

Ethnobotanical Leaflets

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Book Reviews

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K.S. Krishnan Marg, editor. 2000. *The Wealth of India: A Dictionary of Indian Raw Materials & Industrial Products. First Supplement Series (Raw Materials). Volume 1: A-Ci.* 283 pp. (+ Index to botanical synonyms, cultivars of crop plants, common English names, vernacular names, active principles and other chemical compounds, products, and trade names, 24 pp.), National Institute of Science Communication; Council of Scientific & Industrial Research, Pusa, New Delhi, India 110-012. (Fax. +11 5787062; E-mail = [niscom@sirnetd.ernet,I](mailto:niscom@sirnetd.ernet.I)). ISBN 81-7236-208-0.

This volume appears to have been produced, with much labor, by many scholars and commercial experts. It follows the publication of the multi-volume encyclopedic work *The Wealth of India*, acclaimed as a reference standard on raw materials of India [see the original series of encyclopedia and revisions published electronically (AHEAD = Asian Health, Environmental and Allied Data Base, sponsored by International Development Research Centre, Canada, CD-ROM *Wealth of Asia* -D2.1; D2.2; and, D2.3) followed with updates on all entries (A-Z) for specific periods]. This is the first of five volumes of the Supplement Series to the *Wealth of India - Raw Materials* series in the print medium. The complete series (A-Z) will add greatly to the herbals of India and those who seek alternate plant based systems of medicine.

Volume 1, A-Ci is the first of the Supplement Series that updates plant, animal, and mineral; articles covered in the indicated short alphabetic range. Various disciplines of science (biotechnology, molecular biology, genetics, phytochemistry, pharmacology, ethnomedicine, etc.) are interlinked with the classical botany and zoology. Major articles of this volume include: *Arachis*; *Artemisia*; *Bauxite*; *Bees*; *Brassica*, *stones*; *Camel*; *Camellia*; *Catharanthus*; and, *Citrus*. I enjoyed them all as I skimmed through the text, stopping to read a few major and minor articles at random.

In my opinion, this volume is designed for the professional reader. I skipped ahead to read the major article on *Chrysanthemum cineraiifolium* (Trev.) Vis. because I liked the photograph of these flowers in a field that opened the book. This was the only one --- and I wondered why. I never found out why. The article described chrysanthemyl alcohol, chrysanthemic acid, chrysanthemum dicarboxylic acid,

geraniol, and pyrethrins. Callus cultures and incubated cell-free homogenate from the callus also produced these compounds. A methanolic extract of the flower heads yielded a molluscicide that killed snails. It was at this point that I went back to the beginning to read more about plants.

The starting point of this series is in reality the six-volume Dictionary of Economic Products prepared by George Watt (1851-1931) and published between 1889-1893. He published an abridged version of the Dictionary in 1908: Commercial Products of India. The A to Z of Raw Materials (11 volumes, plus two supplements and nine parts stressing industrial products) were published between 1948-1976. The Raw Wealth of India "caught the world's eyes." Three new volumes on plants (plus a supplement) were published between 1985 and 1992. The CD-ROMs followed in the past decade and continues to arrive on the shelves. Lets give a quick look at this first of five volumes with its cross references. This is the product of a team effort (an Editorial Committee of 14 members led by Shri Ramesh Chand). Seventy-One books and references in more than 300 scientific journals support the writers. The first reference informs us that leaves of *Abeloa triflora* R. Br. Contains flavone, acecetin, saponins, gentisic acid, vanillic acid, and ferulic acid.

Abelmoschus esculentus (Linn.) Moench. is described in five paragraphs for Cytogenetics and Breeding, five on Cultivation, seven on Diseases and Pests, one for Yield and Harvesting, and five for Chemical Composition and Utilization. What a nice presentation. As we continue, we read about *A. ficulneus* Linn, *A. manihot* (Linn) Medic., and *A. moschatus* Medic. Before moving on to eight species of *Abies*.

The dictionary presents data regarding *Allium ascalonicum* Linn, *A. Cepa* Linn., *A. porrum* Linn., *A. sativum* Linn. and *A. tuberosum* Rottl. ex Spreng. (Chinese chives). Having worked with varieties of white, yellow, and red onions, I became interested in the phytoalexins contained (determined by chemical analysis). *A. Cepa* was described in eight paragraphs (about two pages). I was particularly interested in the sections Chemical Composition and Utilization. More space was given for the description of *A. sativum* Linn. than *A. cepa*, and for good reason. The uses listed include garlic preparations as: steam-distilled oils; powdered garlic tablets; gelatinous suspensions of garlic powder; and, garlic macerated in vegetable oil. Handling of garlic for cooking may cause contact dermatitis. Garlic is a good export for the country.

Arachis hypogaea Linn. was given about eight pages. Characteristics for 38 cultivars of groundnuts were listed. Cultivation methods were listed and some were described. Leaf blight, powdery mildew, leaf spot, rust, and stem rot diseases and the methods of control of the causal organisms were described. Being a researcher interested in the role of phenolic compounds in plant crop host-fungal pathogen interactions, I could not put the book down until I had read all of this section. This crop represents high export value.

