undertaken and will go a long way in solving chronic shortage of water in cities. Chennai has set an example in this respect by amending building laws to make it obligatory for all new constructions in the city to have rainfall harvesting structures to store water. Such stored water could be used for flushing toilets, washing and gardening.

Chapter 5 outlines technology available for water harvesting such as remote sensing and geographic information system, groundwater recharge designs, computer databases and waste-water recycling. Significant advances in these fields are possible provided the scientific community applies its mind to effect improvements in traditional technology.

The need to make water everybody's business is emphasized in a group of papers assembled in Chapter 6. Reasons for decline in traditional technologies are analysed. Official preoccupation with mega projects implemented with borrowed money and neglect of tanks has resulted in too much centralization and the consequent neglect of traditional technologies based on self-reliance. Another glaring factor is the lack of interest shown by research institutes in tackling problems of the poor in rural areas.

CSE and particularly its leader Anil Agarwal are to be congratulated for having rendered great service by forewarning the people of the bad days looming ahead – the spectre of water famine – threatening to overtake them and suggesting measures for combating the menace.

The attractive part of this educative book under review are the numerous photographs in colour and the large number of line drawings specially drawn to convey its message to everyone. Scientists in our research institutes must take note of this publication and help in organizing sanctuaries within their campus, where models can be created and the effectiveness of the technologies aimed at rainwater harvesting and pollution control are demonstrated.

State water is heavily subsidized and thus under-priced leading to adoption of wasteful practices and squandering of a precious resource. We have more wealth in water than Arabia in oil. This resource therefore, has to be conserved and used with great care if future crises are to be avoided. Our scientists should develop technologies aimed at converting our water resources into real wealth through efficient conservation and use and thus build a future based on the enduring past of India. The book under review is a step in that direction and deserves to be closely studied by our administrators, scientists, the intelligent public and all those concerned with public welfare.

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PERSONAL NEWS

A link with the past: Divya Darshan Pant (1919–2001)

On 9 May 2001, India lost an eminent botanist, an excellent teacher, a distinguished visionary, researcher and a fearless critic in the demise of Divya Darshan Pant. Pant was the founder of a strong school of research in palaeobotany and morphology of plants in the Department of Botany, Allahabad University. Beginning his career as a lecturer in 1945, he became Professor and Head of the Department of Botany in 1966. When he was at the helm of affairs from 1966 to 1981, the department achieved international fame for both teaching and research.

Divya Darshan Pant was born on 18 October 1919 in the pine-dotted picturesque surrounding of Ranikhet in Kumaon Himalaya. His father Ambika Dutt Pant was a highly respected Ayurvedic physician and Editor and Publisher of a magazine, *Himalaya*. After his early school education in Ranikhet and Nainital, he moved to Lucknow where he graduated and later received his post graduation and research training under Birbal Sahni. In 1946, he married Radha Pant, a biochemist who later headed the Department of Biochemistry and Home Science in Allahabad University.

The blending of interest in living and fossil plants and combination of facts with interpretative ideas were Pant's main distinctions. His work enables us to peep into the plant world of Gondwana and Pre-Gondwana times through the modern window. On the basis of his important research contributions on the reconstruction of plants of glossopterids, diversity of the floristic elements and reproductive biology, he was recognized as an authority on *Glossopteris* flora. His interpretation of the compressed organs of *Glossopteris* and related genera, including their vegetative parts and fructifications have been vividly confirmed by the subsequent findings of permineralized fossils. He was the first to propose the existence of mycorrhizic gametophytes in Rhynie Chert by his interpretation of gametophytic and mycorrhizic nature of *Rhynia gwynnevaughanii* and strongly advocated it against criticisms throughout his life. However, this work induced others to discover various gametophytes in Rhynie Chert like *Lyonophyton* and *Sciadophyton*.

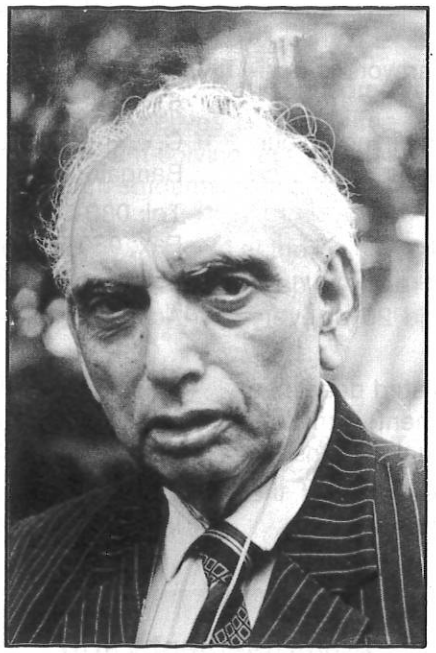
On the basis of his work Pant established that the members of the *Glossopteris* flora had very diverse woods, megaspores, fructifications and seeds. His work on Gondwana conifers, particularly *Buriadia heterophylla* suggested that these could either be regarded as coneless prepinophytes or may be altogether assigned to new group of plants. His work also shed light on Lower Gondwana structurally preserved pteridophytes. Apart from the peninsular part of India, he had extended his studies on extra-peninsular Lower Gondwana and Pre-Gondwana (Lower Carboniferous) flora of Punjab–Kashmir Himalayas, where he found an admixture of Cathaysian and

Gondwana elements along with evidences of insect–plant relationship. His work on Dicroidium flora of India showed that the arrangement of lateral organs in *Pteruchus* was spiral. He discovered regionalism in the worldwide Lepidodedropsis flora of Lower Carboniferous time with special reference to the Gondwana area.

