to use both.

Theories of disease causation are plentiful on the Coast. Belief in temperature as an inherent "humoral" quality of an object, food, drink, illness, or medicine is widespread, especially among the Mestizo population. Taking a cold drink or bath after working up a hot sweat is thought to be dangerous to the health. Excess of one extreme may also be hazardous, such as drinking rum (symbolically hot) when upset or sweating (also hot). Hot illness such as kidney disease or diarrhea must be treated by cold medicine. Hot and cold sponge baths are common treatment modalities, and are used to counteract opposing temperature illnesses, and to drive out the diseases. The hot/cold syndrome, known also as "humoral medicine" is prevalent throughout Latin America, and has been described by various authors.[43,44,45,46]

The idea of illness as a physical agent inhabiting the body is also widespread. Speaking of what she can cure, one Creole healer said, "And maybe a simple measle. You make bath also. And bathe it and it come out. It doesn't keep in. It does throw it out." Objects that symbolize disease are sometimes regurgitated or defecated. A Creole healer who specializes in using blessed wine as a medicine reported a patient who first "passed yellow corn (and then the healer) gave him another shot of wine, when he hock up a little fish." The fish was still alive, and was blamed on a jealous adversary, who sent a devil as an animal, into the body of the patient. "The devil was into her... God stronger than the devil ... They drunk the wine and they done throw it up or pass it out. It have to come out ... Sometime it be a fish, sometime it be some kind of animal ... A little turtle, toads, spring chicken they call them, in the swamp ... the wine throw it out."

Although certain diseases are known to be contagious, there are various explanations for this phenomena. Microbial germ theory is recognized by some of the lay population as well as by most of the biomedically trained health workers. Dirt and contamination are thought by many to be involved in disease causation. Aerial transmission is also postulated. One healer noted, "Sickness go through the air. It comes like a heat ... like a smoke it comes all around, and whenever that sickness drop, it extend. It extends in that town and it kills everybody there ... They have a sickness we call the *gastro*. That *gastro* come down just through the air."

Certain syndromes recognized in other areas are also found in RAAS.[47] *Mal de ojo* (evil eye) is recognized throughout Latin America.[48,49,50] This syndrome is characterized by the ability of a strong, drunk, or agitated person to infect or damage an infant merely with his or her gaze. This syndrome is usually characterized by fever. In RAAS the phenomenon is recognized, but is usually referred to as *calor de vista* (heat of the sight). (*Mal de ojo* refers to actual eye disease on the Coast.) The fever resulting from *calor de vista* can be treated by chewing ruda (*Ruta graveolens*) and tobacco, and spitting the residue over the patient.[27]

Aire is another widely recognized disease category in Latin America.[51,52] *Aire* is characterized by pains, usually in the neck or the back, often caused by cold or bad air entering the body. Various

types of *aires* are recognized, depending on the state of the patient and the location of the pain. Herbal treatments documented by MINSA-RAAS include a tea made from hoja de aire (*Kalanchoe pinnatum*) and altamiz (*Ambrosia psilostachya*), and a poultice made from breadfruit (*Artocarpus altilis*). My own research revealed a multitude of treatments for *aire*, including extracts of albahaca (*Ocimun campechianum*), Christmas blossom (*Senna alata*), cilantro (*Eryngium foetidum*), ginger (*Zingiber officinale*), and mango (*Mangifera indica*).

For certain syndromes localized to RAAS, traditional medicine is the preferred treatment. "*Grisi siknis*" and "*bulpis*" are known only to the *costeño* people. "*Grisi siknis*" described by Philip Dennis[53] as a Miskitu culture-bound syndrome, is a spirit-induced episode of abnormal behavior. I found variants of *grisi siknis* (crazy sickness) in Garífuna and Sumu as well as Miskitu populations.[54] In biomedical parlance, the syndrome is manifested by a sudden onset of loud, aggressive behavior, associated with visions and/or auditory hallucinations. In popular description, the illness is caused by spirits of the woods, the water and the wind, and can only be cured by traditional methods.

"*Bulpis*" is a skin disease thought to be caused by ingestion of a poison. Whitening of the skin is the primary sign. Reportedly, the perpetrator uses the urine of a toad and various botanical extracts to create a potion, which is surreptitiously placed in the victim's food or drink. Knowledge of the exact preparation is said to be known only to a few. Special remedies are known to *curanderos* and bush doctors. *Bulpis* is recognized by Mestizo, Creole, Miskitu, and Garífuna populations. A physician who grew up in the area believes that there may be a plant or animal-derived substance that can cause an allergic skin reaction when administered internally. Other, more biomedically inclined persons, say that *bulpis* is merely the result of a particular skin infection, usually attributed to the spirochete bacterium *Treponema carateum*.[55]

Abdominal pains take several different forms in RAAS. "Colic," "spasm," and "bad belly" are abdominal syndromes known to Creoles, the first two characterized by pain, the latter by nausea and diarrhea. *Empacho* and *maleficio* are syndromes that may manifest as stomach pain and are known primarily to the Mestizo. *Maleficio* is sometimes thought to be a personalistic, or malefactor-caused disease, associated with jealousy or "personalistic" magic. *Yumu* is a syndrome characterized by abdominal pain and known primarily to the Miskitu. Sorosi (*Momordica charantia*) and kina/sweet stick (*Cinchona* spp.) were mentioned to me as treatments for *yumu*. *Yumu* is known throughout Honduran and Nicaraguan Miskitu populations, and is thought to be caused by the spirit of an animal that has entered the body of a sick person.[56]

SPIRITS, SORCERY OR PSYCHOLOGY?

Mental illness is often thought to be caused by spirits or sorcery. *Susto*, a syndrome characterized by fright,[57] is known throughout Nicaragua. One informant said that lulabakbak (*Piper jacquemontianum*) can be used to treat *susto*. Sorcery-induced mental syndromes usually are said to come from outside the village. Jealousy and spite are the primary motives. According to a Garífuna *curandero* known to be especially good with mental illness, enemies "set the devil with you ... and he stay with you ... and get you running all around ... and *curandero* he work on you and he take away that devil ... and you get cured. They say it be science. They also use poison. Is different from science." Diagnosis involves giving a medicinal plant to the patient and observing the results. "If he start to move heavy, you got the devil in you." Treatment includes the use of eight medicinal plants and a special diet. "A crazy person don't want to eat a chicken ... Chicken gonna scratch you and then you gonna jump more." Certain fish are prescribed. "They dry and they calm fish so they keep steady. So you become calm when you eat of that."

The Garífuna especially believe in spirits as a cause of sickness. Spirit-induced illnesses are said to come from the ghosts of ancestors. Spirits of a patient's dead parents are often implicated. A healing ritual known as *walagayo* can be called for an especially severe illness. The *walagayo* is an elaborate three-day event that occurs only rarely. The last *walagayo* was in the spring of 1990. It was an elaborate three-day ritual characterized by drumming, dancing, consumption of Garífuna food and beverage, and animal sacrifice.

Far left: Creole man in front of "plantation" Pearl Lagoon. "Plantations" are used to grow basic crops, as well as medicinal herbs; Sumu healer places steaming herbs next to sick child; Miskitu healer, Murphy Sinclair, Orinoco; Miskitu healer, Pelón, Kakabila; Rama boy cracking corn (with Sandinista letters in background).

Accounts differ, but it seems that *walagayo* have been held every two or three years, on the average, for most of the 20th century. The *sukya* of the Garífuna must receive instructions from ancestor spirits in his dreams. The spirits will announce that a *walagayo* should be held, and the family or friends of the patient must pay for the event. Large quantities of food and drink are required. Three special drums are beaten for 24 hours to begin the ritual. A rattle known as a *sisira* is used by the *sukya* . "I's the man shake the *sisira* ... That is the thing who control the *walagayo*. You make it make it. Is a shake shake. But you make it yourself." If the *walagayo* is successful the patient is cured, and gets up to dance with a chicken before the event is over. The *walagayo* is similar to Garífuna healing rituals observed in Honduras and described by various authors.[58,59,60,61]

Interactions between traditional and modern medicine can be complementary or adversarial, results beneficial or disastrous. In general, biomedical and traditional explanations of illness are not thought incompatible by the population, but instead are integrated into a coherent framework. Explanations that would be deemed mutually exclusive by Western scientific standards are held as mutually supportive components of an integrated belief system.

A REVOLUTION IN HEALTH

Improvements in Nicaragua's health care system following the triumph of the 1979 revolution have been widely applauded in the literature.[62,63,64,65,66,67] Infant mortality was reduced from over 100 per thousand to under 80 per thousand in less than five years. Immunization programs involving tens of thousands of volunteers (*brigadistas*) eliminated polio and drastically reduced measles, tetanus, tuberculosis and whooping cough. Malaria was significantly reduced by a unique program of mass drug administration. Severalfold increases were made in medical and nursing education. Training emphasis was shifted toward primary and community health care. In many ways, Nicaragua created the beginnings of a model system.

However, early gains slowed, obstacles emerged, and eventually, the revolution in health was largely dismantled. Although this process was accelerated by Violetta Chamorro's election victory in 1990, it was well under way during the last few years of the 1980s. The U.S.-sponsored *Contra* war left many direct and indirect scars on the Nicaraguan health care system. Health care workers and medical facilities were consistently targeted by *Contra* violence.[68,69,70,71] Indirectly, the war and the economic embargo placed severe restrictions on the Nicaraguan economy, resulting in reduced health expenditures, and, eventually, a deterioration of Nicaragua's health care system.[72,73,74,75] Austerity measures first instituted by the Chamorro government in 1991 have nearly completed the dismantling of public health in Nicaragua.

ETHNOMEDICAL REVITALIZATION

During the 1980s a national program emerged that aimed to integrate traditional and modern medicine. Although an early attempt at investigating the use of medicinal plants was begun in Bluefields in 1981, it was not until 1985 that the "Rescue of Popular Medicine" was created. First in Esteli, then throughout the country, systematic and continued efforts at investigating the use of medicinal plants were initiated.[76,77] Some 845 secondary school students carried out more than three thousand surveys in 26 districts in 1985 alone.[78] Three hundred forty-five different plants were found to be used frequently as medicines. The most important of these were detailed in books published by the Ministry of Health, along with descriptions of their use against various illnesses.[79,80]

On the Atlantic Coast a survey of traditional medicine was accomplished in 1986-87, and a regional conference was held in which traditional healers exchanged ideas with biomedical personnel. The healers were presented with certificates, more than one of which were proudly displayed to me during my work.

Results of these investigations have been used to improve health care throughout Nicaragua. In 1992 the National Center for Popular and Traditional Medicine published the *Manual of Medicinal Plants for the Promotion of Preventive Medicine and Community Health* .[81] Plants with low toxicity and probable clinical efficacy are promoted. Through the use of seminars and printed materials, medical personnel are gaining greater understanding of patients' belief systems, as well as of botanical medicine. These efforts may help decrease the overuse of expensive and potentially toxic pharmaceuticals. Hopefully, the beginnings of an integrated health system will emerge.[82]

Fever grass, lemongrass or *Zacate de limon* (Spanish), *Cymbopogon citratus*.

Table 1 Common Medicinal Plants of Nicaragua's Atlantic Coast

Species	*Family*	*# informants*	*common name*
Citrus aurantiifolia (Christm.) Swingle	Rutaceae	147	lime
Senna alata (L.) Roxb.	Fabaceae	120	Christmas blossom
Momordica charantia L.	Cucurbitaceae	114	sorosi
Cymbopogon citratus (DC. ex Nees) Stapf	Poaceae	91	lemon grass
Anacardium occidentale L.	Anacardiaceae	70	cashew
Annona muricata L.	Annonaceae	65	soursop
Eryngium foetidum L.	Apiaceae	59	cilantro
Psidium guajava L.	Myrtaceae	57	guava
Sida acuta Burm. f.	Malvaceae	50	broomweed
Cocos nucifera L.	Arecaceae	49	coconut
Allium sativum L.	Liliaceae	41	garlic
Senna occidentalis (L.) Link	Fabaceae	39	pisabed
Stachytarpheta jamaicensis (L.) Vahl	Verbenaceae	35	vervine
Malachra alceifolia Jacq.	Malvaceae	35	malva
Manihot esculenta Crantz	Euphorbiaceae	34	cassava
Piper jacquemontianum Kunth	Piperaceae	30	lulubakbak
Cassia grandis L. f.	Fabaceae	29	stinking toe
Smilax spp.	Smilacaceae	28	China root
Tradescantia zebrina Hort. ex Bosse	Commelinaceae	26	wandering Jew
Neurolaena lobata (L.) Cass.	Asteraceae	25	jackass bitters
Scoparia dulcis L.	Scrophulariaceae	24	broomweed
Zingiber officinale Roscoe	Zingiberaceae	22	ginger
Mimosa pudica L.	Fabaceae	22	sleeping bush
Cecropia peltata L.	Cecropiaceae	18	trumpet tree
Thelechitonia trilobata (L.) H.E. Robins. & Cuatrec.	Asteraceae	17	kaisnipata
Cinchona spp.	Rubiaceae	16	quinina
Piper auritum Kunth in H.B.K.	Piperaceae	15	cowfoot
Ocimum campechianum P. Mill.	Lamiaceae	13	albahaca
Cordia curassavica (Jacq.) R & S	Boraginaceae	12	wild sage
Peperomia pellucida (L.) Kunth in H.B.K.	Piperaceae	11	man-to-man
Musa spp.	Musaceae	11	banana
Mangifera indica L.	Anacardiaceae	11	mango
Myristica fragrans Houtt.	Myristicaceae	10	nutmeg
Matricaria recutita L.	Asteraceae	10	chamomile

KEY TO TABLE 2 (following pages)

Species in Table 2 were identified by the Missouri Botanical Garden, the University of Wisconsin Herbarium, and/or the National Herbarium in Managua.

Common name: cr=Creole English; su=Sumu; mi=Miskitu; tw=Twahka
[Language]: r =Rama; ul=Ulwa; sp=Spanish (Ulwa and Twahka are Sumu languages.)

* Folk Illnesses Associated with Medicinal Plants:

Aire [sp] is a folk illness known throughout Latin America. *Aire* is characterized by pain in the body and is thought to be caused by trapped air or wind.

Bad belly is a syndrome similar to gastro, in which abdominal pain and diarrhea are prominant.

Blood refers to a belief in the power of strong or hot blood to prevent or cure illness. Many herbal tonics are used to "build up the blood."

Evil eye is known throughout Latin America, and refers to illness caused by the gaze of a hot, drunk, or malevolent person. In eastern Nicaragua the term *vista fuerte* [sp] refers to evil eye, whereas *mal de ojo* [sp] usually refers to ophthalmic disease.

Gastro [sp] is characterized by intestinal upset, diarrhea, and stomach pain.

Handwork [sp] refers to obeah, sorcery, witchcraft, or poison.

Pressure usually refers to a popularized version of high blood pressure, but sometimes refers to 'pressure' in the chest or in the abdomen.

Purge refers to a common practice of induced vomiting (purge up) or defecation (purge down).

Shortness usually refers to shortness of breath.

Spirit sickness is caused by one or more of the many spirits known to the region. Specifically named in the remedy reports are Wahiwin [mi], a pig-like animal spirit, and Prahaku [mi], a powerful spirit of the wind. Isigni [mi] spirits are ghosts, spirits of deceased humans.

Susto [sp] is a folk illness characterized by fright.

Yumu [mi] is characterized by stomach pain, and is sometimes thought to be caused by animal spirits.