Having grown bamboo and almost having part of my garden overwhelmed by it, I read the entire entry. I was mentally digging out the bamboo (getting even for the four years of struggle I went through to remove all evidence of it having been present without resorting to a weed killer). I could not find an easier way to remove unwanted bamboo from a garden and so I think I, too, have made a bit of a

contribution to cultivation (use a sharp spade and dig out every rhizome).

The Wealth of India has a few paragraphs on how to cultivate bamboo. (Soaking the seeds in water or dilute solution of disodium hydrogen phosphate for six hours and then dry them gave better results than the moisture equilibration-drying treatment. Soaking in gibberellic acid resulted in better seedling growth. Soaking in a kinetin-ethephon treatment resulted in poor germination after drying and storage of the seeds.) Methods such as these are used in the propagation of bamboo in plantations. Several fungal diseases were described (brown and gray leaf spots; chlorosis). The "greater leaf roller" occurs in epidemic form following the monsoon season. These and other leaf rollers can be controlled using insecticides (sprays/dusts). Several types of termites affect bamboos in nurseries and plantations. These are controlled by soil treatment with Aldrin 30 EC, Chlopyrifos 20 EC, or copper or zinc naphthenates. I did not encounter any diseases or insect pests. The number of young bamboo sprouts produced in the first few years overwhelmed me. I attacked the soil in search of rhizomes.

"Bamboo is the most efficient material in nature so far as strength vis-à-vis cost is concerned." The strength varies with different bamboo species. The static bending data for eleven species was compared to that for teak. The resilience of bamboo makes it useful for house construction. Bamboo plywood and veneer board are produced for parts of the house (ceilings, floors, partitions). Bamboo strips, powder, and powdered wood can be molded with plastic resin (molded bamboo fiber-reinforced composite). Bamboo knitting sticks also are improved by the use of resin treatments (heat, soften, and compress the bamboo prior to resin treatment and curing).

Bamboo (Poaceae; Gramineae) was described in three and one-half pages. Though I skipped trying "planting with seeds" and went directly to vegetative propagation, I enjoyed the description. I agree: it does proliferate rapidly. No. I did not see signs of any disease nor pest but I had my fungicides and insecticides at the ready. Oh, the stems were tough and I thought they were blessed with much lignin, but the problem was the rhizomes (not mentioned as a part of India's wealth). Although I do not wish to try this crop again, I did enjoy the description of the many facets of bamboo. (Now that I know that bamboo vinegar for food can be produced, I may have been inclined to try it. I do enjoy shopping at an international food store. This is one advantage for those who will read this book.)

"*Thyrsostachys regia* (Munro) Bennet syn. *T. siamensis* Gamble is a very graceful bamboo with compact clumps and out-curving culms --. It is very useful for basket making, handicrafts, umbrella handles, and paper pulp. The young shoots are edible." (I tend to think about this plant form and may try it once as part of my flower garden. I can wait for more information of --- the rest of the story --- sure to appear in another book some day. For example, the rhizomes are said to be a remedy for anxiety.)

Over 40,000 villages in India have beekeepers (*Apis cerarra* and *A. mellifera* Linn.). They keep more than one million colonies of honey-bees (maintained by 200,00 part-time beekeepers). These bees yield over 7000 tonnes of honey and 12 tonnes of wax per year. India recently began to export honey. *A. florea* Fabr. prefers shaded sites under tree and shrubs. Together, bees pollinate more than 250 crop plants boosting seed and fruit production. At least six ecotypes of *A. cerana indica* Fabr. are known in

India. Ten pages tell the importance of bees in India. Additional bee genera were discussed. Since monoculture has increased in agriculture, the hibernation and nesting sites of wild pollinators has decreased drastically. About 30% of India's honey is associated with rubber trees. Pollen substitutes are made from dried skimmed milk powder (4%), sucrose (50% solution with a base of brewer's yeast and quar meal), and soya powder or natural pollen. Several types of pollen substitutes are described. Three pages are devoted to disease and pests, and predators.

Moving on, I read about

Linn. (assigned nine pages) and other *Brassica* species (assigned ten pages). *Camellia sinensis* Linn. was assigned fourteen pages of space to describe: Breeding; Area and Production; Diseases and Pests; Harvesting (Plucking) and Yield; Manufacture of Tea; Tea Tasting; Chemical Composition and Utilization; Utilization; and Marketing and Trade. About 95 clones are available for production.

Citrus was assigned 16 page beginning with *Citrus aurantifloia* (Christen.) Swingle; *C. aurantium* Linn.; *C. grandis* (Linn.) Osbeck; *C. limon* (Linn.) Burm. f.; *C. madurensis* Lour.; *C. medica* Linn.; *C. paradise* Macf.; *C. reticulata* Blanco; *C. sinensis* (Linn.) Osbeck; and, *C. unshiu* Markovitch.

We reach page 283 only to find that this part of the series ends with the description of Cirets, animals of little interest to most botanists.

Enjoy the book. I did. I also looked for the older versions. A few copies are available in rare-book stores for a reasonable price.

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