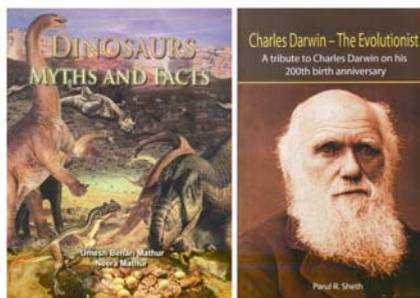


BOOK REVIEWS



Dinosaurs: Myths and Facts. Umesh Behari Mathur and Neera Mathur. Vigyan Prasar, A-50 Institutional Area, Sector 62, Noida 201 307. 2010. xiii + 64 pp. Price: Rs 120.

Charles Darwin – The Evolutionist: A Tribute to Charles Darwin on his 200th Birth Anniversary. Parul R. Sheth. Vigyan Prasar. 2010. x + 114 pp. Price: Rs 120.

Vigyan Prasar (<http://www.vigyanprasar.gov.in>), an autonomous organization under the Department of Science and Technology, was established in 1989 to undertake the communication of science and technology. It frequently publishes books in various Indian languages and in English covering biographies of scientists, the scientific heritage of India, natural history and health. Regular periodicals include *DREAM 2047*, *VIPNET NEWS* and *VIPRIS CLIPSET*. Radio and television serials promote awareness and interest in topics like astronomy, environment and biodiversity conservation. In addition, posters, charts, manuals, brochures, activity kits and CDs are being developed. The organization also supports science clubs and setting up of HAM radio stations, and organizes national campaigns and field activities.

The two books under review have been published by Vigyan Prasar. While one focuses on dinosaurs that lived ~65 m.y. ago, the other features Charles Darwin who lived 129 years ago – both subjects still well-remembered today. The books paint an interesting background in which they portray their central characters and are replete with colourful pictures. They are especially suitable for youngsters and also other interested readers.

The book on dinosaurs is written by Umesh Behari Mathur, a palaeontologist and Neera Mathur, a zoologist. It addresses the myths and facts related to these ‘terrible lizards’ in a question–answer format and informs the common man about the latest developments. The questions tackle their anatomy, physiology,

food, reproduction, environment in understanding dinosaurs, extinction and other aspects. Some examples are: Are birds the ‘living dinosaurs’? How do scientists tell whether a dinosaur was a herbivore or a carnivore? Were the dinosaurs brainy creatures? Did any dinosaurs swim or fly? Which is the oldest known dinosaur from India? Are all mounted skeletons of dinosaurs real? It even features a poem by Bert Leston Taylor written in 1912 that talks of the mythical two brains of a dinosaur: ‘...Thus he could reason “A Priori” As well as “A Posteriori”...’. The reader is informed of facts such as osteoarthritis being common among dinosaurs. Data is provided on dinosaur fossil parks and museums in India, including contact details (some incomplete) and the fossils/models found therein. Some jargon could have been replaced with simple words in the text.

The book on Darwin is written by Parul R. Sheth, a science journalist, health and medical writer. It covers the life and works of the Father of Evolution, and the debates around his theory of evolution. It talks about a simple, affectionate, friendly, gullible and naughty boy who escaped from school and roamed the woods and who at the age of eight ‘...tried to make out the names of plants and collected all sorts of things, shells, seals, franks, coins and minerals’ (quoted from Darwin’s autobiography); his love of learning and reading; his love for nature and interest in natural history inspired by his surroundings and his grandfather Erasmus Darwin; his stint in medicine at the University of Edinburgh where he found the lectures boring but his conversations with others like William Francis Ainsworth and Robert Edmund Grant interesting; his one-time inclination to become a clergyman to attain which post he pursued a Bachelor of Arts degree at the University of Cambridge, where his passion for collecting beetles and shooting, and interest in music and arts developed; his desire to travel being satisfied through his epic journey (lasting 5 years) as an unpaid naturalist on-board the *H. M. S. Beagle* in 1831 which he describes as: ‘The voyage of the *Beagle* has been by far the most important event in my life, and has determined my whole career...’; his theory of evolution proposing natural selection and speciation; his work despite ill-health: ‘My chief enjoyment and sole employment throughout life has been

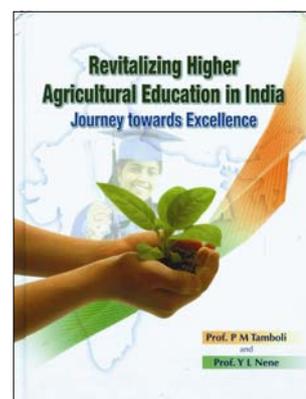
scientific work; and the excitement from such work makes me for the time forget, or drives quite away, my daily discomfort’; his love for children; the conflict of ideas between creationists and evolutionists; supporters and critics of Darwinism; Darwin’s tree of life portraying the evolutionary relationships between different species, which molecular biologists believe is incorrect, and neo-Darwinism and various views that have evolved over the years and continue to do so with advances in areas such as genetics.

The book also gives some interesting and funny anecdotes such as Darwin being called ‘Gas’ at school during the time that he was helping his elder brother Erasmus Darwin with his chemistry projects, and *poco curante* (meaning trifler) by the Headmaster who rebuked him for ‘wasting time on useless subjects’, and Robert FitzRoy, captain of the *Beagle*, judging Darwin as a weak man based on his small and snub nose. It also showcases the tributes to Darwin, and presents a list of books by him. A glossary and references have been included.