Table 2: Medicinal Herbs of Eastern Nicaragua and Their Uses

The following letters have been used to identify the common names of the plants by language. cr = Creole English tw = Twahka (Sumu) sp = Spanish mi = Miskitu r = Rama ul = Ulwa (Sumu)

Botanical name	Common name(s) by Language	Part(s) of Plant Used	Conditions Treated
Allium sativum L., Liliaceae	ajo [sp], garlic	garlic clove	bad spirit*, cough, belly pain, fever, parasites & worms, snakebite, vomiting
Anacardium occidentale L., Anacardiaceae	cashew, marañon [sp], kasau [mi], kasantaya [ul]	bark, fruit, leaf bark or leaf boiled alone or with guava (*Psidium guajava* L., Myrtaleae) to make tea	bad belly, diarrhea, fever, skin disease diarrhea
Annona muricata L., Annonaceae	guanabana [sp], puno [mi], puntar waihia [mi], saput [mi], soursop, sowasap [cr]	leaf, fruit above boiled with *Bixa orellana* L., Bixaceae leaves	belly pain, childbirth, diarrhea, fever, headache, giddyness, parasites, vomiting, weakness taken to ease childbirth boiled, water used to bathe for fever or headache
Cassia grandis L.f., Fabaceae	stinking toe, carrol [cr], caraola [sp]	fruit, leaf, seed	bad belly, clean the blood, colds, cough, purge, skin disease
Cecropia peltata L., Cecropiaceae	guarumo [sp], plan [mi], plang [mi], palan [ul], trumpet, trumphet [cr]	leaf	bad belly, diarrhea, fever, headache, liver, 'wash out the babies'; 'best cure for the gastro* and the bad belly'
Cinchona spp. L., Rubiaceae	kina [cr,mi], kinina [cr,mi], quinina [sp], sweet stick [?]	bark	for washing the blood, colds, fever, heart, malaria, pain of belly, yumu*
Citrus aurantiifolia (Christm.) Swingle, Rutaceae	damni [mi], leimus [mi], lime, lima [cr], limón, limón de castillo [sp], limón agria [sp], uriaup supkaba [ra]	fruit, leaf, root	belly pain, childbirth, colds, cough, diarrhea, fever, headache, itching, kidney, nerves, parasites, purge, vomiting, weakness
Cocos nucifera L., Araceae	coco [cr], coconut, kuku [mi], kukunup [ra]	fruit, leaf, oil, (often from 'young coconut')	bad belly, colds, cough, diabetes, diarrhea, headache, heart, pain, parasite, pressure*, purge
Cordia curassavica (Jacq.) R & S., Boraginaceae	kaiasaika [mi], riskupata [mi], wild sage	leaf leaves boiled	bad belly, colds, cough, fever, headache, parasites, pressure* water used to bathe and reduce fever
Cymbopogon citratus (DC. ex Nees) Stapf (*Andropogon citratus*), Poaceae	fever grass, lemon grass, tiwahiwa [mi], zacate de limón [sp]	leaf	belly pain, colds, cough, fever, pressure*
Eryngium foetidum L., Apiaceae	cilantro [sp], coriander, culantro [sp], fits weed, kisauri [ul], kia saura [mi], kulantro [mi], prouk [ra]	leaves, whole plant	aire*, asthma, belly pain, colic, colds, cough, diarrhea, earache, fever, giddyness ('drunky head'), parasites, spirits*, vomiting
Malachra alceifolia Jacq., Malvaceae	malva [sp], slimey bush	leaf leaves boiled	bellyache, fever, headache, inflamation, vomiting tea drunk and/or water used to bathe skin and/or poulstice applied to head
Mangifera indica L., Anacardiaceae	mango, mankro [mi], mango dusa [mi]	bark, fruit, leaf	aire* , bad belly, cough, diarrhea, fever, pain, rheumatism, skin disease
Manihot esculenta Crantz (*M. dulcis*), Euphorbiaceae	cassava, iik [ra], yuca [sp], yauhra [mi]	leaf, root, starch	belly pain, diarrhea, fever, headache
Matricaria recutita L., Asteraceae (*Chamomilla recutita* (L.), Rauschert)	chamomille, manzanilla [sp]	flower, leaf	belly pain, cough, menstrual pain, nerves, ovaries, purge
Mimosa pudica L., Fabaceae	dormilona [sp], king aula [mi], sleepy, sleeping bush, sensitive	leaf	diarrhea, fever, headache, hemmorhage, parasites, stomach ache, vomiting, 'clean the womb', sedative to make baby sleep'
Momordica charantia L., Cucurbitaceae	broomweed, makalalaska [ul], miniklalasni [tw], panaminik [ul], pepino montero [sp], sorosi [sp], tasplira [mi]	leaf	belly pain, build up, strengthen or clean the blood, childbirth, cold, cough, diabetes/sugar, fever, headache, malaria, menstrual pain, pain, purge, skin disease, womb, yumu

Botanical name	Common name(s) by Language	Part(s) of Plant Used	Conditions Treated
Musa spp., Musaceae	banana, banano [sp], sumuu [ra], samu [ra], cgir	leaf, flower, fruit, root	bad belly, diarrhea, snakebite
Myristica fragrans, Houtt., Myristiceae	kerosin [?], memoscada [cr], nuez moscada [sp], nutmeg, querosin [?], gmr	seed	belly pain, diarrhea, fever, vomiting
Neurolaena lobata (L.) Cass., Asteraceae	gavilan [cr], jabilla [sp], jackass bitters, kunata palska [ul]	leaf	help the blood, diabetes, fever, itch, malaria, skin disease, stomach ache, tuberculosis
Ocimum campechianum P. Mill., Lamiaceae	albahaca [sp], barsle [cr], barsley [cr], sika kaira [mi]	leaf	aire* , cold/cough, diarrhea, earache, fever, headache, heart, kidney, nerves, obeah, pressure, spirit * [Liwa mairen = water maiden], stomach ache
Peperomia pellucida (L.) Kunth in H.B.K., Piperaceae	cold man, man-to-man, upla kahula [mi]	whole plant plant boiled whole & tea drunk	cold, cough, fever, kidney for kidney; 'that for [?] cough, and for pressure *, and for cooling too'
Piper auritum Kunth in H.B.K., Piperaceae	cowfoot, kalamata [su], kamput [mi], kamput wahia [mi], savila [sp], santa maria [sp], sika tara [mi]	leaf leaves boiled, tea drunk leaf mashed	anemia, fever), headache, heart, kidneys, liver, pain, rheumatism, toothache various internal complaints applied to sore gums or tooth
Piper jacquemontianum Kunth, Piperaceae	bakbakya [mi], cordoncillo [sp], lula sara [mi], lula sara [mi], lulubakbak [mi], pansan [ul], panadadas [tw], spanish ela	leaf, flower	belly pain, colds, fever, fright (susto*), headache, kidneys, nerves, pain, pressure* , spirits* , weakness, 'drink for the kidney, downward infection', good for people who trouble with sugar (diabetes)
Psidium guajava L., Myrtaceae	borimak [ul], guava, guayaba [sp], krue [mi], kuabas [ra], sigra [mi], sikra [mi]	leaf, fruit, seed	bad belly, diarrhea, fever, pressure*, worms, weakness
Scoparia dulcis L., Scrophulariaceae	amarga [sp], anisillo [sp], bitterbroom, broomweed, brum sirpi [mi]; brum tahplira [mi], escobilla [sp], escoba lisa [sp], haraspata [mi], hierba de dolor [sp], rice weed, sirsaika [mi], wild rice	leaf, root, whole plant leaf tea whole plant tea	belly pain, childbirth, cough, fever, headache, itch, labor, spirits*, yumu* diarrhea, poultice for headache or wounds 'infection of liver', to 'clean the blood, kidney, the whole system'
Senna alata (L.) Roxb. (*Cassia alata* L.), Fabaceae	christmas blossom, ganabisi [mi], kislin [mi], red head, serocontil [sp], sus saika [mi], sus tara saika [mi], sus waha tara [mi]	flower, leaf, root	aire* , clean the blood, fever, liver, kidneys, pressure* , purge, skin disease, used 'to cool the inside' or 'clean out the inside'
Senna occidentalis (L.) Link (*Cassia occidentalis* L.), Fabaceae	baby leaf, frijolillo [sp], pisabed [cr,sp], pico de pajaro [sp], singsingya [mi], sinsinya [mi]	leaf, whole plant	belly pain, childbirth, cold, colic, fever, headache
Sida acuta Burm. f., Malvaceae	amarga [sp], bear dead, broomweed, escoba de chancho [sp], escoba lisa [sp], escoba lucia [sp], haraspata [mi], john charles, kataramas [su], malva, slimey bush, wild broom, yu tangni [mi]	leaf, root, whole plant whole plant boiled, tea drunk	asthma, bad spirit*, belly heat, childbirth, cold, cough, fever, handwork*, headache, ulcer, yumu headache and/or as an anti-worm medication; leaves bound to head for headache
Smilax spp., Smilacaceae	chaney root [cr], China root, chiny [mi], cuculmeca [sp], samalai [su], wasalanka [su]	leaf, root	anemia, to build up the blood, colds
Stachytarpheta jamaicensis (L.) Vahl, Verbenaceae	verbena [sp], vervine	leaf leaves squeezed or boiled	clean the blood, colds, cough, parasites, purge, kidney juice/tea drunk to rid oneself of worms or parasites
Thelechitonia trilobata (L.) H.E. Robins. & Cuatrec., Asteraceae	bad man, kaisnipata [mi], kasmitin [?], upla saura [?]	leaf, whole plant leaf crushed whole plant boiled	colds, kidney, purge, applied directly to snakebite, stingray cut, wounds tea drunk for kidney
Tradescantia zebrina Hort. ex Bosse, Commelinaceae	espiritu santo [sp], wandering jew	leaf leaves boiled with leaves of *Ocimum micranthum* Willd, Labiatae and *Wedelia tribolata* (L.) Hitchc, Compositae	for the blood, kidney, pain, purge, for kidneys
Zingiber officinale Roscoe, Zingiberaceae	ginger, jenjibre [sp]	rhizome	aire*, belly pain, cough, fever, gas, sore throat

Left: **latawira** (Miskitu), *Desmodium incanum*; right: **annato,** *aulala* (Miskitu), *achiote* (Spanish), *nata* (Creole), *Bixa orellana*.

HISTORICAL INTERACTIONS

On Nicaragua's Atlantic Coast, indigenous (Miskitu, Sumu and Rama) ethnomedicines have interacted and blended with those of the Euro-African invaders and immigrants (Spanish, English, Creole, Mestizo and Garífuna) for almost 500 years. Some experts say that the Miskitu culture itself is largely a post-contact phenomenon.[83,84] Health-related beliefs and practices developed interactively, and have repeatedly borrowed from, lent to, and influenced each other. Blacks and Creoles arriving both as slaves and free over the past centuries brought with them strong roots in African tradition. The Garífuna retained their own ethnomedical beliefs and customs when they first arrived in Central America in 1797, and later when one group moved to Nicaragua from Honduras around the turn of the present century.[85,86,87] Military doctors, ships' surgeons, and other medical representatives of Euro-American colonialism sometimes accompanied the traders, raiders, and colonizers that plied the Mosquito Coast. These influences combined to form a complex and dynamic regional network of beliefs concerning health and illness.

The 1979 revolution brought a unification and expansion of the nation's health care system. Professional and volunteer health care workers were sent in large numbers to the countryside.[88] Hundreds of new health posts and a few larger health centers were established. In RAAS this meant the construction of additional health centers in rural locations, and a tripling in the number of physicians. A new hospital was built in Bluefields in 1982. Volunteer health care workers (*brigadistas*) were trained and equipped with basic medicines. By 1983 some 250 *brigadistas* operated in 135 communities.[89]

Especially important to an understanding of health and medicine in RAAS, in Nicaragua, and throughout the developing world is a recognition of ethnic differences between the biomedical practitioners and the population at large. The Atlantic Coast of Nicaragua has remained isolated from the Pacific Coast for most of its history.[90,91] British colonization followed by North American exploitation of lumber and mineral resources left a cultural and linguistic legacy.[92,93] Creole, Miskitu, Sumu, Garífuna, and Rama are more likely to speak English than Spanish. Protestant churches, especially the Moravian, are dominant. Many people identify more strongly with English or North American culture than with the dominant Mestizo culture of western Nicaragua.

In addition to linguistic barriers there are ethnic and cultural obstacles. Although hot-cold humoral etiology may be familiar to Mestizo physicians, spiritual or personalistic theories may arouse derision or contempt. *Calor de la vista* and *aire* may have been encountered during community service in medical school, but *bulpis* or a thunderstone may be totally unfamiliar. Lack of mutual understanding, combined with language barriers, can seriously undermine the doctor/patient relationship.

Traditional healers, on the other hand, are more in tune with the belief systems of the population at large. They come from the region, speak the language of the people, and understand intimately the norms and values of their patients. They have more time to interact with patients and are not associated with the government bureaucracy. Etiological categories and treatment modalities are mutually understood, providing for greater compliance and patient satisfaction. Traditional healers are physically closer to their patients, and are more likely to live in the region's villages rather than in the city of Bluefields.

Although more accessible, traditional healers often lack the prestige associated with medical doctors and have less understanding of the biological basis of disease and healing.

Modern Euro-American civilization is well known to the people of RAAS through radio and television, and by word of mouth. Modern technology and the advances of science are associated with the biomedical practitioners, enhancing their reputation and creating for them a role in many ways similar to the role of the traditional healer of the past. The socially accepted power to deal with the unknowns of disease has shifted toward the medical doctor, but there remains a strong undercurrent of belief in magic and faith in the power of the *sukya, curandero*, or bush doctor.

Beliefs and practices surrounding the subjects of health and illness are not fixed in time, nor do they come from a single source.

Soursop, guanabana (Spanish), *saput* or *puno* (Miskitu), *Annona muricata*.

Although the roots of the hot-cold syndrome and of germ theory can each be traced to historical Europe, the branches observed today have been molded by countless additional forces. A person experiencing pain in her stomach may drink a homemade concoction of a "cold" plant to counteract her "hot" illness, may go to the Miskitu *sukya* to banish the animal spirit causing the *yumu*, may go to the Creole bush doctor to drink blessed wine to remove a foreign object sent by an enemy, may go to a *curandero* to receive herbal treatment for *empacho*, *maleficio*, or *aire*, or may go to the nearest health center to receive antibiotics for a bacterial enteritis. Her explanations for the illness may be multiple, and may or may not correlate with her ethnicity. Her choices within the pluralistic health system depend on her upbringing and her experience within the multi-ethnic cultural domain of Nicaragua's Atlantic Coast.

Thus, traditional and modern medicine can be seen to play complementary roles in the pluralistic system of health care in Nicaragua's Southern Atlantic Autonomous Region. Differing options allow patients flexibility and choice. Contrasting belief systems vie for acceptance in the dynamic processes of sharing, borrowing, and acculturation. Official medicine—under the auspices of the Nicaragua Ministry of Health—has only just begun to open its arms to traditional medicine. In return, a few traditional healers have recognized the value of modern medicine. Individual patients integrate concepts and practices from each, as they try to negotiate the complex pathways of health and illness they face. ❑

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Herbal Medicines Can Reduce Costs in HMO

by Larry Kincheloe, M.D.

Oklahoma is not known as the hotbed for complementary-alternative medicine (CAM). At the first Harvard course on Alternative Medicine, three years ago, I persuaded another doctor to join me, but at the last two courses I have unfortunately been the sole physician representing the State of Oklahoma. It is with this as a backdrop that I would like to share the experience of introducing herbal medicines into a very conservative HMO practice.

I am the chairman of an Ob-Gyn Department that is part of a 47 multi-specialty group that has the contract to take care of 60,000 members of an HMO. I have been using herbals in my practice for about five years with good success. I was anxious to get on the monthly staff meeting agenda to discuss the topic of herbal medicine with the rest of the medical group. It seems that there was never enough time or interest and so my request for time to discuss herbal medicine was always put off.

Then came the yearly meeting when the medical group and the HMO administrators met to discuss ways of holding down cost. I was asked to sit on the task force whose mandate was to discuss the more expensive drugs on the formulary and look for ways of reducing costs. This was also about the time that the *Journal of Geriatric Psychiatry and Neurology* put out a supplement devoted to the discussion of an herbal anti-depressant called St. John's Wort (*Hypericum perforatum* L., Clusiaceae). The data showed that this herb was as effective as many of the other drugs on the market for depression, but with fewer side effects. The working dose was 300 mg three times daily of Hypericum standardized at 0.3 percent of one of the presumed active compounds, hypericin.

I developed a handout summarizing the information from the journal article, which clearly showed that this herbal was prescribed just as any other traditional anti-depressant drug. I then presented data that showed that a month's supply of Prozac® was $72.00 whereas Hypericum cost less than $9.00 for a month's supply. The HMO spent nearly $1 million a year on anti-depressants for our membership and the data showed that if St. John's Wort was only effective in 25 percent of the patients, then this would save over $250,000 a year. I felt this was a very conservative estimate but in a conservative environment you tend to make conservative estimates.

Suddenly, there was great interest in herbal medicines and it was obvious, given today's financial climate, that the proverbial "foot-in-the-door" that I needed was cost savings. I would like to think that my colleagues were motivated by patient demands or the safety of these herbal medicines but as a pragmatist, I knew that wasn't true.

I was then asked to work up an herbal medicine presentation at the next month's meeting. As the time drew near to give my talk, I found myself becoming apprehensive about how I would be received. Would my credibility be ruined? Would my referral base disappear because I would be seen as the "quack" physician?

The potential of direct savings in yearly drug costs was between $500,000 and $750,000.

