

depleted choline status¹⁷. While data from our Bangalore pregnancy cohort were unable to demonstrate a relationship between crude measures of choline intake and birth weight (unpublished) despite an apparently large range of choline intake, it is necessary to evaluate this relationship in better ways. The opportunity to appropriately feed the pregnant Indian woman has never been greater or so important; the chapter on choline by Zeisel in this volume is relevant.

Recently, there has been much interest in the definition of daily essential amino acid requirements and the importance of protein quality¹⁸. Given the importance of protein nutrition today, the review by Hoppe *et al.* of the effect of cow's milk on longitudinal growth is timely. Secular trends in improving height and nutritional status are evident everywhere. Yet, these need to be evaluated in terms of specific nutrients or factors. Protein intake and height have been associated in an earlier Chinese study¹⁹. The present study also adds weight to the importance of appropriate protein nutrition in infancy and childhood. The possibility that the whey protein fraction, as well as other insulinotropic peptides may be important and the stimulation of the insulin-like growth factor axis are all exciting areas of research, linked to the possibility that dairy products could lower the incidence of type-2 diabetes or promote fat oxidation. Of course, all proteins, or too much protein cannot be that good. The chapter by Lefebvre *et al.* deals with proteins, particularly gluten, which has been shown to be associated with type-I diabetes, while the intake of hydrolysed casein has been shown to be protective. These are experimental studies which now need good natural history epidemiology and such studies are underway. However, the review in this volume highlights potential mechanisms and is an encouraging read, particularly for those who would move beyond the current obsession with clinical trials and try to understand mechanistic biology.

Finally, the translation of basic science to bedside therapy is always welcome and even essential. There are so many claims that are made today, often based on inadequate science, that critical reviews of the evidence are always welcome. These should deal with claims of efficacy and safety, and current topics like intensive-care nutrition, immunonutrition and food allergies are represented

in this volume by balanced reviews. This volume of the *Annual Review of Nutrition* is, as always, a treasure of balanced compilations of relevant topics in nutrition, and certainly meets the needs of the Indian perspective.

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Sen'trees' of Mumbai. S. B. Chaphekar, C. S. Lattoo and Mugdha Karnik (eds). Centre for Extra-Mural Studies, University of Mumbai, Supported by ONGC. 2007. 304 pp. Price: Rs 2000.

When environmental problems linked to the declining green mantle are proving menacing to life on our planet, the release of the book under review by the Hon'ble Minister of Petroleum, Murli Deora is timely. The publication presented by the Vice-Chancellor of the University of Mumbai, Vijay Khole, on the occasion of the sesquicentennial year of the university provides a fresh approach to the arboreal sentinels of the metropolis. The genesis of the book lies in a course on 'tree appreciation' organized by the university under the leadership of S. B. Chaphekar. No claim is laid on covering all the ligneous species. Excluded are some showy flower-bearers, fruit trees, teak – the king of the forest and exotics like *Eucalyptus* and wattles. Included are over 100 species that have caught the fancy of the participants of the course for their sheer beauty and their cultural, historical, religious, literary and scientific significance.

Over 40 authors, among them eminent botanists, have contributed as many chapters. Beautiful photographs, a few (19) without description, enhance the value of the publication. The title is apt: Sen'trees', a pun, is a tribute to the greenery around us, to the lifeguards that shower upon us their generous bounty: lungs of the city that generate oxygen, sequester CO₂, indicate and reduce pollution, control micro-climate, contribute to water cycle and storage, check erosion and bestow on us myriad benefits. The Sen'trees' are thus our saviours in the *Homo sapiens*-dominated ecosystems in a new geological era termed 'Anthropocene'.

Valuable information is included for a majority of species on world distribution, migratory routes in some cases, mean-

ings of Latin and vernacular names, economic and medicinal uses since earlier times with references to the *Mahabharata*, *Ramayana*, *Charak Samhita* (500 BC), *Sushrut Samhita* (AD 300), mythological anecdotes and localities in Mumbai where the trees stand.

The derivation of botanical names makes interesting reading; to cite a few: *Areca catechu* – Areca could have come from Kannada ‘Adaka’ and *catechu* could be with reference to the chewing action. *Tamarindus* is derived from the Arabic Tamar-e-Hind (Indian date). *Azadirachta* has its roots in *Azae-darakht*, terms used by the Iranian travellers meaning good health at no cost. Etymology of the monocarpic *Corypha* is traced to Malayalam Kodapanam, i.e. umbrella palm. Its abundance in Kerala has reportedly earned it the title of God’s own country. *Calophyllum inophyllum* means a tree made beautiful because of its veined leaves: *Calo* = beautiful, *phyllum* = leaves and *ino* = veins. Mice-killer *Gliricidia* has roots in *gliris* (mice) and *caedo* (killer).