Further, he was able to show that *Diphyllopteris* was a vertically compressed seedling of *Glossopteris* and that the *Glossopteris* flora was dominated by tall and deciduous trees of glossopterids and also that the Lower Gondwana coal is autochthonous. By his studies of the carbonaceous pulls of compressions of *Trizygia speciosa*, he concluded that these fossils in all likelihood belong to *Sphenophyllum* and he also found diverse sphenophylls in the *Glossopteris* flora. He elucidated the structural features of *Ranjganjia bengalensis* and *Phyllotheca indica* which indicated that they were different from northern *Umbellaphyllites*. He established certain new genera of fertile ferns like *Damudopteris*, *Damudosorus*, *Asansolia* and *Trithecopteris* which were assignable to two families, Damudopteridaceae and Asterothecaceae. On the basis of the annulus of their sporangia, Pant pointed out that the phyletic slide of annulus in ferns could have had alternative courses other than those suggested by F. O. Bower.

In horizontal dimension, Pant's researches extended into morphotaxonomy, anatomy, reproductive biology, pollination ecology, palynology from bryophytes through pteridophytes and gymnosperms to angiosperms. His classification of stomata based on their ontogeny is now classic, on the importance of which W. Von Cotthem had written a full length paper. Pant also contributed to the classification of gymnosperms and fossil spores and pollen. He contributed ideas on the evolution of nodal anatomy, conduplicate carpel, morphotaxonomy of *Isoetes*, gametophytes of Ophioglossaceae, anisospory in bryophytes and the function obligate unions of spores and angiosperm pollen.

Pant earned worldwide high encomium due to his comprehensive and authoritative work on the living and fossils cycads. He was a distinguished cycadologist as well. Besides original research on modern cycads, he had reviewed modern cycads with a retrospection of their fossil history. In addition, he had reported two cycadophylls, *Chiguites mamalensis* (fossil counterpart of modern *Chigua*) and *Cycadites meyenii* from the Permian strata of Kashmir. The revised version of his first comprehensive monograph '*Cycas* and Cycadales' entitled *Introduction to Gymnosperms, Cycas and Cycadales*, is being published by Birbal Sahni Institute of Palaeobotany.



Pant had more than three hundred publications, including research papers, reviews, monographs, popular articles, etc., in addition to three books and two edited volumes. He guided twenty-two research students for doctoral degrees. In his honour and as a mark of recognition of his versatile academic status, seven taxa have been named after him so far, viz. *Pantopteris* Chandra & Rigby, a pteridophyll; *Pantophyllum* Rigby, a noeggerathiopsid leaf; *Isoetes pantii* Goswami & Arya, an extant lycopod; *Hepaticites pantii* Bose & Pal, a fossil bryophyte; *Brachyphyllum pantii* Nautiyal & Srivastava, a fossil conifer; *Glossopteris pantii* Chandra & Surange, a pteridosperm; and *Birbalsahnia divyadarshanii* Bajpai & Maheshwari, a male pteridospermous fructification. On the last named fossil plant, a postal stamp was released by the Government of India in 1997 on the occasion of the Golden Jubilee of Birbal Sahni Institute of Palaeobotany.

Pant was conferred with a number of academic awards and honours. He was a Fellow of the Indian National Science Academy, New Delhi, the National Academy of Sciences of India, Allahabad and the Indian Academy of Sciences, Bangalore. He was also a Fellow of the Indian Botanical Society and the Linnean Society (London) and Palaeobotanical Society. He was the President of Botany Section in the 65 Indian Science Congress held in 1978 in Ahmedabad. In addition to being a life member of many international botanical societies, he had been conferred with many medals and honours.

Pant preferred to be at Allahabad University, deeply involved in academics without being allured to the administrative positions like his mentor Birbal Sahni.

As Pant's youngest research student, I was closely associated with him for the last twenty-five years. I found that his only passion was botany. As an indefatigable teacher, he tried to excite the natural curiosity of his students and to awaken and cultivate in them an increasing love for plants.

He was fully devoted and dedicated to the cause of botany even during his retired life, despite ill health and a fractured left arm for the last four years. By an advance letter addressed to the Vice Chancellor of Allahabad University, he had expressed his wish for not holding any condolence meeting at his death so that work is not hampered. He has left behind his wife, a son and two daughters, doing well in their respective fields. Pant's death is mourned by many in the realm of botany and also in different walks of life.

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