I presented the following herbals and the medicines that they could replace along with the cost savings that could be realized. I chose ten herbs that I felt had some of the strongest data to support their clinical use:

1. Ginger root (*Zingiber officinale* Roscoe, Zingiberaceae) as an anti-emetic
2. Garlic (*Allium sativum* L., Liliaceae) as a hypolipidemic
3. Nettle leaf (*Urtica dioica* L., Urticaceae) as an anti-histamine
4. Ginkgo biloba (*Ginkgo biloba* L., Ginkgoaceae) as a treatment of tinnitus and intermittent claudication
5. Feverfew (*Tanacetum parthenium* (L.) Schultz-Bip., Asteraceae) as a treatment and prevention of migraines
6. Valerian (*Valeriana officinalis* L., Valerianaceae) as a minor tranquilizer and sleep aid
7. Cranberry (*Vaccinium macrocarpon* Aiton, Ericaceae) to prevent recurrent bladder infections
8. Saw palmetto (*Serenoa repens* (W. Bartram) Small, Arecaceae) as a treatment and prevention of benign prostatic hypertrophy
9. Milk thistle (*Silybum marinum* (L.) Gaertn., Asteraceae) to treat chronic liver disease and toxic liver damage
10. Peppermint oil (*Mentha* x *piperita* L., Lamiaceae) as a treatment for irritable bowel syndrome (enteric-coated capsules).

The potential of direct savings in yearly drug costs was between $500,000 and $750,000. The indirect savings would be in the area of fewer emergency room and clinic visits for urinary tract infections, acute migraines, or overdosing on prescription medication, just to name a few. What would be the cost benefits of using Echinacea if patients got back to work after the flu two days sooner?

I was surprised to find that many doctors came up to me after the presentation and in confessional tones stated that they had wanted to use herbs but did not for fear of professional condemnation or for the lack of knowing where to get reliable information on herbal medicine. Now, I would like to say that all of these herbal medicines were well received and now in common use but doctors do not easily let go of proven therapies or move on to treatments which are foreign to them. We do carry St. John's Wort, Valerian and Feverfew in our pharmacy and physicians are writing prescriptions for these herbals as they would for any other recognized medicine. I have also given a grand rounds on herbals at the medical school and have two more talks planned for local medical societies. I have also had more physicians ask about herbal medication in the past year than in the previous five years.

There seems to be a movement that is slow growing here in Oklahoma City and a group of physicians and the complementary-alternative providers in the community are now meeting on a regular basis to develop a network. In the words of Bob Dylan, "the times they are a changin'..."

To date our pharmacy has dispensed herbals to 175 patients. It is not a giant step towards the reintegration of herbal medicine but it is a step. I have found that to be heard, you must speak the language of those to whom you are speaking. In today's managed care environment, the language is that of "cost savings." It is here where the potential of integrative therapies of including the use of herbal medications can make significant advances.❑

Dr. Kincheloe is a Board Certified Ob/Gyn physician, a Fellow of the American College of Obstetrics & Gynecology; he has an M.A. in Counseling Psychology and he also uses acupuncture and mind/body therapies. He is affiliated with the Oklahoma City branch of the Central Oklahoma Medical Group.

The Herbalists' United Plant Savers

by Richard A. Cech

Left: **Black cohosh** roots, right: black cohosh plant, *Cimicifuga racemosa*.

Top: **American ginseng** root, above: American ginseng fruit and leaves, *Panax quinquefolius*.

Echinacea, *Echinacea angustifolia*.
All photos © 1997 Steven Foster.

United Plant Savers (UpS) has taken on a giant responsibility. Its on-going and ultimate goal is to coordinate widespread efforts to preserve native medicinal plant populations which are suffering from loss of habitat and over harvest. Herbalist Rosemary Gladstar, director Dr. Richard Liebmann, and a team of concerned herbalists and conservation-minded plant enthusiasts are asking the cooperation of all segments of the herbal industry, including practitioners, organic growers, wildcrafters, herb brokers and herbal manufacturers, to strive to protect native populations of the plants which serve their livelihood.

The identification of plants which are presently in decline due to expanding popularity and shrinking habitat and range has taken the form of a list called the "UpS at Risk List," which is available in draft form from UpS, and is open to public comment. American Ginseng (*Panax quinquefolius*, L., Araliaceae), Echinacea - all species, Goldenseal (*Hydrastis canadensis*, L., Ranunculaceae), and Wild Yam (*Dioscorea villosa*, L., Dioscoreaceae) are some of the primary herbs listed. It must be stressed from the beginning that UpS is not calling for a moratorium on the use of these herbs, rather initiating programs, both practical and educational, which are designed to preserve these important wild medicinal plants.

At the core of this effort is the support of organic cultivation of "at risk" herbs. Using domestically grown herbs serves to lessen dependence on wild-harvested plants and it is a direct means of preserving them. For instance, without widespread organic cultivation of *Echinacea purpurea*, wild stands of *E. angustifolia* would be even more stressed than they already are. Cultivated plants become a source of seeds and cuttings for further propagation and eventual re-introduction of plants into the wild. UpS is asking for the assistance of wildcrafters to provide information about native habitats, to observe the way plants reproduce in the wild and to collect seeds for domestic cultivation. On an industry-wide basis, as wild-harvested herbs become more difficult to find, herb quality goes down while price increases. Cultivation thus becomes more profitable, and with appropriate techniques the quality of organically grown herbs can meet and exceed the wild standard. Growing medicinal herbs is a swelling profit area for individuals wanting to find a way to make a living with herbs.

In the interest of rejuvenating wild populations, UpS has initiated work on developing a 650-acre botanical sanctuary in southeast Ohio, which will serve as a testing-ground for studies in propagating and re-introducing medicinal plants to the wild. UpS holds on-going "Planting the Future" conferences which serve to bring together individuals who are interested in ethical wildcrafting and in growing wild medicinal herbs. The conferences provide an apprenticeship into the reasons and means for stewarding medicinal plant resources.

Members of UpS receive a newsletter and membership packet which give more detailed information about its programs. Tax-deductible contributions will directly support preservation of the herbs which are the livelihood of all herbalists and potential healers of all humanity. To become a member, please write United Plant Savers, PO Box 420, E. Barre, VT 05649.

—Richard Cech, Director of Quality Control at HerbPharm, Williams, OR.

Goldenseal In World Trade: Pressures and Potentials

by Joy Elvey Bannerman

Goldenseal (*Hydrastis canadensis* L., Ranunculaceae) ranks with ginseng as a North American plant having high medicinal and financial value, as well as extraordinary and escalating demand. Goldenseal grows nowhere else in the world, and even within North America its range is limited and shrinking. Like ginseng (*Panax quinquefolius* L., Araliaceae), goldenseal is a small woodland-floor plant that grows in moist shaded hardwood coves favored by companion medicinal species which may include black cohosh (*Cimicifuga racemosa* (L.) Nutt., Ranunculaceae), blue cohosh (*Caulophyllum thalictroides* (L.) Michaux, Berberidaceae), bloodroot (*Sanguinaria canadensis* L., Papaveraceae), mayapple (*Podophyllum peltatum* L., Berberidaceae), and false unicorn root (*Chamaelirium luteum* (L.) A. Gray, Liliaceae). Above ground, each goldenseal plant consists of only one fragile stem 6"-8" high with one or two leaves, each the size of a small human hand stretched out over the moist earth that supports them. Below ground a rhizome sprouts numerous thin rootlets which intertwine with companion plants to form clusters that may be inconspicuous or spread out in large patches.

This kind of growth strategy works well in undisturbed woodlands; but it turns to deadly disadvantage when people come on the scene, for even the most careful collector or trespasser will trample on something of value, with the added liability of compacting the decaying humus and leaf-litter upon which all the delicate woodland species depend. When large-scale collection is taking place for financial gain, the disturbance is usually so disastrous that populations of plants like goldenseal do not recover. This kind of collection, along with expansion of timber harvesting, agricultural expansion, road intrusion, urbanization, and recreational use has made it increasingly difficult to find even a single population of goldenseal in many forests where they were formerly abundant. For these reasons, goldenseal has been assigned a fragile ranking by the Network of Natural Heritage Programs. Commercial trade in goldenseal is regulated in seven out of 26 states with goldenseal. According to state government reports, all harvest from the wild is prohibited and the species is listed as "endangered" in North Carolina, Vermont, Connecticut, Georgia, Massachusetts, and Minnesota. Goldenseal is reported but unprotected, at this time, in Arkansas, Illinois, Iowa, Kentucky, Mississippi, Ohio, and West Virginia. It is on the "rare plants list" in Alabama; the "watch list" in Delaware, Virginia, and Indiana; considered "threatened" in Maryland, Tennessee, and New York; "fairly rare" in Oklahoma and Michigan; "historic" in New Jersey; "vulnerable" in Pennsylvania; and "of special concern" in Wisconsin. Although goldenseal had been used for centuries, as early as the 1800s there were reports that habitat destruction was severely impacting wild populations (Lloyd and Lloyd 1884-1885, in Foster 1991); for this reason, today's remaining goldenseal stands may exist only as remnant populations.

Hydrastis canadensis was first used by Native American peoples of many tribes, later adopted by immigrants to the North American continent, and its reputation then carried eastward back to Europe, Africa, and Asia. The Food and Agriculture Organization (FAO) of the United Nations cites goldenseal as one of the best-selling herbs internationally. It is now recorded in the official pharmacopoeias of France, Britain, Germany and Italy, and is marketed in over 500 medicinal products worldwide, with Germany accounting for 57 percent and France for 30 percent of European-marketed phyto-therapeutic products (TRAFFIC-USA). A German database of phytopharmaceuticals reported 43 pharmaceutical companies selling 176 different remedies using goldenseal (Lange-Osten 1996). Goldenseal is a component in at least 300 homeopathic remedies produced in France, Germany, the United Kingdom, Switzerland, Spain and Australia. The headquarters of three large homeopathic companies (Boiron, Dolisos, Lehning) are located in France and export mother tinctures, dilutions, and finished products. However, the largest percentage of exported plant materials go to Milan, Italy, which has the world's largest extractor industry. From there, processed materials go on to many different countries, including re-import back into the United States, Canada, and the Caribbean.

Agros Associates estimates that the annual volume of goldenseal entering the United Kingdom is approximately 10 metric tons with an estimated value of US $1.55 million. At a minimum of 200 roots to the pound, that 10-ton import amount for the U.K. alone suggests a staggering annual harvest which is utterly unsustainable by wild-harvested supplies since even partial regeneration of disturbed populations takes decades, if it happens at all (Alan Smith). If the weight of roots exported to international markets between 1994-1995 is tallied using only data from USDA-issued phytosanitary certificates, over 6 million roots would have been traded in that one year. Since there has been no organized or reported monitoring of wild populations in North America in the past, there has been no way to quantify the extent of potential decimation. It is for these reasons that the U.S. Fish and Wildlife Service, the regulatory body charged with much of the responsibility for protecting the nation's vital plant and wildlife resources, proposed the listing of goldenseal under Appendix II of CITES, the Convention in Trade in Endangered Species, a move which was formally approved at the biennial Meeting of the Conference of Parties (COP) held in Zimbabwe in July 1997. At that time there was concern, especially by the Europeans, that their supplies would be more difficult to secure and even more costly. However, recognizing the threat to the species as a whole, and therefore to its availability as a medicine, the Europeans did support the initia-

tive which, while not prohibiting trade, will regulate ethical and sustainable supply in world trade. Roots, rhizomes and rootstocks, as well as "specimens recognizable as parts thereof" will now require CITES export permits from the U.S. Fish and Wildlife Service (USFWS), the federal permitting agency. Value-added products such as tinctures, creams, capsules, and the like will remain unaffected.

The CITES listing went into effect on September 18, 1997, in both the United States and Canada. Anyone planning to export goldenseal from either of these countries, or to re-export it from anywhere else in the world, must now apply for an export permit from the Office of Management Authority of USFWS. Permits will be granted on the basis of whether the material was legally acquired (not in violation of any local, state, tribal, or federal law), and whether or not the collection is detrimental to the survival of the species. In the first year of implementation, a number of groups and individuals will be involved in planning for future sustainable use and conservation of goldenseal, including the U.S. Forest Service, state government agencies, NGOs, industry, and researchers. The CITES listing is one action, but full protection requires partnership and cooperation at all these levels, including involvement of affected states.

The listing of goldenseal under CITES is intended to serve as a useful tool and stimulus for industry, the healing community, and individual consumers by providing an opportunity to collaborate in structuring mechanisms for responsible protection and sustainable use. The foundation of these efforts is effective trade monitoring so that a baseline of information about collection can be built and augmented. This kind of information can lead to wise financial investments in developing sustainable cultivation practices, along with conservation and enhancement of the native germplasm base upon which cultivars depend. Clear parameters of responsible trade, enforced at the source of origin, will certainly encourage high-quality product development, effective consumer and grower education, and enhanced profitability as companies contribute to both. As Chris Robbins, Program Officer for TRAFFIC USA, points out, "While CITES is a global mechanism affording immediate protection to goldenseal, it should not be seen as a permanent solution to the conservation and management of the species. CITES brings goldenseal's conservation status to the attention of users and will hopefully encourage remedial efforts." To this end, field researchers must be supported in their efforts to gain understanding of the biological dynamics and the collection effects, not only of goldenseal, but also of the valuable medicinal species with which it has co-evolved.

Goldenseal root, *Hydrastis canadensis*.

Since the market demand for goldenseal continues to increase worldwide, successful cultivation methods will be the key to future supplies. The herbal products industry has spearheaded this awareness with printed literature and electronic Web campaigns including the "Save the Goldenseal" campaign of Frontier Herbs. Others, such as Wilcox Natural Products, are supporting advanced research and contracting for cultivated botanicals. There are now cultivated enterprises in over a dozen states and Canada. Researchers such as Dr. Jeanine Davis, of North Carolina State University's Mountain Horticultural Crop Research and Extension Center in Fletcher, N.C., have been spearheading this effort, thanks in large measure to industry support particularly from Nature's Way, Gaia, and QBI. In a series of cultivated-material trials, Dr. Davis has done groundbreaking work by determining that higher measurable (medicinal) alkaloid concentrations are produced in those plants which have been grown slowly, without the benefit of extra chemical fertilizers. Although this means that material may take a year longer to be produced, it also means a higher potency yield. In companion research, the Center is looking at growing goldenseal in former ginseng beds to see if the ravaging effects of ginseng pathogens are thereby mitigated. If this proves to be true, then ginseng can be replanted in its former plots and goldenseal's therapeutic affects will extend to plant as well as human and veterinary medicine. With the cost of raw, bulk goldenseal on the market in excess of $125 per lb., its judicious cultivation may thereby yield multiple, ongoing profits.

In a companion project, the Wildlands Medicinal Plants Restoration Program of the Institute of Conservation & Culture is looking at biological and agricultural factors related to woodlands cultivation and restoration. This initiative, begun with support from Environmental Seed Producers (ESP) Inc., is developing an applied knowledge base for wildlands restoration, as well as for cultivars. Since so many medicinal plant species grow intermingled in undisturbed natural areas, the program is also working to develop medicinal plant sanctuary set-aside areas as vital germplasm reserves. All these kinds of cooperative efforts between public and private interests will help the USFWS to regulate international trade in such a way that the management of goldenseal becomes a national and international model, replicable for many other medicinal species whose existence may in the balance. For more information, contact the Office of Management Authority, USFWS, 4401 North Fairfax Drive, Room 430, Arlington, VA 22203, or by telephone at 703/358-2104.

Joy Bannerman is Director of The Wildlands Medicinals Program of The Institute of Conservation & Culture, and Research Associate with The North Carolina Botanical Garden

SOURCES

Proposal For The Inclusion of *Hydrastis canadensis*, Appendix II, CITES (Convention in Trade of Endangered Species). 1997. U.S. Fish & Wildlife Service, Washington, DC; U.S. Fish & Wildlife Service. Personal communications. October 1996-October 1997; U.S. Forest Service. Personal communications. October 1996-October 1997; Davis, J. Personal communication. 1997. Fletcher, NC. August; Robbins, C. Personal communication. 1997 Washington, DC September;Smith, A. Personal communication. 1997. Mars Hill, N.C. August.

Echinacea #1 in Natural Food Trade

For the third consecutive year *Whole Foods* magazine conducted a survey of retailer readers of the magazine. The dollar figures reported reflect the experience of "the average store" as identified in a 1996 retailer study with overall store sales being $1,226,495, the basis used in this survey. 1996 store sales were up 53.4% from the year before and, based on the first two months of 1997, are expected to increase by 15.1% to a total of more than $1.4 million.

[Richman, A. and J. P. Witkowski. 1997. Reprinted with permission from *Whole Foods*, October.]

Herbs and Self-Medication Gain in Germany

Herb use is increasing in Germany. An article in the *Medizin* medical supplement in a recent issue of a German paper noted that in 1970 herbs were used by 52 percent of the public. By 1997 that figure climbed to 62 percent. German physicians prescribe 22 percent of the herbs, the remainder being nonprescription medicines, many of which are approved by Commission E. According to the article, in 1978 44 percent of the public did not see a physician for minor complaints; in 1997 that figure had risen to 58 percent, indicating an increase in the general trend towards self-medication. This self-medication use breaks down as follows: 66 percent use herbs for colds; 38 percent for flu; and 25 percent for digestive problems, headaches, and insomnia. The study was conducted by the Institute for Demoscopy in Allensbach. The German situation does not represent a dramatic increase in 27 years, but is significant nonetheless, considering that it started from a base of over 50 percent, still much higher 27 years ago than the U.S. is today. — *Mark Blumenthal and Varro Tyler.*

[Anonymous. Natural Medicines More and More Popular. 1997. *Welt Amsonntag* No. 12, 40. March 23.]

