

A timely collection

Plants for Reclamation of Wastelands. Publications and Information Directorate, CSIR, New Delhi. Price: Rs 325, \$ 110, £ 65. 1990. 684 pp.

Given the impending threat of global warming, rising sea level, advancing desertification and burgeoning population, this publication on greening of 175 million hectares of India's wastelands is most timely. The book is divided into three parts. The first, covering 31 pages, deals with generalities like geography, climates, soils, definitions and estimates of wastelands. It is the second part, from page 32 to page 524, that forms the bulk of the book. After an introduction to green cover are discussed the roles of plants in controlling erosion, in nitrogen fixation, and as source of energy. Then follows a list of nearly 1000 species (in alphabetical order) that have contributed to wasteland reclamation in one form or another. Sufficient information is compiled for each species under several heads like vernacular names, morphology, habitat, distribution, silvicultural characters, cultivation/regeneration and utilization; the latter is further subdivided into reclamation value of the plant, and timber, fuel, fodder and other types of utility like medicinal or food value. One may be in for some surprises because included in the list is teak, the king of timber species, which one would not as a rule associate with wastelands. Other examples are *Bischofia javanica* and the bamboo *Bambusa arundinacea* of moist habitats. However, their use in the context of reclamation is properly explained. Genera like *Acacia* and *Eucalyptus*, which have made a mark in India's plantation programmes, receive a good deal of attention; besides the common ones included in the list, the lesser known species are also treated in tables with relevant facts. Part III is a short chapter of seven pages dealing with derelict mined areas. Whereas the bibliography is not exhaustive, there are a number of useful appendices enumerating species according to their adaptations to different types of wastelands and according to their economic value, such as fuel, fodder, green manure, etc. Indices have been provided for Latin,

common English, vernacular, regional and trade names, which fact, combined with the size of the book, makes the publication worthy of its price.

The following printing error may be the sole addition to the errata list: page 48, line 22, read 'heave' for 'have'. References to the sources of some of the tables are not complete. Data in tables 2 and 4 reveal a gradual increase in forest cover parallel to a decline in barren and unculturable land from 1950-51 to 1982-83; these are contrary to the known trends. As proof of this, tables 5 and 11 contradict the figures of forest percentages given in tables 2 and 4. On page 13 there is a reference to Kudremukh mining area 'where lush green forests existed not long ago'. As a matter of fact, this iron-rich area was never under forest. The wooded tract to suffer damage in the wake of the mining project is the Bhagwati valley.

On page 17, the classification of coastal wetlands (mangroves) and grasslands-rangelands under 'degraded land with special problems' may not be universally acceptable. The valuable contribution of the mangroves in protecting the coastline and that of grasslands in preventing erosion need not be questioned. Saline-wetland vegetation has been receiving worldwide attention for the part it will have to play in gene-transfer biotechnology especially with the menace of greenhouse effect and submergence of islands and continental shoreline looming large on the horizon. The salt marshes are also significant sinks of carbon dioxide.

On page 34, the temperature-reducing property of mulching also needs to be stated, particularly of coconut coir dust. On pages 44-45, discussion on AVM is conspicuous by its absence. *Copaifera*

langsdorfii should find a mention among petro-crops. On page 71, the fact that *Acacia holosericea* has given excellent results in Pondicherry region has not been recorded. On page 92, the lower limit of 25 mm for *Albizia amara* is erroneous. Rainfall range of *Dichrostachys cinerea* (page 215) may also be revised from 25-400 mm to 250-1300 mm. On page 252, relationship between *Eucalyptus* and soil moisture has been discussed but much of it remains to be verified by serious experimental evidence.

Legends of photographs are too brief and do not mention locality. The plate facing page 5, of two *Acacia* spp., seems to show only one species. *Acacia holosericea* with its characteristic silvery foliage (phyllodes) cannot be made out. There is a mix-up in *Euphorbia* spp. also: no resemblance is noted between *Euphorbia royleana* on the plate facing page 189 and the one on page 279; the former (also given on the back cover) looks more like a species of *Cercus* (Cactaceae) than of Euphorbiaceae. Also *E. nivulia* on page 271 and the one given in the plate between pages 188 and 189 differ considerably, the latter being the authentic one. *E. nerifolia* on page 270 would be *E. caducifolia*.

It is hoped that a second edition, which seems likely given the usefulness of the publication to all those engaged in the conquest of wastelands, will take care of these minor errors.

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Precambrian assemblage

Archaean Greenstone Belts of South India. B. P. Radhakrishna and M. Ramakrishnan, eds. (GSI Memoir 19) Geological Society of India, Bangalore. 1990. 490 pp.