In the first chapter on the ‘Princes of the plant kingdom’ – the palms, Marselin Almeida presents a wealth of information on ten species. The chapter on mangroves points out the worsening scenario and shrinkage in the area of what was once the dominant element in the seven islands that the city originally was. The silver lining is the Mangrove Park project launched by the company Godrej under the guidance of Chaphekar. Given the paucity of mangrove species, what may be suggested is the creation of a Mangrove Arboretum within the framework of the Park project, with introduction of mangals from other parts of India (e.g. *Nypa* and *Heritiera* from the Sunderbans) and other warm countries. For the massive *Adansonia*, C. S. Lattoo has collected voluminous data; the huge, hollow trunk could accommodate 30 persons, an African tribe buries its dead in the tree. Missing is the Indian legend that robbers used to hide inside the trunk during daytime and commit robberies at night. Hence the Gujarati name ‘Chor-Amlo’, the robbers’ tamarind. Two candidates contest for the title of the oldest living tree: A specimen of *Adansonia* claiming to be 6000 years old is challenged by a bristle cone (not care) pine, 5000 years of age. Among such other fascinating points of interest in the book figures the mythological significance of planting *Couropita* around Shiva temples; to the devotees its flower represents the image

of the Lord as ‘linga’, sun-shaded by the hood of the ‘naga’. In the case of the rain tree (*Samanea*), the rain is not a water-shower but the excreta of certain insects inhabiting the tree. The heavy, hanging fruits of *Kigelia* could provide a novel idea for the Motor Vehicles Department! Incidents of these fruits making dents on cars parked underneath the tree, suggest planting of *Kigelia* trees in no-parking zones. The reviewer is reminded of a query from an eminent lawyer: ‘Why is it that there is not a single police or court case of a coconut falling from a height of 25 m on someone’s head, grievously injuring him?’ Though I did not find mention of this curious fact in the chapter on palms, the reason may be that the nuts are collected before maturity or that the fruit-fall occurs during night-time. A glaring omission is the mention of a special coconut day celebrated in Maharashtra; probably to thank the ocean currents that brought the fruit to our shores. On this occasion coconuts are offered as return gifts to the sea. On *Pongamia*, the author is silent on the use of its seeds as bio-diesel.

A matter of inconvenience is that the species are listed neither in alphabetical order nor according to an accepted taxonomic system. The family Sterculiaceae is separated into four groups, *Sterculia foetida* (p. 138), *S. urens* (p. 287), *Firmiana* (p. 285), *Pterospermum* (p. 269). *Mimusops* (p. 78) and *Manilkara* (p. 260) are treated in different chapters, though earlier the latter was placed in the genus *Mimusops*. The reason for this discrepancy is the choice given to the authors to deal with trees of his/her liking. The photo plates show the same trends: *Diospyros malabarica* (p. 14) deserved a place near *D. embryopteris* (p. 172), *Lannea* (p. 144; Anacardiaceae) near *Mangifera* (p. 66), *Haldina* (p. 6; Rubiaceae) near *Neolamarkia* and *Mitragyna* (pp. 146, 147).

The language used is at times too poetic. I, for one, prefer plain English. Also there are several anthropomorphic expressions. For example, on p. 27, there is a reference to ‘Strangling Ficus’, an oft repeated textbook statement. The banyan seed germinating on the palmyra trunk develops roots that clasp the palm for support. But do they really choke the host with the intension of killing it? ‘Adventurous traveller’ (p. 175), ‘Born in’ instead of the country of origin, ‘Living happily’, ‘Obesity’ in the baobab, and the ‘Ghost tree’ *Sterculia urens* are few more examples. Likewise the noteworthy

distribution of the Doum (Dome) palm *Hyphaene dichotoma* is not discussed. Like the Gir (Kathiawar) lion, this palm too has almost endemic status in Diu, an erstwhile Portugese enclave in Kathiawar. Given the concentration of the genus *Hyphaene* in Angola, also a past Portugese colony in Africa, indigenous or introduced occurrence since earlier times would be a good subject for historical and palaeo-palynological research.

Errors are few. *Peltophorum* (p. 87) bears the heading *Pterocarpus indicus*. *Saraca asoka* plate is on p. 126 and not on p. 116 as indicated in the photo-index. ‘Deciduation (p. 201) is not a well-recognized term for leaf-shedding. An appendix of vernacular names with the corresponding botanical names would have helped readers not familiar with the local language. One would have also appreciated a map showing major localities. The price is on the higher side for students to afford a copy. Anyway, it is a useful reference book which universities, institutes and college libraries should have. For the budding botanists it would be a good guide to know the trees and their location. The publication is, however, essentially addressed to tree-lovers; not only Mumbaiites but also to those residing in other cities and towns who would enjoy reading it – a veritable collector’s item for those interested in plant-life, ecology, and the very history of the metropolis.

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Groundwater Management in India: Physical, Institutional and Policy Alternatives. M. Dinesh Kumar (ed.). SAGE Publications India Pvt Ltd, B1/11, Mohan Cooperative Industrial Area, Mathura Road, New Delhi 110 044. 2007. 354 pp. Price: Rs 480.

Groundwater constitutes a vital natural resource for sustaining India’s agricultural economy and meeting the country’s social, ecological and environmental goals. It is a unique resource, widely available, providing security against droughts and yet it is closely linked to surface-water resources and the hydrological cycle. Its availability depends on geo-hydrological conditions and characteristics of aquifers, from deep to alluvium, sediment