Herbal Supplement Sales in Natural Food Stores

'97 rank	Herb	'97 % of sales	'96% of sales	'96 rank
1	Echinacea	11.93%	9.6%	1
2	Garlic	8.52%	7.2%	2
3	Ginkgo biloba	6.80%	5.1%	4
4	Goldenseal	5.95%	4.7%	5
5	Saw palmetto	4.87%	3.1%	9
6 (tie)	Aloe	4.76%	2.4%	12
7 (tie)	Ginseng	4.76%	6.4%	3
8	Cat's claw	3.49%	2.1%	14
9	Astragalus	3.07%	1.3%	27
10	Cayenne	2.83%	2.5%	11
11	Siberian ginseng	2.70%	3.5%	7
12	Bilberry	2.61%	1.6%	23
13	Cranberry	2.47%	1.7%	18
14	Dong quai	2.13%	1.8%	17
15	Grape seed extract	2.07%	2.0%	15
16	Cascara sagrada	1.92%	2.8%	10
17	St. John's wort	1.87%	n/a	n/a
18	Valerian	1.73%	2.2%	13
19	Ginger	1.69%	1.7%	18
20	Feverfew	1.59%	1.6%	23

Five herbs (cat's claw, saw palmetto, ginkgo biloba, echinacea, and kava kava, have been on the list all three years that the study has been conducted. The top 10 herbs have 56.98% of sales; top five herbs have 38.07%, second five herbs have 18.91%.

Ginkgo, *Ginkgo biloba.*
Photo © 1997 Steven Foster.

OTC Drugs Save Consumers $20 Billion in 1996

A recent report indicates that American health consumers may have saved up to $20 billion by using over-the-counter (OTC) medications in 1996, marking an increase from savings of $10.5 billion in 1987. The report was prepared by Kline & Co. of Fairfield, New Jersey, and was released May 16 at the Nonprescription Drug Manufacturers Association (NDMA) Annual Meeting/ Executive Conference.

The cost savings were calculated by considering increased healthcare costs, the transfer of drugs previously only available by prescription to nonprescription status (Rx-to-OTC switch), and consumer desire to benefit from and "take full advantage of expanding opportunities in self-medication," according to an NDMA newsletter. The calculations compared the average cost of an OTC drug with the typical cost of an office visit to a physician, purchasing an Rx drug, and, for people on hourly wages, the lost income while visiting an M.D. Based on these factors, the study concluded that OTC drugs which were switched from Rx-only status constituted $12.9 billion of the $20.6 billion savings in 1996. — *Mark Blumenthal*

[Anon. 1997. OTC Drugs Saved Consumers $20 Billion in 1996: Kline Study Documents Cost-Effectiveness of Nonprescription Medicines. *NDMA Executive Newsletter. No. 10-97*, May 16.]

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Sandalwood Oil Crop Suffers Burn

A fire in March 1997 in the East Indian state of Tamil Nadu has destroyed most of the year's sandalwood (*Santalum album* L., Santalaceae) crop, sources report. Although Indonesia does produce some sandalwood oil, most of the product comes out of India. As a consequence, prices for sandalwood oil are sure to rise later in the year when the shortage will begin to be felt in the market. It has been estimated that approximately $17.5 million worth of sandalwood has been affected. "Sandalwood oil will surely rise with this news," says one supplier. "With recent events, this will make it even harder to get natural sandalwood oil."

The oil had already been in short supply outside of India since the Indian government placed sanctions on its exportation in June 1996. The availability of synthetic sandalwood oil kept prices in check at that time, and brokers predicted that the natural sandalwood oil market would recover in a year or two. Due to the recent fire, however, the recovery is no longer expected that soon. In early 1996 East Indian sandalwood oil was selling at $174/pound. By the end of 1996 and into January 1997 the price was as high as $235/pound. Since then the price has leveled out to $215/pound. Prices for the Indonesian product are slightly lower. Due to its different fragrance characteristics the Indonesian oil is not the preference for perfumery. In India cutting of sandalwood trees is not allowed until they are 30 years old, although a black market has risen in trees being sold to distillers of the oil. — *Ginger Webb*

[Floreno, Anthony. Sandalwood Oil Faces Trouble as Crop is Destroyed by Fire. 1997. *Chemical Marketing Reporter*, March 31. p. 23.]

Market Report
by Peter Landes

Spices: Interesting doings in Spices for this issue's long-anticipated Market Report. Prices of both **Black & White Pepper** have continued their meteoric rises. In fact prices have risen so far and so fast that these esoteric commodities actually rated a mention, for the first time ever, on NPR's excellent "Marketplace" program! A couple of factors have contributed to this situation. First, as far as **Black Pepper** is concerned, is the establishment of an organized futures trading market in this commodity in Cochin, India. This mechanism allows traders to speculate in the future price of Black Pepper on margin. One need not put up hundreds of thousands of dollars (or millions of rupees) to control large quantities of Pepper—just a good-faith deposit of margin money, which is often no more than 3-8 percent of the value of the contract. This gives people the opportunity to speculate in quantities of Pepper that they could not possibly control without the mechanism of an exchange and the magic of margin. While creating liquidity for end users and producers, a futures market generally makes for much wider price swings than would normally occur.

Another, and probably more important, factor in the equation is the slow but general rise in the incomes and living standards of some third-world peoples—most particularly, in this case, in India. While nobody except a few purchasing agents at food companies and a few traders in the U.S. worries or even notices the price of Pepper (which is, after all, literally *free* on every restaurant table in America) it is considered a very desirable luxury item in many places in the third world, both for its unique flavoring as well as preservative properties. It is estimated that if every person in India uses only one *ounce* more Black Pepper *per year* there would be about 30,000 *more tons* consumed by the internal Indian market from a total crop of 50-70,000 tons, by far the world's largest crop of Black Pepper. This increased usage, if multiplied throughout Asia (and perhaps elsewhere) would make for genuine shortages of Pepper throughout the world for many years to come, a situation that hasn't

occurred since World War II when supply lines were cut. This shift in consumption may be the first really radical change in market dynamics in many years. Interesting.

The price of **White Pepper** has moved up sharply also, mainly in response to the price rise in **Black Pepper**. Here, the crop seems adequate, though barely, to meet world demand and even a de facto devaluation of the Indonesian rupiah and 40 percent interest rates there have not led to a price decline. *Theoretically,* the price should be about 60 cents/lb cheaper than it is, but most of the crop is held in very strong (i.e., rich) hands and they can afford to wait out the buyers, who will eventually need to have White Pepper and will have to pay up the actual nontheoretical price in actual non-theoretical U.S. dollars. These dollars will then, of course, be converted into even more rupiahs than before the de facto devaluation, so the rich will get even richer in Indonesia (not a bad job, by the way) and probably exercise even tighter control over next year's crop.

Other spices remain somewhat dull. This seems to be the year when the long-neglected tropical spices finally have their day. **Nutmeg** is up about 50 percent. Mace is expensive and *very* scarce at origin and here, **Ginger** is higher (especially Chinese) and even **Cloves**, after languishing for years on lack of Indonesian demands, are making a move upward. This is the year when most temperate-climate (i.e. non-tropical) herbs and spices may have finally bottomed out. In fact, **Basil** in Egypt, which usually has three cuttings a year, is being plowed under by farmers after the first cutting due to prices being *way too low to* bother with. This type of situation *usually* leads to fairly large price increases and shortages in the following year when nobody even bothers to plant **Basil**. Suppliers will supply if customers are willing to meet their prices but nobody works for nothing forever. **Cumin Seed**, which is, as noted last time, a thoroughly manipulated item, is very strong both in price and demand, a combination that almost always leads to spiraling price increases. **Cassia** (known generally in the U.S. as Cinnamon) is even weaker than at the time of our last Market Report with Indonesian exporters still carrying large stocks from last fall—sales were not as large as expected, so currently bargains abound. **Anise Seed** from Turkey is very expensive since the Turkish government monopoly has bought almost all of it at high prices to make the agricultural community happy enough to re-elect them in the upcoming national election. Strange, how many components influence markets, isn't it?

Botanicals: Very interesting markets as demand explodes in the U.S. for many items and suppliers struggle to keep up. Temperate-climate botanicals are just being harvested as we write this and smart manufacturers have already lined up purchases with reliable importers and growers to secure material which will probably be very scarce very soon. There are too many items to treat individually but certainly those that are currently "hot" bear the brunt of price rises and shortages, while those that are just "warm" get shunted aside in the pursuit of the "hot" and become scarce themselves through lack of attention. If, for instance, everyone is scrambling for **St. John's Wort,** who is paying attention to the gathering, cleaning, drying and shipping of say, Lungwort or Plantain? Who is paying particular attention to the quality of the St. John's Wort they're harvesting, when the market will absorb all they can cut and clamor for more?

This market is at an interesting juncture with many more consumers willing to at least give herbal products a try—it's up to suppliers and responsible manufacturers to keep them coming back by providing clean and effective safe products. The industry will certainly be subject to more and harsher scrutiny in the near future. Although it may not seem so to some, we've flown "beneath the radar" for so long that much carelessness, incompetence, and worse have long gone unnoticed. We are now presented, finally, with the opportunity of a lifetime—the opportunity to bring products into the mainstream that have had thousands of years of history of safe and efficacious usage. Every day brings new articles and more news features attesting to the effectiveness of botanical medicine—and more opportunity to build this market. With this opportunity comes the challenge of supply and the responsibility to the consumer in particular and the market in general, both of whom are hurt by specious, ineffective and/or unsafe herbal products.

Potpourri Ingredients: Too boring to actually discuss, although an interesting example of an overhyped market. Most items were supplied from India, because of the cheap labor available there as well as the almost infinite variety of flowers, pods, seeds, cones, barks and roots that grow in that varied subcontinent. The market expands exponentially—supply is difficult and quality is iffy. Just when exporters more-or-less have these items down pat and can supply cheap, reasonably clean, reasonably well-colored merchandise in good quantity, the market collapses, leaving these exporters with vast inventories of good, incredibly cheap ingredients desperately seeking a home. *But...*exporters will finally work off these inventories because the market, while no longer expanding as it did, is still there and will absorb the current excess. Exporters, though, once burned by irrational exuberance, will be much more cautious about taking positions they may not be able to profitably move and this will once again result in a seller's market and supply will once again, inevitably, be short. A good example of how markets are *always* cyclical—and always interesting and always, above all, *human.* ❐

Peter Landes is President of KHL Flavors in Maspeth, NY and Past-president of the American Herbal Products Association. When not writing for HerbalGram *he is usually busy trying to improve his golf game.*

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time to justify this policy.

DSHEA resulted from a public and legislative revolt against the agency's proposed restriction on the availability of herbs and other dietary products. The new legislation does not prevent the FDA from acting against unsafe products; it simply requires them to provide evidence of lack of safety before taking action. It also permits structure/function statements to be made on the label of herbal products, providing such information is followed by a disclaimer noting that the claim had not been approved by the FDA. Nevertheless, the desire of the agency to exert restrictive control over herbs continues. In 1997, they adopted a new approach.

Marketers making seemingly reasonable structure/function claims for their products began to receive letters from the FDA noting that these statements—permitted under DSHEA—were really drug (therapeutic) claims which are not allowed. That menopause is a natural process often accompanied by some unpleasant symptoms is a universal truth. Menstruation is also a well-recognized condition to which all healthy females of appropriate age are subject. Some degree of prostatic enlargement is experienced by almost all males over 40 years of age. Cholesterol is a normal component of all human blood. Claims to modify these conditions are obviously structure/function claims to everyone except FDA officials. They have apparently begun to consider as drug claims any recommendations for the alleviation of conditions that also may be treated by approved drugs.[8]

Most recent in the long series of inappropriate actions by the agency was the temporary import detention on June 11, 1997, of a 5,450 pound shipment of red yeast (*Monascus purpureus* Went) because it "appears to be an unapproved new drug."[9] This product serves as the basis of Cholestin™, a popular proprietary product that reduces serum cholesterol levels. Red yeast is a traditional Chinese health food, widely consumed in that country for more than 2,000 years. It has been used in the United States for at least 60 years. The detention order was subsequently withdrawn.

The safety and efficacy of red yeast have been repeatedly confirmed by numerous clinical trials. The nature of its active principles—mevinolin and several chemically related HMG-CoA reductase inhibitors—is well-known. It obviously qualifies as a legal dietary supplement, but because it has a cholesterol-reducing effect—a condition often treated by approved drugs—the FDA has seen fit to consider it a drug.

If this attitude were to prevail and if the agency wished to act in a consistent manner, the importation of garlic would also have to be prohibited. Garlic is another dietary supplement widely advertised and appropriately labeled for its cholesterol-reducing effects. Its mechanism of action is, at least in part, the same as red yeast's, namely inhibition of HMG-CoA reductase.[10] Fiber is another natural product, widely known for its ability to reduce cholesterol.[11] Although it probably acts by a different mechanism, the end result is similar, so logically and for the sake of consistency, an import ban should be placed by the FDA on all dietary fiber-containing products. And what about all those low-fat health foods widely recommended to reduce blood lipids? Will they, too, be banned in this country because they mimic, to some degree, the beneficial effects of synthetic drugs?

The illogical nature of the FDA's position in this entire field is evident. Those of us who work daily with herbal medicine tend to become cynical about the agency's actions. But how else can one interpret the activities of an organization that has found (by default) prune juice to be an unsafe and/or ineffective laxative and peppermint an unsafe and/or ineffective digestive aid?

I have personal knowledge of attorneys in Washington, D.C., many of whom have themselves worked at one time for the FDA, who openly characterize the agency's position on herbs as, "If it's green and comes from abroad, the FDA is against it." This is truly a sad commentary on an organization that should be trying to assist millions of Americans who now use herbs to obtain quality products together with sufficient information to use them safely and effectively.

This would not be difficult to accomplish. The FDA could initially adopt the German Commission E herbal findings and then subject them to review by a panel of American experts to determine any modifications that might be required for the U.S. market. Logical, inexpensive sensible regulations could thus be implemented in a very short period. What is needed is an agency and policy-making officials within the agency willing to listen and to learn about a field that is extremely important to the American public and that is expanding at a rapid rate. Also, and this may come as a shock to some persons there, it is a field in which the safety and efficacy of a substantial number of the products are supported by reasonable amounts of sound scientific and clinical research.

In Friedrich von Schiller's *William Tell*, the fisherman Ruodi comments on the sad state of affairs in Switzerland under the tyrant Gessler. He cries out, "Good heavens, when will there come a savior for this land?" Some of the arbitrary herbal actions of the United States Food and Drug Administration in recent years have been compared even by staid federal judges to a children's fantasy. These actions continue in the FDA's attempt to define obvious structure/function statements as drug claims. All of which causes those of us involved in the scientific aspects of herbal medicine to join Ruodi in his plaintive plea —"When will there come a savior...?" ❐

Varro E. Tyler is Dean and Distinguished Professor Emeritus at Purdue University. He serves as an independent consultant to a number of producers of herbal products, including those prepared from botanicals such as St. John's wort, stevia, ginseng, and red yeast mentioned in this article. Tyler holds no equity position in any of these organizations.

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that are used for purposes other than to supplement the diet." The study should include "the types of disclaimers that might apply and the appropriateness of such a system within the U.S. regulatory framework. Such a comprehensive study would go beyond the mandate of this Commission, which is limited to dietary supplement uses of these products." These are important words and can provide the basis for major progress for proper labeling of *therapeutic claims* for herbs. The Commission concluded that "a comprehensive evaluation of regulatory systems used in other countries for botanical remedies is needed."

RECOMMENDATIONS ON BOTANICALS

1. "The Commission recognizes that, under DSHEA, botanical products should continue to be marketed as dietary supplements when properly labeled."

2. "The Commission strongly recommends that FDA promptly establish an OTC botanical products panel to consider petitions from manufacturers for preventive and therapeutic uses of such products."

This should lay to rest the concerns of some who believed that the Commission was recommending a shift of herbs to the OTC drug category. The CDSL emphasized that herbs are dietary supplements and should remain as such, and pointed out what some supplement proponents may have forgotten: "Botanicals have always been included as potential candidates for OTC status. The Commission is not recommending a new category of OTC drugs, but believes that a dedicated OTC panel on botanicals would facilitate the review of OTC claims."