This volume is among a series of outstanding memoirs of the Geological Society of India brought out through

the dedicated efforts of the editors on the occasion of the birth centenary of B. Rama Rao, who made fundamental contributions in the Precambrian geology of Karnataka craton in South India. The memoir, subtitled Bellur Rama Rao Volume, begins with a tribute to him by the senior editor. Then follows a five-page introduction to the 32 selected papers by early pioneers

and by more recent contributors on the greenstones, traditionally known as schist belts, in southern Indian Precambrian shield. As such, much of the material reproduced here in extracted or reprint form, was originally published in more detail in various journals, some being almost inaccessible now. The editors must be congratulated for collecting these papers together in this volume. The collections fall under six sections, each being prefaced by the editors' comments. In section 1, 'Early work', the classic papers by Bruce Foote contain the background information about the present-day controversy over older and younger schist belts in the Dharwar craton. Section 2, 'Winds of change', contains pioneering work of C. S. Pichamuthu on the Kaldurga conglomerate and that of B. Rama Rao on the stratigraphy of the Dharwar rocks. The paper by B. P. Radhakrishna (no. 10) is the first attempt at synthesis of the work on supracrustals and Peninsular gneiss complex. The next section 'Stratigraphy' contains, amongst others, two main papers with opposing views. Pichamuthu and Srinivasan (paper 15) consider the higher-grade schists (Sargur) and the lower-grade Dharwar schists as part of the same Dharwar sequence, whereas Swaminath *et al.* (paper 12 and 13) recognize them as two different schist belts, lithostratigraphically. Their view that the Bababudan schists containing garnet-chlorite-biotite and garnet-chlorite-chloritoid assemblages belong to epidote-amphibolite facies (p. 137) is untenable in the

light of experimental work, phase relations in AFM diagram and geothermometric data, which show that garnet-chlorite (-muscovite-quartz) association is stable only within greenschist facies conditions. Papers on metamorphic aspects are, however, not included.

The remaining three sections contain interesting results of more recent papers. The section 'Structure and tectonics' contains papers which pertain to evolutionary models and deformation history of supracrustal rocks of specific regions as well as of the Dharwar craton as a whole (paper 17, Mukhopadhyay; paper 18, Drury *et al.*; paper 20, Chadwick *et al.*). Almost all the papers in this section attribute the structural styles, interleaving relationship and other complexities of the schist belts and their gneissic infracrustals to multiple deformation and attendant recrystallization as well as to subsequent thermotectonic activities witnessed by the rocks. The section 'Geochemistry' includes papers on the petrogenetic aspect of the metaigneous and metasedimentary rocks of the Dharwar schist belts. From major and trace elements and/or REE patterns komatiitic basalts were recognized (paper 22, Viswanathan), compared with marginal basin basalt or MORB (paper 23, Anantha Iyer and Vasudev), and considered to have been generated from deep mantle sources. In contrast, the associated tholeiitic basalts apparently found their origin within lithospheric depths, not exceeding 80 km (paper 27, Rajamani). Geochemical characteristics of Dharwar sediments are discussed by

Naqvi and his coworkers (papers 24 and 26). The paper by Hoering (no. 25) appears to somewhat out of place here but it reinforces the possibility of the occurrence of chemogenic sediments, like the bedded barites, in the Sargur-type schist belts. The last section, 'Geochronology', includes papers on isotopic age data for granites, gneisses and metasediments. In spite of the reliable oldest ages of 3.36 Gyr for components of the Peninsular gneiss complex (paper 30, Beckinsale *et al.*) and in spite of the age data of 2.6 Gyr for Chitradurga granite that intrudes the oldest rocks of the Dharwar Supergroup (paper 32 by Taylor *et al.*), the age relationship between different greenstone belts has not been satisfactory. They indicate approximate maximum and minimum ages between 3000 and 2500 Myr for the supracrustal rocks of the region, but the age data for acid volcanics from upper Chitradurga group and for the intrusive granite from Honnali area of western Karnataka (p. 343) are apparently in conflict. These and other discrepancies about the schist belts require further investigations by serious geoscientists, with occasional field visits.

For those who wish to combine a journey into classical scholarship with modern geological researches on greenstones I highly recommend this memoir.

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Drosophila Stock Centre

A Drosophila Stock Centre is being established in the Department of Studies in Zoology, University of Mysore, Manasagangotri, Mysore 570 006, with financial assistance from the Department of Biotechnology, Government of India. The proposed centre will maintain and supply free of cost genetic stocks of *Drosophila melanogaster* and strains of other available species required for routine teaching and research purposes. Therefore, to establish the germplasm, the Centre requests contributions of *Drosophila* stocks from different laboratories. For further information contact: Dr H. A. Ranganath, Principal Investigator of the Stock Centre.