EXPERT EVALUATION OF SAFETY, LABEL STATEMENTS, AND CLAIMS

The Commission also suggested that the industry consider establishing an expert advisory committee on supplements "to provide scientific review of label statements and claims and to provide guidance to the industry regarding the safety, benefit, and appropriate labeling of specific products." This is an important step and echoes the proposal for a Botanical Ingredient Review expert panel initially proposed by the Herb Research Foundation and the American Herbal Products Association in 1991 in public comments on NLEA (AHPA, 1991). Unfortunately, at that time, FDA rejected the idea of an outside scientific panel to review the safety of herbs. This rejection and other related events are key issues that motivated the industry and consumer movement to support DSHEA. Now, the CDSL is suggesting a similar system, with the mission of advising industry on "safety benefits and appropriate labeling of specific products."

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COME TO THE SOURCE

IN MEMORIAM

Katherine Esau
1898 - 1997

Katherine Esau, international expert on plant structure and winner of the 1989 National Medal of Science, died June 4. "She absolutely dominated the field of plant anatomy and morphology for several decades," said Dr. Peter Raven, director of the Missouri Botanical Garden. "She set the stage for all kinds of modern advances in plant physiology and molecular biology. You have to understand the structure of plants first before you can unravel the questions of molecular biology."

Katherine Esau was born in Ukraine to a family of Mennonites of German descent. Her studies in agriculture were interrupted by the Bolshevik Revolution in 1917. She and her family fled, riding on a wagon for two weeks to reach Germany, where she worked on farms and continued her studies, graduating in 1922. With her parents she emigrated to the U.S. and settled in a Mennonite community near Fresno, California, where she joined the Spreckels Company near Salinas, to work on a sugar beet that would be resistant to the curly top virus. She was invited to the University of California at Davis in 1927, and arrived with a truckload of beets and beet seed. Esau achieved her doctorate in 1931 doing her research on the Davis campus where she joined the faculty. Her seminal book, *The Anatomy of Seed Plants*, was published in 1960 and updated in 1977. In 1963 Dr. Esau moved to the Santa Barbara campus, intending to retire in two years; however, her interest in electron microscopy led her to keep working and publishing. — *Barbara A. Johnston*

Lynn Lowery
1917 - 1997

Lynn Lowrey was a pioneer in the use of native and rare plants in the landscape. In his youth in Louisiana he and his mother ordered plants through catalogues and planted them around the house. Lowrey supplemented their planting adventures by ranging through the woods behind the house, selecting an appropriate candidate for transplanting and hauling it to the residence. He graduated with a degree in agriculture from Louisiana State University in 1940 and served four years in the U.S. Army during WWII. He started his own nursery in the late 1950s, stocking his inventory mainly with native species. His extensive travels throughout Texas, the southeastern U.S. and southern Mexico gave him a wealth of knowledge that he generously shared with many people as well as being a mentor to many gardeners, nurserymen, and landscape designers. Mike Anderson of Anderson Nursery and Lowrey's son-in-law said Lowrey gave him his start in the native plant business. "I wasn't interested in plants, particularly native plants," said Anderson, "I just wanted a job." (This was in 1978.) Typical of Lowrey's generosity, a pattern that was to repeat with others receiving work, Lowrey gave Anderson a job.

Anderson experienced first-hand Lowrey's deep conviction about native plants. His excitement was contagious—even infectious as Anderson described it. "He really got me interested. He was so consumed, so excited about it that he builds an interest that would be hard to find anywhere else."

He spent his lifetime collecting and propagating plants for numerous Texas nurseries, including over 600 *Camptotheca acuminata* trees for cancer research. In the 1960s native azaleas and maples were his priority; in the early 1970s he gathered Texas pistach trees from Pistach Canyon; and in the 1980s he led field trips into Mexico where myrosperma trees and various Mexican oaks were zealously checked for seed. According to a fellow botanist, "His field trips were not for the weak of heart!" He was nominated to receive an honorary life membership in the Native Plant Society of Texas. In recent years he became increasingly interested in medicinal plants and worked to help researchers investigating these plants. His associates remember him as "a gentleman on a plant crusade right up to the end, one whose consuming interest in plants never dimmed." — *Barbara A. Johnston*

Thalassa Cruso
1909 - 1997

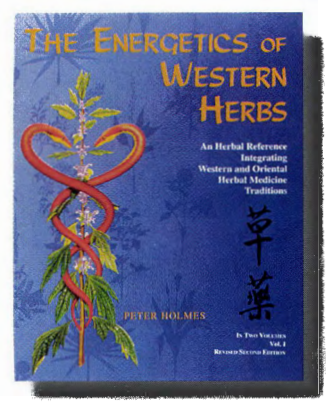
Thalassa Cruso, known as "the Julia Child of horticulture," died June 11. Hostess and star of the public television series *Making Things Grow,* the witty, acerbic Englishwoman indoctrinated viewers into the world of plants, insisting that "if a plant is unbelievably tatty, dispose of it without the least feeling of guilt." Ms. Cruso's programs and writings were aimed at the novice and their appeal lay in the fact that she was Everygardener who drew her advice from personal experience. "I have never studied it, and there is so much I don't know," she once said. In addition to her broadcasting career, she contributed a gardening column to *The Boston Globe* for 22 years and authored four books, *Making Things Work, Making Things Grow, Making Things Grow Outdoors,* and *To Everything There is a Season*. Her parents were passionate gardeners and, as a child, she did much of her homework in the greenhouse. She received her diploma in archeology from the London School of Economics in 1931, and served as assistant keeper of the costume collection at the London Museum. She later directed an excavation at an Iron Age fort in Worcestershire where she met American archeologist Hugh O'Neill Hencken. She returned with him to Boston after their marriage in 1935. Her frequent appearances with Johnny Carson on the *Tonight Show,* as well as her books, caused her to become an unofficial custodian of the public horticultural trust. — *Barbara A. Johnston*

Harold Epstein
1903 - 1997

"He was a remarkably gifted man who was a passionate horticulturist and global plant collector, who introduced many wonderful plants to American horticulture." — *Michael Balick, New York Botanical Garden.*

Harold Epstein, known by many as the elder statesman of the horticultural world, died in July. At the time of his death he was working on his long-term project, the classification of the genus *Epimedium*, a semi-evergreen ground cover. He was born in Manhattan and graduated from New York University. Few of his admirers realized that he was a totally self-taught horticulturist who had been a practicing certified public accountant until 1963 when, he said, a heart attack persuaded him to indulge two loves: travel and plants. "I've circled the globe four times, with 29 trips to Japan, my favorite destination," he said in a 1991 interview. His interest in gardening began in 1939 through the advice of experts from the New York Botanical Garden after he moved to Larchmont, New York. He soon became an active member of the American Rock Garden Society, inaugurated its quarterly bulletin, started a seed exchange and organized an annual symposium. He was the society's national president for 16 years.

He clearly thrived on finding, collecting, and introducing horticultural prizes not previously found in American gardens. His first such introduction was in 1949 when he returned with a Korean lilac, *Syringa meyeri* C.K. Schneid. in Sarga, Oleaceae. He was soon donating or swapping seeds, seedlings, or cuttings, of the unusual plants he had found throughout the country—rare cultivars of azaleas and rhododendrons, as well as the flowering vine *Schizophragma hydrangeoides* Siebold & Zucc., Hydrangeaceae, and the golden ornamental grass *Hakonechloa macra* (Munro) Honda, Poaceae. Among his favorite lecturing sites were the New York Botanical Garden, the Brooklyn Botanic Garden, the Alpine Garden Society of Great Britain, and the Japan Alpine Rock Garden Society. His writings appeared in several of the journals of the societies, and he received awards from many horticultural and garden societies. One of his biggest horticultural jewels, which he called, "the biggest thing I've done in this lifetime," was a dawn redwood, now some 150 feet high. This tree, which dates to the time of the dinosaurs, was believed extinct in 1948 when he was given one of the first seeds brought by botanists from China to Harvard's Arnold Arboretum. "Over the years he's shared with us many unusual plants, and these have become part of the garden," said Marco Polo Stufano, director of horticulture at the Wavehill Center for Environmental Studies in the Bronx. — *Barbara A. Johnston*



The Energetics of Western Herbs *Revised 2nd Edition by Peter Holmes. Boulder, CO. Snow Lotus Press. 1993. 419 pp. $39.95. ISBN #0-9623477-3-6.*

Traditional Chinese Medicine (TCM) is a very effective and widely practiced medical system. It has spread from its place of origin, China, to everyday usage throughout the U.S., Canada, Europe and Australia. Chinese medicine has been successful not only due to its low cost and empirical successes, but because it is a "system of medicine." A medical system is defined by clear, logical beliefs and practices that give the practitioner insights into the patient, his or her illness, and the materia medica needed to effect positive change. In highly developed practices such as TCM, differential diagnostics, a large and varied pharmacopoeia, and an understanding of energetics (human and therapeutic) are the tools which produce consistent success.

In comparison, Western herbal medicine has no clearly defined system at all. Lacking the aforementioned tools (differential diagnosis and energetics), Western herbal practice has largely been empirical, with the focus on treating the disease and not on the individual patient. This educated guesswork has its successes, but it is much more difficult to accurately understand the underlying disharmony and to devise a treatment protocol.

This inadequacy in Western herbal practice has been widely noted and various books have attempted to address this problem (e. g., Lad & Frawley, *The Yoga of Herbs*; Tierra, *Planetary Herbology;* Mills, *Out of the Earth*). By far the most extensive undertaking of this type is by Peter Holmes, *The Energetics of Western Herbs*. The author has attempted to create a synthesis of TCM, Greek medicine (the last Western medical system that utilized energetics), native American herbal traditions, and modern herbal knowledge.

Upon first glance throughout these attractively produced volumes, one comes away with a feeling of having found a valuable addition to the herbal library. Upon close inspection, however, a number of major problems become apparent that unfortunately lessen the usefulness and value of this book.

While similar on the surface, the energetic concepts the author attempts to meld together are actually quite different. Attempts to merge TCM and Ayurveda have failed precisely because the underlying paradigms and cultural belief systems are far more different than the veneer of similarity suggests.

The following paragraph illustrates this combination of divergent data, along with mistakes of therapeutics, biochemistry, and history:

"With its content of saponins, resins, and essential oil, Blue Cohosh Root has an additional, double-cutting detoxicant edge particularly suited to Blue and Grey-Green Iris Constitutions. Its diaphoretic action was important to Native Americans for the Sweat Lodge![1] The root's antidyscratic diuretic action balances fluids as a whole. Both acute and chronic conditions of wind/damp/cold obstruction with static or migratory pain are thereby relieved as no matter what their origin. Being estrogenic, Blue Cohosh will relieve joint pains due to a lack of this hormone, especially in the extremities."[2]

Errors previously mentioned by reviewers of the 1st edition also persist. Holmes' book is directed toward the acupuncture/TCM community who have little or no experience with Western herbs. With this in mind, correct dosages, especially of potentially toxic herbs, are essential. The recommended dosage of Mayapple rhizome (*Podophyllum peltatum* L., Berberidaceae) of 10-25 gtt. (drops) is dangerously high.[3] Arnica (*Arnica montana* L., Asteraceae), at 1-40 gtt., is problematic due to its highly variable, often idiosyncratic reactions from patient to patient.[4] Lily of the Valley (*Convallaria majus* L., Liliaceae) is usually prescribed at a dosage range of 5-20 gtt.[5] Holmes recommends 10-50 gtt. twice daily.

In addition to these potentially dangerous errors, the author also discusses analogues between Western and Chinese herbs. Theoretically, these comparisons may seem sound, but in practice they are not valid. Western asparagus (*Asparagus officinalis* L., Liliaceae) is not similar to Chinese asparagus (*A. cochinchinensis* (Lour.) Merr., Liliaceae) in its taste, energetics, or its medicinal activity. Potentially toxic squills (*Drimia maritima* (L.) Stearn, Liliaceae) have little in common to the soothing, yin, nourishing Mai Men Dong (*Ophiopogon japonicus* (L.f.) Ker Gawl., Liliaceae) or Lily Bulb (*Lilium brownii* F. R. Br. ex Miellez, Liliaceae). While squills contain moistening mucilage, it is considered to be an irritating expectorant and can cause inflammation of the bronchial and gastric mucosa.

Other problems, such as disagreements as to the energetic classification of Western herbs, are more in the nature of a scholarly dispute. It has taken the Chinese thousands of years to fully classify their materia medica and occasional arguments as to energetics of certain herbs still arise. I believe this to be the crux of the problem with this book; the creation of such a hybrid system of Herbal Medicine and the energetic classification of the Western materia medica are massive projects and are projects better suited to dozens, if not hundreds, of practitioners and researchers coordinating their efforts.

Holmes deserves credit for his attempt. A great deal of time, effort, and research have gone into these volumes. Perhaps the 3rd edition will include the missing piece: i.e., a

collaborative effort bringing together the necessary experience, research, and knowledge to truly create a Western Energetic System of Herbal Medicine. — *David Winston*

1. Blue Cohosh (*Caulophyllum thalictroides* (L.) Michx., Berberidaceae) was not used in "sweat lodge" ceremonies.
2. Blue Cohosh is not estrogenic, nor does it relieve pain due to a "lack of this hormone."
3. The usual dosage for Mayapple is 1/10 - 10gtt.
4. The usual dosage for Arnica is 1 - 10 gtt.
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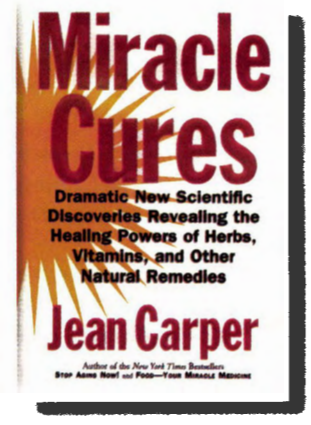
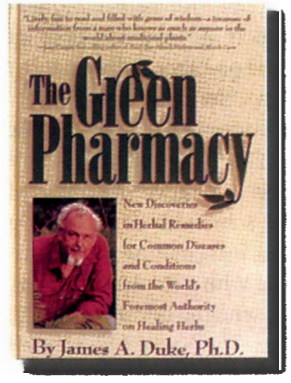


Miracle Cures, *Jean Carper. HarperCollins Publishers. 1997. 308 pp. Hardcover, $25.00 ISBN 0-06-018372-1. ABC Bookstore #B280.*

Take a title like "Miracle Cures" and a subtitle such as "Dramatic New Scientific Discoveries Revealing the Healing Powers of Herbs, Vitamins, and Other Natural Remedies," and the first word that comes to mind is hyperbole. At the International Pharmacy Federation 58th International Symposium held in Vancouver in early September, one speaker in the medicinal and aromatic plant section, pharmacy education seminar, flashed a slide of this book's cover across the screen as an example of what Dr. Varro Tyler calls advocacy literature. Beauty may be skin deep, but the "skin" of this book — the title and subtitle — mask the depth of information held between the covers. Jean Carper, one of the most reliable interpreters of the scientific literature on health topics for popular consumption, has produced a gem. Millions of Americans are turning to herbs and other dietary supplements for the first time, many with little more information than that provided by television sound bites. They are hungry for reliable information in a marketplace that's so confusing that few know where to turn. Carper's *Miracle Cures* is a good place for consumers to go for reliable facts. In addition to the best-known herbs, including St. John's wort, feverfew, echinacea, valerian, milk thistle, ginger, ginkgo, kava, kudzu, saw palmetto, licorice, and peppermint oil, Carper also covers other dietary supplements, such as vitamins C and E, OPCs, bee pollen, coenzyme Q-10 and glucosamine.

In twenty-one chapters, Jean Carper separates the mystery from the "miracle." In simple, easily understood language, Carper brings the subject matter into a comfort zone, giving consumers the confidence to make choices on using herb products. The chapter on Echinacea explains that it is not an antibiotic, but rather a substance that helps support the body's own immune defense mechanisms. Several "case studies," interviews with consumers who have had successful experience with an herb or dietary supplement, followed by interviews with experts in the field, put the information in a real-life context. She then explains exactly what the herb is, reviews the current scientific literature, not only from her interpretive perspective, but also through interviews with the scientists who conducted the research. No matter what the published results may be in a scientific study, it is always revealing to learn what the researchers really think about those reports. This element of the book helps to put what could otherwise be hyperbole into its proper context. Dosage information and safety data is often based on the Commission E monograph English translations, soon available from the American Botanical Council. To the benefit of consumers, Jean Carper goes one step further when she gives an ingredient a thumbs up. Instead of telling consumers to simply seek out the herb, she provides a section called "consumer concerns" which points the reader to a specific product or group of products. Carper's book is friendly, accurate, reliable and on the leading edge of what consumers need to know about herb products. Besides the title, the only drawback to this book is the rather brief bibliography. Jean, we know that your files are deeper. Whether you are a professional or lay person in the herb field, this is a book that everyone will want to have. It comes at the right time for the consumer seeking new, dependable information.—*Steven Foster*



The Green Pharmacy, *Dr. James A. Duke. HarperCollins Publishers. 1997. 308 pp. Hardcover, $29.95. ISBN 0-06-018372-1. ABC Bookstore #B281.*

When I first met Jim Duke sometime in the 70s, he was talking about retiring. Whenever I saw him in the 1980s or the 1990s, Jim Duke talked about retiring from his USDA career, in part so he could do, and more importantly, write and say, what he wanted to without the eye of a monolithic government bureaucracy staring over his shoulder, and slapping his wrist when he got out of line. Duke got his wrist slapped from time to time, not only because he knows too much about the subject of medicinal plants to keep quiet, but also because of an endless

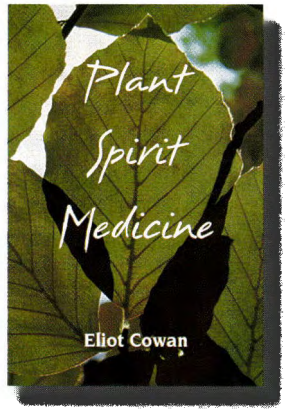
passion for the subject matter. He was the government's spokesperson on plant medicines when plant medicines were a subject the government did not wish to talk about. As of September 1995, Jim Duke is indeed "retired" and *The Green Pharmacy* is the first fruit of his post-USDA career. If his *CRC Handbook of Medicinal Herbs* (1986) is his magnum opus, then *The Green Pharmacy* is his romance novel, endowed with Duke's "lifetime of loving plants."

The extremely frenetic and sensational direct mail pieces of the publisher, along with the book's cover, tout Duke as the "world's foremost authority on healing herbs." I feel that I have come to know most of the experts in the herb field and have a sense of their breadth of knowledge. Pound-for-pound, herb-for-herb, continent-for-continent, added all together, it is indeed true that there is no other individual in the world who knows the uses of more plants from more traditions than James A. Duke.

That type of acclaim can lead some individuals to believe that they know it all. Jim Duke's breadth of knowledge carries more than information, it is imbued with experience with a flock of wisdom. Duke is as sure of what he doesn't know as what he does know. *The Green Pharmacy* is as much about opinion as it is about facts. That opinion is invaluable in our contemporary sea of herb information babble.

The book is arranged alphabetically by condition, covering over 120 afflictions from aging to yeast infections. Since the cold and flu season is on, I turned to that section. As with all chapters in the book, the cold and flu chapter begins with personal recollections or quotes from colleagues. Here, Duke has an opportunity to tell a lifetime of stories or anecdotes. The reader immediately becomes comfortable and engaged. A simple medical explanation of the condition follows, enumerating the symptoms, how it develops and strategies for prevention and treatment. Duke's "Green Pharmacy" entries are next. For colds and flu he covers nineteen herbs, with a few milligrams of vitamin C and a bowl of chicken soup mixed in for good measure. In "choosing the herbs that heal" Duke has used a three leaf rating system. Those herbs achieving his highest score get three leaves.

If you are looking for a reference book to find information on individual herbs, this is not that book. Echinacea, for example, is treated under two dozen different conditions, on 30 pages throughout the text. If you want a book that cautiously recommends herbs that are useful for common ailments, with Duke's own honest assessment of their safety and effectiveness, this book is for you. *The Green Pharmacy* is a book that is friendly, accessible, easy to read, authoritative, and engaging. It serves both as pleasure reading and a wealth of information. If you ever wanted to sit down with Jim Duke and pick his brain, you don't have to look any further than the pages of *The Green Pharmacy*. You will come away enriched.—*Steven Foster*



Plant Spirit Medicine. *Eliot Cowan. Swan Raven and Company, Newberg, OR. 1995. 187 pages. ISBN #0-926524-09-7. $13.95.*

". . . how did the first ancient healers learn of the medicinal benefits of foxglove ... ? Unlikely that it was discovered randomly, through accident or trial and error. It seems reasonable to assume that ancient medicine men or women were somehow able to communicate with the plants or in some other intuitive way read what they might offer us humans."

This brief quote, from Hal Zina Bennett's foreword to *Plant Spirit Medicine,* raises a question often ignored by ethnobotanists. How did humans discover the healing power of plants? The doctrine of signatures is one explanation; a plant's form or other physical attribute suggests its use. Galactagogues (agents which increase milk production), for example, often come from latexbearing plants, blood remedies from red-colored ones. Liver- or heart-shaped leaves are employed to treat ailments of the respective organs. But other proximal and ultimate reasons also account for a species' use, including its taxonomic relationships, habitat, commonness, and faunal interactions. Cultural traditions also are important.

Eliot Cowan offers another possibility—the plants themselves are the teachers. For Cowan, plants are more than cellulose phytochemical factories. He writes, "To think that plants are mere dumb creatures that do not know ecstasy is ignorance or tragic arrogant folly." In what could be called the Zen of drug plant discovery, Cowan describes the process of learning plant spirit medicine. "Go for a walk outdoors at a time and place where there are many different kinds of wild plants growing. Wander with no destination in mind. When you come across a stand of plants that are especially attractive to you, approach them. Speaking aloud, introduce yourself by name, and explain that you have come to learn from the spirit of this species." One page later he summarizes the process, "Become the plant."

Cowan asserts that science and traditional wisdom agree in describing the world as a dream, "...a tissue of appearances made of energy and consciousness." While he may be an accurate spokesperson for metaphysical herbal healing, one should take his assessment of conventional knowledge carefully. I know of few scientists who would describe the world around them as a dream.

Here Cowan reveals the influence of the anthropologist Michael Harner, who authored the widely read book, *Jivaro: People of the Sacred Waterfalls.* Harner later embarked on a career as a spiritual guru. For traditional Jivaro, more properly called the Shuar, the physical world around them is indeed artificial. They discover the "real world" through the use of psychoactive substances such as *natem* (*Banisteriopsis caapi* (Spruce ex Griseb.) Morton, Malpighiaceae) and *maikua* (*Brugmansia sauveolens* (Humbl. & Bonpl.) ex Willd. Berchtold & Presl, Solanaceae) (Bennett 1992 and in press). If some scientists have attempted to make discoveries through similar processes, they have failed to mention this in their Materials and Methods.

According to *Plant Spirit Medicine,* it is not the plants that heal but rather the spirit of the plants. Cowan claims that there are no specific herbs for specific illnesses. Many traditional people recognize this, in part, believing the herbal remedies have little power until a shaman releases it. An objective assessment makes this argument less tenable, particularly considering the historical and geographical continuity of plant use. For example, leaves of guava (*Psidium guajava* L., Myrtaceae) are used throughout the plant's range to treat diarrhea. The leaves are employed in traditional societies, who may acknowledge the existence of plant spirits, as well as acculturated societies, who do not. This pattern suggests a physical component rather than a purely spiritual element to healing.

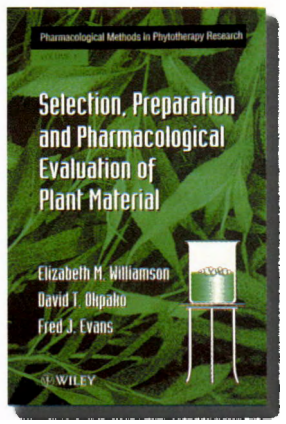
Plant Spirit Medicine provides little information on the medicinal uses of specific plants. It also is inconsistent in treating binomials. Generic names sometimes are italicized, sometimes are capitalized and occasionally are printed properly. Readers will likely fall into one of two camps. Some will consider the author's position to be untestable balderdash. Those of the New Age bent will applaud his work. Is there middle ground? Perhaps. Cowan has touched upon an important missing element in modern medicine—the spiritual component. In a poignant description, he notes that Don Guadeloupe, a healer-teacher, was as shocked by the spiritual poverty of the developed world as much as the developed world was shocked by his physical poverty. All but the most hardened cynics would fail to find truth in that assessment. It is easy to dismiss *Plant Spirit Medicine* as 1990s gobbledygook but there are truths to be found within.

One of my graduate students, Christiane Ehringhaus, just completed her thesis among the Kaxinawá people of Acre, Brazil. Imidio Vieira, a 65-year-old healer, described the following method of plant healing: "When you use an enchanted leaf, you do not have to pray because the plant cures by itself.... While picking the leaves, you explain to the *iuxin* (plant spirit) why you picked them and why you need their help and explain the disease of this patient to them.... You bring the leaves, you do not do anything with them until they start talking. Wait until they ask, 'What do you want these leaves for?'" After responding that she had never heard a plant talk, Imidio replied, "Oh Christiane, if you stayed here longer with me you would hear." Eliot Cowan would agree. — *Bradley C. Bennett, Ph.D.*

[Bennett, B. C. 1992. Hallucinogenic plants of the Shuar and related indigenous groups in Amazonian Ecuador and Peru. *Brittonia*, 44:483-493.

Bennett, B. C., M. A. Baker, and P. Gomez. Ethnobotany of the Shuar of Amazonian Ecuador. *Advances in Econ. Bot.* (in press).

Ehringhaus, C. 1997. Medicinal uses of *Piper* spp. (Piperaceae) by an indigenous Kaxinawá Community in Acre, Brazil. M.S. Thesis, Department of Biological Sciences, Florida International University, Miami, Florida.]



Selection, Preparations and Pharmacological Evaluation of Plant Material. *Elizabeth M. Williamson, David T. Okpako, and Fred J. Evans. John Wiley & Sons. 1996. 228 pp. Softcover, $39.95. ISBN 0-471-94217-0. ABC Bookstore #B227.*

This is the first volume in a new series, "Pharmacological Methods in Phytotherapy Research." This brief handbook will be an extremely useful research tool for anyone interested in performing or understanding the principles and procedures used for selecting materials for testing, their preparation, and pharmacological studies of plant extracts. Chapter One, "The Use of Plant Remedies in Indigenous Medical Systems," presents an overview of conventional drugs discovered after observations of traditional use in indigenous cultures. The authors provide caveats for understanding the cultural and social contexts in which promising research leads are utilized, offering indigenous African medicine systems as a model to understand target concepts for research. Five points for selection criteria are emphasized, including selection based on traditional usage, poisonous plants, selections based on chemical composition, screening for biological activity (including going beyond the obvious), and combinations of criteria.

Chapter Two gives details on "presentation of results," describing for the researcher the significance of the

dose-response curve and how to interpret it in determining relative potencies, drug interaction or potentiation, and competitive antagonist and receptor classifications. The remainder of the book is devoted to pharmacological procedures and screening methods for major body systems or activity such as anti-inflammatory and analgesic activity. A list of standard textbooks is provided as Appendix I. Appendix II describes saline solutions used for bathing isolated tissues.

The information in this useful handbook is succinct and well presented. Full citations to seminal methods and review papers are included. This is an extremely useful volume for the student, researcher, or individual interested in understanding pharmacological testing methods and principles as they relate to medicinal plant extracts. — *Steven Foster*

Top 10 Sellers of ABC BookStore

May through August 1997
Previous standing shown in ( )

1. *German Commission E Monographs:* Blumenthal, Goldberg, Gruenwald, Hall, Riggins, and Rister eds., Klein & Rister, trans. (1) (in press)
2. *Encyclopedia of Herbs and Their Uses:* Bown (8)
3. *Herbs of Choice:* Tyler (3)
4. *Herbal Medicines: A Guide for Health-Care Professionals:* Newall, Anderson, and Phillipson (7)
5. *Herbal Prescriptions for Better Health*: Brown (2)
6. *Encyclopedia of Herbal Medicine*: Bertram (9)
7. *Healing Power of Herbs*: Murray (back after a short absence)
8. *Herbal Medicine:* Weiss (6) tied with
8. *British Herbal Pharmacopoeia*: British Herbal Medicine Association (1996 edition; back after a short absence)
9. *Kava: The Pacific Elixir*: Lebot, Merlin, and Lindstrom (new listing)
10. *The Honest Herbal:* Tyler (back after a short absence)

See the Herbal Education Catalog in the center of this issue for these and over 300 other titles!

DIETARY SUPPLEMENTS
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RESEARCH ISSUES

The report concludes that it is in the public's interest that more research be conducted that "documents the relationships between dietary supplements and maintenance of health and/or avoidance of disease." It would like to see "incentive mechanisms" developed to encourage industry to research products. The Commission strongly supports continued research by federal agencies on the benefits of dietary supplements. In addition, the Commission made this recommendation (not just a suggestion) to the Office of Dietary Supplements (ODS): "ODS should place greater emphasis on its assigned role of advising other government agencies on a broad range of issues relating to dietary supplements."

And in a recommendation to Congress: "ODS should be funded at the level authorized by DSHEA."

CONCLUSION

The Commission finished its work making very few of the kind of "recommendations" that would be published as proposed rules. Instead, it provided background, analysis, and differing viewpoints on specific issues in the complex area of supplement regulation. It made many suggestions (called "policy guidance") which should serve as recommended, but voluntary, directions for consideration by industry, Congress and government agencies.

In summary, the report:

1. underscores the safety of supplements;

2. endorses the industry's expert panel recommendation (the Botanical Ingredient Review or BIR);

3. urges both industry and the FDA to seek expertise outside their ranks;

4. recommends further research (and research funding) as well as consideration of other regulatory options, including OTC drug approval (when appropriate and requested by industry); and

5. suggests consideration of a mechanism for approval of further therapeutic claims for products which may not meet the scientific standards required for OTC approval, such as the traditional use claims currently allowed abroad. ❐

SOURCE:

Commission on Dietary Supplement Labels. Report to the President, the Congress, and the Secretary of Health and Human Services. November, 1997. Available on DHHS homepage heep://web.health.gov/dietsupp

REFERENCE

American Herbal Products Association. 1991. Botanical Ingredient Review Proposal to the Food and Drug Administration. May 8. In *HerbalGram* 25:32-37.

COMFREY KUDO

This concerns comfrey (*Symphytum officinale* L., Boraginaceae) which has been used as a healing herb for centuries. I discovered when the plant goes to stalk, which is around June or July the stalk has a small core that will produce a very good liquid for applying to cuts, burns, etc.

My first experience was while mowing my yard on my riding mower I went under a mesquite tree; one of the thorns cut a very large gash just above my eye. Shortly before that, I had extracted some of the comfrey liquid, and I put some on the cut. It stopped bleeding, and healed in three or four days leaving no scar. I had a skin cancer cut from my forehead; the doctor said it would leave a scar. After I treated it with the comfrey liquid, there was no scar. I recently had "parathyroid" surgery and used the comfrey liquid; after 6 months, there is no visible scar on my neck. I have had several other experiences, including minor burns, where they had healed in three or four days, leaving no scar.

I heard on TV recently, there was a new break-through for burn treatment. It is an artificial skin, at a cost of $1,000.00 for a 4 X 4 inch square. From what I have seen, the way comfrey liquid repairs, and replaces the skin tissue, I believe it would be very good for treating burns, and it could be a lot less costly. It only takes a very small amount to cover an area. One ounce will go a long way. I have some of the liquid that I could share with you, if you would like to do some research with it.

Bill Kelley
Granbury, Texas

Pomegranate, *Punica granatum.*

JULIA MORTON REMEMBERED

I was saddened to see the announcement in *HerbalGram* #38 of the untimely death of the ageless Julia Morton. I have heard her presentations at scientific meetings on more than one occasion and have her set of toxic plant posters hanging outside my office for the enlightenment of passing students. She will be missed! But is that really she in the accompanying photograph? Maybe it's the angle of the shot and the fact that she's wearing a hat instead of a turban. Julia Morton was the original tiny person, not the giant she appears to be in the picture!

Connie Nozzolillo, Ph.D.
Professor, University of Ottawa, retired

ST. JOHN'S WORT INFO TIMELY

I have recently read through *HerbalGram* No. 40 and want to write and congratulate you on such as excellent issue. There was plenty of valuable information and the monograph on St. John's wort is particularly useful and timely.

Emeritus Professor J. D. Phillipson
Centre for Pharmacognosy, University of London
London, England

"ADVERTISING" ST. JOHN'S WORT

Why are you advertising St. John's Wort as the "depression" herb? This herb will cause liver toxicity in long-term use and is only meant for intermittent short-term use by any patient with depression, along with dietary and specific detoxification protocols. I think you are paving the way toward the AMA and drug company control of medical herbalism by advertising herb usage this way...is that what you want? Please be more responsible with your editorials, or tell the truth about your intentions for the future of medical herbalism!

Craig M. Jones, D. C.
(location not listed in original letter)

(Thank you for your letter. We are not "advertising" St. John's Wort; we are educating the public about its well documented benefits for treating mild to moderate depression. As far as we are concerned, the more M.D.s who begin to consider the appropriate use of well researched herbs the better—better for the health of their patients and for the general public. We believe that herbs should be used responsibly by all members of society, including health professionals from the conventional model. We believe that we are doing herbalism a great service by providing accurate, responsible, scientific information for the benefit of the general public. Sorry if you do not agree. Do you have research data that supports your claim that SJW is hepatotoxic? We know of no such data.)

MOVING?

Our mail permit does not allow us to forward *HerbalGram*. If you move or change your mailing address, please notify us immediately so you will not miss any copies. Send your change of address notice to Margaret Wright, Circulation Manager, American Botanical Council, P.O. Box 201660, Austin, TX 78720-1660. 512/331-8868, Fax: 512/331-1924.

LETTERS

HERBS FOR DIABETES

In reference to your piece on herbs to treat diabetes (*HerbalGram* #40, pp. 20, 23) there were a couple of points I would like to share. First, in the discussion of Ho Shou Wu, the author asserts that it is an herb traditionally used for sleep disorders. This is true of the plant's stem known as Ye Jiao Teng, however, true *Ho Shou Wu* (*Polygonum multiflorum* Thunb., Polygonaceae) is the root of the plant and is classically considered to be a herb to nourish blood and yin and is most famous as an herb for the hair and tonification of sexual function. Clinical studies have shown an ability to lower plasma cholesterol levels, a cardiotonic effect as well as the mentioned antidiabetic effect.

Secondly, there was no mention of *Gymnema sylvestre* (Retz.) R. Br., ex Schultes, Asclepiadaceae. This Ayurvedic herb, also known as gurmar (Sugar Destroyer), has been used in India for the treatment of non-insulin dependent diabetes and has shown a profound blood glucose balancing effect. As an herbalist I look forward to each issue of *HerbalGram* as a journal that serves an ongoing need for more research into effects of herbs on a scientific level. But, especially with herbs from rich traditions of empirical use such as TCM and Ayurveda, we should never discount the importance of traditional use.

John Armstrong
Los Angeles, California

REGARDING CRANBERRY

Dr. Arthur Siciliano's article on cranberries in *HerbalGram* No. 38 is very interesting but contains some errors in the chemistry/nutrition section that should be corrected.

The section begins with the statement that the cranberry is 88 percent water, then goes on to say: "Among the other organic constituents...." Since when has water been considered as "organic constituent"? Then flavonoids are named as constituents quite correctly, but the anthocyanins (not anthrocyanins as printed in the article) and catechin which follow in the listing are both flavonoids! If they are to be named separately, it should be as important examples of this class of constituent. Similarly, wouldn't it be useful to name one or two of the triterpenoids (not triterpinoids as printed) especially since eight organic acids are named without being assigned to any class at all?

The reason I am so "picky" about the above points is that Canada's self-styled national newspaper, *The Globe and Mail*, recently published an article on the importance of "anthrocyanins" [sic] in blueberries as medicinal compounds. Presumably the author got this term from a technical article. If the experts in the field can't get the spelling right, how can we expect the journalist to get it right?

Connie Nozzolillo, Ph.D.
Professor, University of Ottawa, retired

CALANOLIDE

continued from page 13

patented a process for synthesizing Calanolide A. In 1995, MediChem was granted a worldwide exclusive license to the NCI patent and to the rights held by the government of Sarawak.

Laboratory tests of Calanolide A conducted by MediChem Research have shown the compound to completely inhibit replication of the AIDS virus. It is active against strains and mutations of the virus that are resistant to AZT and other drugs, and has unique properties that make it more effective in combination with AZT or other anti-HIV agents.

Calanolide A works against the virus differently than most anti-HIV compounds now available. It is a non-nucleoside HIV-1 reverse transcriptase inhibitor (NNRTI), whereas most anti-HIV compounds on the market are protease or nucleoside reverse transcriptase inhibitors. Because it attacks the virus differently than protease and nucleoside reverse transcriptase inhibitors, Calanolide A could prove to be particularly important in the war on AIDS as part of the emerging drug "cocktails" approach.

[Compiled by Barbara A. Johnston from MediChem Research, Inc., press release. April 25, 1997.

Arnold Arboretum Director's Report 1994-1996. 1997.]

In this department of *HerbalGram*, we list resources such as publications, organizations, seminars, and networking for our readers. A listing in this section does not constitute any endorsement or approval by *HerbalGram*, ABC, HRF, or the HRF Professional Advisory Board.

Anne S. Chatham Fellowship in Medicinal Botany, a new grant open to Ph.D. candidates and Ph.D.s to enable study in medicinal botany, from the Garden Club of America. One $4,000 grant awarded annually. Application due Jan. 15, 1998. Eligible applicants send a brief application letter, 1-2 page description of the proposed research, and current curriculum vitae to Dr. James S. Miller, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166-0299. Ph: 314/577-9503. Email <miller@mobot.org>. Web site <http://www.mobot.org/mobot/research/applied_research/chatham.html>.

Conservation and Development of Nontimber Forest Products in the Pacific Northwest: An Annotated Bibliography. Brief summaries of much of the emerging literature related to the management and marketing of non-timber, or special forest products. For individuals and organizations interested in the scientific and rural development aspects of special forest products. Available in its entirety on the Internet from the Forest Service Home Page: <http://www.fs.fed.us/pnw>. Click on "Publications" to access.

Directory of Databases for Research into Alternative and Complementary Medicine, including 56 databases, with 35 available online over the Internet, compiled by Jackie Wootton. The directory is available online at the Rosenthal Center for Complementary and Alternative Medicine at Columbia University's web site (http://cpmcnet.columbia.edu/dept/rosenthal/databases/AM_databases.html).

Friends of the Trees Society, aiding people around the world to plant trees and heal the planet since 1978. Offering workshops, seminars, newsletter. Publications include *Kiwifruit Enthusiasts Journal,* 196 pages of information on kiwifruit, and *Third World Resource Guide,* with 425 organizations working in forestry, sustainable agriculture, and conservation listed with brief descriptions (Latin America, Africa, Asia, and the Pacific). Contact Friends of the Trees, P.O. Box 4469, Bellingham, WA 98227. Ph: 360/738-4972. Fax: 360/671-9668. Web site <http://www.geocities.com/rainforest/4663>.

Herbal Green Pages, 1997-1998 edition. Contains over 6,000 herb-related businesses, both retail and wholesale. Sections on herb publications, associations, educational programs, and suppliers of products of interest to herb businesses. More than 350 pages in an easy-to-use spiral binding. This annual directory includes companies in the U.S., Canada, and several foreign countries. From the Herb Growing and Marketing Network, P.O. Box 245, Silver Spring, PA 17575-0245. Ph: 717/393-3295. Fax: 717/393-9261. Email <HERBWORLD@aol.com>. Web site <http://www.herbnet.com/>.

Herbs Northwest Business Directory, an herbal networking reference for Alaska, British Columbia, Washington, Oregon, Idaho, and Western Montana. A publication of Herbs NW, this directory brings together over 200 medicinal plant-related businesses. Indexed by state, province, town, and by category of each enterprise. Published by Longevity Herb Press, 1549 West Jewett Blvd., White Salmon, WA 98672-8929. Ph: 509/493-2626.

Journal of Alternative and Complementary Medicine, Research on Paradigm, Practice, and Policy. This peer-reviewed publication includes observational, analytical and scientific reports on topics of interest to medical researchers, scientists, anthropologists, sociologists, medical historians, and practitioners in all fields of medicine and healing. Published by Mary Ann Liebert, Inc., 2 Madison Ave., Larchmont, NY 10538. Ph: 914/834-311 or 800/M-LIEBERT. Fax: 914/834-3688. Email <liebert@pipeline.com>.

Manual for Northern Herb Growers. Essential information for growing and managing herbs in northern locations. Production, management, horticultural guidance, seeding suggestions, potential problems, hints for better crops, propagating, pest control, harvesting, and more. Detailed information on 33 plants. The Herb, Spice, and Medicinal Plant Press. Department of Plant and Soil Sciences, Stockbridge Hall, Univ. of Mass., Amherst, MA 01003.

Office of Alternative Medicine, new Website for up-to-date information on the OAM's programs and activities. The National Institutes of Health (NIH), Office of Alternative Medicine identifies and evaluates unconventional health care practices. The OAM supports and conducts research training on these practices and disseminates information. Visit the site at <http://altmed.od.nih.gov>.

People and Plants Handbook, Sources for Applying Ethnobotany to Conservation and Community Development. A publication of the WWF-UNESCO-Kew People and Plants Initiative. Includes information on international and national programs, networks, NGO's, resource centers, botanical gardens, and interviews, advice from the field, ethnobotanical portraits, and more. Gary J. Martin, General Editor. B.P. 262, 40008 Marrakesh-Medina, Morocco. Fax: 212 4 301511. <email: 100427.1260@compuserve.com>. Alison L. Hoare, Associate Editor. Centre for Economic Botany, Royal Botanic Gardens, Kew. Richmond, Surrey TW9 3AE, U.K. Fax: 44 181 3325768. <email: a.hoare.@rbgkew.org.uk>.

The Plant Detective, a five-minute informational radio program aired on the University of Montana radio station every Saturday at 7 p.m. after National Public Radio's "All Things Considered." Hear about the history of plants and herbs, their use and abuse, natural healing, plants as foods, flavors, and medicine, and cultural and worldly insights. Journey into conservation, ecology, and things natural every Saturday from 7-7:05 p.m. on public radio with the Plant Detective.

1997 Southwest Conference on Botanical Medicine, and Medicines from the Earth 1997, audio cassettes and proceedings books. Available from Herbal Education Services, P.O. Box 57, Swans Island, Maine 04685. Ph: 800/252-0688 or 207/526-4479.

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CALENDAR

November 14-December 29: Travels to China, Chengdu University of Traditional Chinese Medicine, the most traditional Oriental Medical school in China. Training for the practitioner or advanced student in Oriental Medicine, with courses oriented in clinical practice and herbal training. Contact Academy of Oriental Medicine, P.O. Box 9446, Austin, TX 78766. Ph: 512/454-1188.

November 19-20: Botanicals and the Regulatory Process: Developing Scientific and Clinical Evidence of Safety to Support the Regulatory Process for Heterogeneous Botanical Products, Washington, D.C. A must for those who are researching, developing or selling heterogeneous botanicals in the U.S. Speakers include Floyd Leaders, Freddie Ann Hoffman, John Riddle, Mark Blumenthal, Edward Croom, and Jerry Cott. Contact Drug Information Association, Ph: 215/628-2288, Fax: 215/641-1229, Email <dia@diahome.org>, Website <http://www.diahome.org>.

November 21-23: Applied Ayurvedic Medicine, a practical course for licensed professionals, Calistoga, CA. Final session for a total of 54 hours. Instructor, Dr. Vivek Shanbhag, N.D., M.D. (Ayurved). Institute of Medical Herbalism. Ph: 707/942-1250.

November 29-December 12: Permaculture Design Course, Molokai, Hawaii. A two-week intensive in sustainable design systems, to impart permaculture principles and methodologies which can be applied anywhere in the world with a particular emphasis on permaculture and agroforestry in the subtropics and tropics. Sponsored by Hui Ho'olana, a 77-acre retreat center on Molokai. Contact Friends of the Trees Society, Ph: 360/738-4972, Fax: 360/671-9668. Or contact Hui Ho'olana, Ph: 808/567-6430.

December 11-12: 4th Annual Symposium on Complementary Health Care, University of Exeter. A forum for researchers in all areas of Complementary Medicine to present new data. Contact Mrs. E. Stewart, Symposium Secretary, Dept. of Complementary Medicine, Postgraduate Medical School, University of Exeter, 25 Victoria Park Road, Exeter, Devon EX2 4NT, UK. Email <E.Ernst@ex.ac.uk>.

December 13-15: Fifth International Conference on Anti-Aging Medicine & BioMedical Technology, Las Vegas, Nevada, presented by the American Academy of Anti-Aging Medicine. Over 100 presenters, with topics including brain aging and repair, Alzheimer's detection and prevention, hormone replacement therapy, establishing an anti-aging medical center, brain transplant technologies, and more. Contact USA HOSTS, Ph: 800/634-6133, Fax: 702/597-0264. Or contact American Academy of Anti-Aging Medicine, 1341 W. Fullerton, Suite 111, Chicago, IL 60614. Ph: 773/528-4333. Fax: 773/528-5390. Website <http://www.worldhealth.net>.

1998

January 5-9: Evaluation of Medicinal Plants, presented by Pharmacognosy Laboratories, Department of Pharmacy, King's College London. Formal lectures, tutorials, laboratory classes, and group discussions. Contact Dr. P.J. Houghton, Dept. of Pharmacy, King's College London, Manresa Road, London SW3 6LX.

January 8-10: Antitumor Products from Higher Plants, Paris, France. Biosynthesis and activity of anticancer compounds extracted from higher plants. Phytochemical Society of Europe. Contact Professor F. Tillequin, CNRS URA 1310, Faculté de Pharmacie, Université René Descartes-Paris V, 4, rue de l'Observatoire, 75270 Paris cédex 06, France. Ph: 33 1 43 29 12 08. Fax: 33 1 40 46 96 58.

January 24-30: Psychotropic Ethnobotany, Shamanic Plant Seminar, Yucatán Peninsula, Mexico. Seven-day, intensive seminar at the archaic Mayan ceremonial center of Uxmál, to study psychoactive plants and mushrooms with leading experts. Practical workshops, demonstrations, and instructive lectures. Contact Ken Symington, Ethnobotany Seminars, P.O. Box 4, Sierra Madre, CA 91025. Ph: 626/355-9585.

January 28-February 1: 3rd Annual Herb Business Winter Getaway Conference, San Antonio, TX. Focusing on the fast-growing area of medicinal herbs, commercial production of both culinary and medicinal herbs, and general business topics. Contact the Herb Growing and Marketing Network, P.O. Box 245, Silver Spring, PA 17575. Ph: 717/393-3295. Fax: 717/393-9261. Email <HERBWORLD@aol.com>.

February 5-8: NNFA-SW Trade Show & Convention, Fort Worth, TX. Exhibits: Ft. Worth/Tarrant County Convention Center. Host Hotel: The Worthington. Contact National Nutritional Foods Association, 12900 Preston Rd., LB 23, Dallas, TX 75230. Ph: 972/490-6550. Fax: 972/490-0003.

February 16-20: International Conference on Medicinal Plants Conservation, Utilisation, Trade & Biocultures, Bangalore, South India. Hosted by the Foundation for Revitalisation of Local Health Traditions, bringing diverse bio-cultural concerns related to medicinal plants together under the 1998 theme "Medicinal Plants for Survival." Contact FRLHT, No. 50, 2nd Stage, 3rd Main, MSH Layout, Anandnagar, Bangalore - 560024, India. Email <root@frlht.ernet.in>.

February 20-22: Second Annual Aromatherapy and Herb Conference & Trade Show, Scottsdale, Arizona. Featuring over 30 workshops and lectures by well-renowned authors and speakers. Contact Jeffrey Schiller, International Aromatherapy and Herb Association, 3541 W. Acapulco Lane, Phoenix, AZ 85023. Ph: 602/938-4439. Email <jeffreys@aztec.asu.edu>.

February 2-8: Psychotropic Ethnobotany, Shamanic Plant Seminar, Yucatán Peninsula, Mexico. Seven-day, intensive seminar at the archaic Mayan ceremonial center of Uxmál, to study psychoactive plants and mushrooms with leading experts. Practical workshops, demonstrations, and instructive lectures. Contact Ken Symington, Ethnobotany Seminars, P.O. Box 4, Sierra Madre, CA 91025. Ph: 626/355-9585.

March 1-4: Alternative Medicine: Implications for Clinical Practice, Boston, MA, presented by Harvard Medical School, Dept. of Continuing Ed., and by Dept. of Medicine, Beth Israel Deaconess Medical Center. Objective is to provide clinicians with sufficient information to responsibly advise patients who use or seek alternative therapies. Credit hours in category 1 of the Physician's Recognition Award of the AMA are available. Contact Professional Meeting Planners, 5 Central Square, Suite 201, Stoneham, MA 02180. Ph: 617/279-9887 or 800/378-6857. Fax: 617/279-9875. Email <PMPMeeting@aol.com>.

March 13-15: Natural Products Expo West 1998, Spirit of the Past, Vision of the Future, Anaheim, CA. Contact Holly Saltz, Natural Products Expo West, 1301 Spruce St., Boulder, CO 80302. Ph: 303/939-8440. Fax: 303/939-9559.

March 13-15: 1998 International Conference on Phytotherapeutics, sponsored by the National Herbalists Association of Australia, Sydney, Australia. Herbal medicines and their applications. Contact Conference Coordinator, 1998 International Conference, P.O. Box 403, Morisset, Australia 2264. Ph: 61 49 734107. Fax: 61 49 734857. Email <ajmh@hunterlink.net.au>.

March 14-22: Chicago Flower and Garden Show, featuring 40 gardens, and more than 90 free educational seminars offered throughout the nine-day show. Held at Navy Pier, on Chicago's lakefront at Grand Avenue, from 10 a.m. to 6 p.m. daily. For show information, call 312/321-0077.

March 16-18: American Herbal Products Association's 2nd International Symposium, Anaheim, CA. This comprehensive international symposium will cover the science and history of St. John's Wort, as well as the practical issues of cultivation and supply, impact of current and potential legislation and regulation, GMPs and manufacturing, and markets, both in the U.S., Europe, and elsewhere. Contact AHPA, 4733 Bethesda Ave., Suite 345, Bethesda, MD 20814. Ph: 301/951-3204. Fax: 301/951-3205.

March 21-22: Santa Cruz Industrial Hemp Expo "Spring Into Hemp," Santa Cruz, California. For manufacturers, stores, and individuals to network and see the most up-to-date hemp products and concepts. Over 50 booths, educational and historical exhibits, videos, speakers, panels, and more. Santa Cruz Civic Auditorium. Contact 408/688-8706/ Fax 408/688-8711. email <cruzexpo@pacifichemp.com>.

April 19-22: Biosynthesis of Isoquinoline, Indole and Related Alkaloids, Istanbul, Turkey, meeting of the Phytochemical Society of Europe. Topics include biosynthesis of isoquinoline alkaloids, pharmaceutical properties, and biotransformations. Paper deadline January 1988. Contact Professor G. Sariyar, Istanbul University, Faculty of Pharmacy, 34452 Beyazit, Istanbul, Turkey. Ph: 90 212 526 0737. Fax: 90 212 519 0812.

May 10-13: Progress in Phytochemistry, Kerkrade, the Netherlands. Symposium aims to provide forum for young scientists to make oral or poster presentation of their research, to meet other young scientists working in all areas of phytochemistry, and to discuss their own research with a group of distinguished research leaders. Paper deadline March 1998. Phytochemical Society of Europe. Contact Professor Dr. A.W. Alfermann, Insitut für Entwicklungs und Molekularbiologie der Pflanzen, Heinrich-Heine-Universität Düsseldorf. Ph: 49 211 811 4603. Email: <alferman@rz.uniduesseldorf.de> Fax: 49 211 811 3085.

July 14-17: Marketplace '98, National Nutritional Foods Association Annual National Convention and Trade Show, San Antonio, TX. Contact Marketplace '98, 3931 MacArthur Blvd., Suite 101, Newport Beach, CA 92660. Ph: 800/966-6632.

August 2-7: XXV International Horticultural Congress, Brussels, Belgium. Scientists will address state of the art horticultural research. Contact H. Wilcox, Secretary 25th IHC, c/o Ministry of SME and Agriculture, Bolwerklaan 21, 15th Floor, B-1210, Brussels, Belgium. Fax: 32 2 206 7209. Email <25ihc98@tornado.be>. Website <http//:www.agr.kuleuven.ac.be/ishs/ishshome.htm>.

September 13-16: Biologically Active Polysaccharides, Oslo, Norway. Role of polysaccharides in plants, pathology, pharmacology, and more. Paper deadline May 1998. Phytochemical Society of Europe. Contact Professor B.S. Paulsen, Farmasøytisk, Ph: 47 2285 6572, Fax: 47 2285 4402, Email <b.s.paulsen@farmasi.uio.no>.

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CORRESPONDENCE COURSES AND SEMINARS

Aromatherapy Studies Course/Jeanne Rose. Correspondence, certification, in-person intensives. 160 CEU provided, California Board of RN Provider #CEP11659. Info: 219 Carl St., San Francisco, CA 94117 or FAX 415/564-6799.

Green Terrestrial offers herbal and earth awareness workshops, quality herbal products, and apprenticeships in an atmosphere of co-creative partnering with the Earth. Pam Montgomery, P.O. Box 266, Milton, NY 12547. 914/795-5238.

Grow Gourmet & Medicinal Mushrooms. Shiitake, Reishi, Morels, Oysters.... Seminars on cultivation. Free brochure. Commercial catalog $4.50. Fungi Perfecti, P.O. Box 7634HG, Olympia, WA 98507. Call 800/780-9126. Fax 360/426-9377.

Institute of Chinese Herbology has been teaching courses in Chinese Herbal Medicine since 1986. Our 130-hour audiotaped program (includes extensive notes and herb samples) is excellent for anyone who wants to gain a working knowledge of Chinese herbs. Free brochure: Admissions 2HG, 3871 Piedmont Ave., #363, Oakland, CA 94611. Ph./Fax 510/428-2061.

The School of Natural Healing was founded in 1953 by Dr. John R. Christopher, M.H., N.D., and continues in his time-tested modalities. The SNH offers Master Herbalist (M.H.) training in 18 course levels at $100 each. This full spectrum of courses is taught by expert instructors, in the convenience of your own home, on professionally produced video and audio tapes. Books, workbooks, and home assignments are also provided. Upon completion of the 18 courses, students are eligible to attend the intensive certification seminar held at our own beautiful retreat in the majestic Wasatch Mountains. For free information, call 1/800/372-8255 or write to the School of Natural Healing, P.O. Box 412, Springville, UT 84663.

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SCHOOLS

Academy of Oriental Medicine - Austin. Accredited three-year, 2,800-hour Oriental medicine program which includes extensive training in Oriental herbs (600 hours); AOBTA, 1 year; 600-hour Oriental body work programs; financial assistance. Approved. 800/824-9987.

Australasian College of Herbal Studies offers 11 dynamic, internationally recognized Distance Learning Diploma & Certificate Programs in Aromatherapy, Homeobotanical Sciences, Herbal Medicine, Homeopathy, Iridology, Flower Essence Therapy and Nutrition. 1997 introduced the revised, updated and expanded Aromatherapy Program with full liability insurance available upon graduation. Individual Course Programs offer well organized study aids which may include books, videos, organic/wildcrafted herb samples, informational decoder wheels and homeobotanical remedies. Free prospectus. 800/48-STUDY (78839). E-mail <achs@herbed.com.> Website <http://www.herbed.com.>

Chinese Herbology, health professionals' training, certification - Experienced instructors (clinical/scientific research) - Clinical case emphasis - Residential intensives, distance learning. Rocky Mountain Herbal Institute, P. O. Box 579-C, Hot Springs, MT 59845. 406/741-3811. rmhi@rmhiherbal.org — http://www.rmhiherbal.org

Goddard College, a leader in progressive education since 1938. Goddard offers graduate and undergraduate study in Health Arts Education: Nature, Culture & Healing. Health Arts Education is an interdisciplinary degree. The program builds links between natural and ecological sciences, Western and non-Western medicine, alternative systems of healing, and community health promotion and education. Study modes available: campus-based undergraduate program or a low-residency, off-campus BS or MA. For more information write, call, or e-mail: Office of Admissions, Goddard College, Plainfield, VT 05667; 802/454-8311; admissions@earth.goddard.edu. Homepage: http://www.goddard.edu.

The Institute of Dynamic Aromatherapy - Correspondence, certification, in-class training programs. Contact: IDA 800/260-7401 or write Unit 98, 936 Peace Portal Drive, Blaine, WA 98231-8014.

Northeast School of Botanical Medicine — Six-month 360+ hour residency program emphasizing clinical skills, botanical identification, materia medica, herbal pharmacy, wildcrafting, field trips, and student clinic. A one weekend-per-month course is also offered April through October. 7Song, P.O. Box 6626, Ithaca, NY 14851. 607/564-1023.

The Rocky Mountain Center for Botanical Studies, comprehensive, balanced herbal curriculum of academic and earth-centered studies. Certification programs and advanced clinical internship available. Call or write for a free brochure, or send $3 for a complete catalog. P. O. Box 19254, Boulder, CO 80308-2254. 303/442-6861.

Sweetgrass School of Herbalism—Classes in herbalism, plant identification and phytopharmacy methods for both the beginner and professional. Sweetgrass School of Herbalism, 6101 Shadow Circle Dr., Bozeman, MT 59715. 406/585-8006.

Wild Rose College of Natural Healing — established 1975, offering correspondence and part-time classroom courses in Herbology, Pharmacognosy, Nutrition, Vitamins & Minerals, Biology, Physiology, Iridology, and many other fields. Diploma programs for Master Herbalist (two years), and Wholistic Therapist (three years). Call or write for a detailed brochure. #400, 1228 Kensington Rd. NW, Calgary, Alberta, CANADA T2N 4P9. Ph: 888/WLD-ROSE.

PUBLICATIONS

American Herb Association Quarterly Newsletter — $20/yr. AHA, P.O. Box 1673, Nevada City, CA 95959.

Aromatherapy Quarterly Magazine — Prestigious English journal, the longest-running aromatherapy magazine in the world; read in over 50 countries by aromatherapists, herbalists, masseurs, and medical practitioners. A world-class resource for the latest developments in aromatherapy; beautifully crafted, filled with practical information. Subscriptions $30. Free information: Suite 249, PO Box 421, Inverness, CA 94937-0421. 415/663-9519.

Australian Journal of Medical Herbalism — quarterly publication of the National Herbalists Association of Australia (founded in 1920). Deals with all aspects of Medical Herbalism, including latest medicinal plant research findings. Regular features include Australian medicinal plants, conferences, conference reports, book reviews, rare books, case study and medicinal plant review. Aus/$40 plus Aus/$15 if required by airmail. National Herbalists Association of Australia, Suite 305, 3 Smail St., Broadway, NSW 2007, Australia.

The Business of Herbs — Comprehensive reporting, business news, marketing hints, sources, and resources. Subscription $24/yr. Brochure/SASE from Northwind Publications, 439 Ponderosa Way, Jemez Springs, NM 87025.

HerbalGram — Quarterly journal published by the American Botanical Council and the Herb Research Foundation. $25/yr., $45/2 yrs, $60/3 yrs. P.O. Box 201660, Austin, TX 78720. 800/373-7105 or fax 512/331-1924. See pages 4-5 in the accompanying Herbal Education Catalog for ordering information.

HerbalVoices: The Journal of Self-Reliant Herbalism. Sample Issue $3. Yearly subscription $12. Published Quarterly. 3936 Mt. Bliss Rd., East Jordan, MI 49727.

Herban Lifestyles — Bimonthly newsletter with entertaining, eclectic, and sometimes esoteric reports on how we live, work, and play with herbs. Money-back guarantee. Sample $3. $18/yr. Free brochure. Stone Acre Press, 84 Carpenter Rd., Apt. 78711-1, New Hartford, CT 06057.

The Herb Growing and Marketing Network— An information service for herb businesses and serious hobbyists. Includes *The Herbal Connection*, a 36-page bimonthly trade journal, *The Herbal Green Pages*, annual resource guide with over 5,000 listings, free classified advertising for subscribers, and more. Entire package $60/yr. (Higher outside North America) Sample newsletter, $4. The Herbal Connection, P. O. Box 245, Silver Spring, PA 17575. 717/393-3295. MC/Visa accepted.

The Herb Quarterly —When the world wearies and ceases to satisfy, there's always *The Herb Quarterly*, a beautiful magazine dedicated to all things herbal—gardening, medicinals, crafts, folklore, alternative uses of herbs, and more. Rates: Sample issue $5; introductory subscription (5 issues) $19.95. P. O. Box 689, San Anselmo, CA 94979. 1/800/371-HERB.

Join the Aromatherapy Revolution! — The American Alliance of Aromatherapy, a non-profit organization, has been established to strengthen, inspire, and advance the field of aromatherapy. Offering the following publications to keep you updated with aromatherapy developments worldwide: *The Alliance News Quarterly*, *The Aromatic Thymes*, *The International Journal of Aromatherapy*, *The Aromatherapy Guide - 2nd Edition*, and *The Aromatherapy Records*. For information, including a complimentary issue: 800/809-9850, Fax 800/809-9808.

Journal of Herbs, Spices & Medicinal Plants— A comprehensive quarterly forum filled with recent research and valuable information about herbs, spices, and medicinal plants. Special rates: $36/1 volume (save $4); $64/2 volumes (save

$16); $84/3 volumes (save $36) (4 issues per volume; U.S. individual subs only). Pharmaceutical Products Press, 10 Alice Street, Binghamton, NY 13904-1580, Tel: 800/HAWORTH, Fax: 800/895-0582. Free sample issue also available.

Medical Herbalism — Subtitled "A Clinical Newsletter for the Herbal Practitioner." Edited by Paul Bergner. $24/yr, $42/2 yrs. Canada $29/yr. Overseas $39/yr. Sample/$4. Medical Herbalism, P. O. Box 33080, Portland, OR 97233.

Robyn's Recommended Reading—A quarterly review of literature relating to herbalism and phytotherapy. Keep up to date with books, journals, newsletters, magazines, web pages, and other sources of information. $15/yr for 4 issues, $20/yr International. U.S. funds only. RRR, 1627 W. Main, Ste. 116, Bozeman, MT 59715.

Washington Insight — A quarterly newsletter designed to keep natural products scientists abreast of important happenings in Washington, D.C., that may affect them and their institutions. Read interviews with Congressmen, Senators and government officials; reports on key Congressional hearings, FDA, NIH, HIH Offices of Alternative Medicine, Dietary Supplements; "Update on Promising New Compounds" — what's hot from marine organisms, plants, fermentation products. In addition to the newsletter, subscribers receive Funding Alert, pre-advertised information on funding opportunities. Annual subscription, U.S. personal/$45; institutional/$85. Foreign: personal/$52; institutional/$95. Contact: Washington Insight, 11000 Waycroft Way, North Bethesda, MD 20852. 301/881-6720, Fax: 301/984-7372.

Wildflower — North America's only popular magazine devoted solely to the study, conservation, and cultivation of our continent's native flora. Offering an appealing blend of art and science, this 48-page quarterly examines all aspects of popular botany in North America from the rain forests of Panama to the micro-mosses of the Arctic tundra; from gardening with native trees, shrubs, wildflowers, and ferns to the latest projects in habitat and native plant conservation. The green revolution begins in our own backyard. *Wildflower* is published by the Canadian Wildflower Society, 90 Wolfrey Ave., Toronto, Ontario, Canada M4K 1K8. Tel: 416/466-6428. Subscriptions and membership are $30/1 yr., $55/2 yrs. Sample copy $5.

OTHER

Discover Mushrooms. Windows-based program to identify mushrooms to the species level. Over 1,000 species in database. $69 includes shipping. Charles Samuels, 7805 Linda Lane, Anchorage, AK 99518. E-mail <arktika@alaska.net>.

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Hydra-screw Tincture Press. 285 p.s.i. For specification flyer send SASE to Longevity Herb Company, 1549 W-H Jewett, White Salmon, WA 98672 or call Krista, 509/493-2626 and leave message.

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ABC ACTIVITIES

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Drug Topics Magazine, Baltimore, MD, "Herbal Medicine in the United States: Current Use, Regulatory Status, and Benefits of Leading Herbal Dietary Supplements"

IBC, Washington, D.C. "Identifying Issue of GMPs, Variability, Standardization and Phytoequivalence of Leading Herbs and Phytomedicines"

SMU University, Dallas, TX , Panel member "Herbal Medicine," sponsored by Alternative Medicine Research Foundation of Texas

Institute for International Research, San Francisco, CA, "Quality Control, Product Identity and GMPs in the Herb Industry: the American Botanical Council's Ginseng Evaluation Program"

Western States Chiropractic College and the University of Colorado Health Science Center, School of Pharmacy, Philadelphia, PA, "Herbal Medicine - A Continuing World Trend"

Bioneers, San Francisco, CA, "Green Medicine," "Herbal Medicine"

WIC Nutrition Education and Breastfeeding Promotion Conference, Austin, TX."Herbal Remedies and Their Effects on Pregnancy and Lactation"

Texas Attorney General, "Legal and Regulatory Considerations Regarding the Safety and Benefits of Herbal Dietary Supplements"

Lake Forest Health and Fitness Institute, Chicago, IL, "Herbs for Health and Longevity"

Dr. Dean's Seminar, Chicago, IL, "Herbs for Health: Herbs to Support a Healthy Body and Mind with Aging"

NNFA MarketPlace '97 Annual National Convention & Trade Show, Las Vegas, six presentations.

TPA Annual Meeting, Corpus Christi, TX, "Assessing the Safety and Efficacy of Herbs and Phytomedicines: The Issue of Phytoequivalence"

Western States Chiropractic College, Philadelphia, PA, "Overview of the Rational Use of Herbal Therapies"

American Journal of Natural Medicine **Conference**, Chicago, IL, "Herbal Regulatory Update"

2nd Annual National Wellness Forum, University of Texas, Austin, TX, "Herbology"

Armstrong McCall's All New World's Fair of Cosmetic Arts & Science, Fort Worth, TX, "Use of Herbs and Medicinal Plants as Alternative Healthcare"

American Herbalist Guild 8th Symposium, Cincinnati, OH, "Integrating Herbal Medicine into America's Health Care" Keynote

Breitenbush Retreat, Detroit, OR

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