In both books, minor editing may be required to correct grammatical errors and improve the legibility in a few figures. The sources for all figures could be provided in the appendix.

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Revitalizing Higher Agricultural Education in India: Journey Towards Excellence. P. M. Tamboli and Y. L. Nene. Asian Agri-History Foundation, 47 ICRISAT Colony-1, Brig. Sayeed Road, Secunderabad 500 009. 2011. xvi + 300 pp. Price: Rs 500/US\$ 25.

In all areas of human activity, knowledge, skills and imagination of inspired

human resources play the most significant role in achieving the goals. Realizing the importance of human resources in enhancing national economy, the advanced countries of Europe and North America keep discussing ways for further improvements in higher education. In India, people keep writing and discussing the deteriorating educational standards in the universities, including many in *Current Science*. We aspire to see at least some of the Indian institutions of higher learning as being world class. Recently, a lot has been said about the education and research standards at the Indian Institutes of Technology (IITs) considered to be the best in the country for education in engineering and that are well recognized abroad. The *New York Times* recently reported the statement of our Minister of Human Resource Development, himself educated at the Harvard University, saying that we do not have enough quality institutions¹. With this backdrop of higher education in the country, the book under review is timely and represents an excellent compilation of different reports on higher agricultural education (HAE) in India, and the authors' own views on the subject. Both authors have been closely involved in agricultural education and research in the country over the past 60 years and have vast national and international experience.

As the authors state in the Preface, 'the purpose of the book is to highlight the need and urgency of building high quality human resources in the field of agriculture by strengthening agricultural universities in India'. It is widely recognized now that the country needs to produce more food, fibre, feed, fodder, fruits, vegetables, spices, medicinal and aromatic plants from a diminishing resource base of cultivable land, water and energy with minimal environmental impact. Further, all this should be achieved on a sustainable basis at low production cost. This indeed is a tall order. Over and above, we should be prepared for the anticipated climate changes. This calls for increase in the skills of the millions of Indian farmers who produce food for over 1.2 billion people and women who manage the family food. High quality teachers, researchers are trainers at the grass root level are required. Agriculture in the country contributes to 26% of the GDP, 60% employment and is the primary source of livelihood for 68% of the population. Besides the production tech-

nology, home science is an important component of the educational programme of the State Agricultural Universities (SAUs), particularly for women. Their improved knowledge and skills in nutrition and home management can help in ameliorating the widely prevalent 'hidden hunger'. Education, research and extension of the new knowledge and products are the three main inter-dependent pillars of the SAUs.

The book includes nine chapters. Chapter 1 gives the historical perspective of HAE in the country. The first agricultural colleges in India were established under the British rule in 1879 at Coimbatore, Pune and Loyalpur (now in Pakistan). In the post-independence era, launch of the Post-graduate (PG) School at the Indian Agricultural Research Institute (IARI), New Delhi in 1958, with large assistance from the Rockefeller Foundation, was the beginning of the change and modernization of HAE in the country. The system of course credits, varied choice of courses, internal assessment and grades traditionally followed in the American Universities was adopted for the first time in the country. Ralph Cummings of the Rockefeller Foundation served as the Dean of the PG School for some time and overlooked the transition to the agricultural education based on the success of the land-grant universities (LGUs) in USA. This reviewer joined the first batch of Ph D students at IARI in 1958 and gained a great deal from the incredible changes of the new system. Establishment of the SAUs at Pantnagar, Uttar Pradesh, and Ludhiana, Punjab followed. Subsequently, SAUs following the new system were replicated in other states.

Chapter 2 gives comprehensive information on the SAUs and agricultural colleges in the country. This includes information on the various courses offered and the number of students enrolled, faculty strength and the number of vacancies. The highlights of the research contributions are also given. Chapter 3 covers the role of the Indian Council of Agricultural Research (ICAR), its research institutions (45), national research centres (17), national bureaus (6), directorates and project directorates (25). The chapter also gives the main research accomplishments of the different institutions under ICAR. Agriculture is essentially a state subject in the country. The Central Government through the ICAR

supports the SAUs which follow the state policies. Chapter 4 covers the centre – state relationship and also that between the SAUs and the Department of Agriculture in different states. Chapter 5 covers the role of bilateral and multinational donors in supporting higher education in the SAUs. Rockefeller Foundation, Ford Foundation and USAID have provided extensive initial support for the development projects of the SAUs. Later funds accumulated in Indian rupees through the sale of food grains imported from the US under Public Law-480 (PL-480) were used to support SAUs. Agricultural research programmes in the country were later supported by the World Bank.

Chapter 6 describes the working of typical LGUs in USA on which the Indian SAUs were conceptualized. It further compares the US LGUs and the Indian SAUs. The current issues and constraints facing the India SAUs are examined in chapter 7. Various suggestions have been made for addressing the constraints. Current high inbreeding at the SAUs is reflected by the fact that 51.4% of the faculty have obtained their B Sc, M Sc and Ph D degrees from the same university. Only 5.5% of the faculty have a Ph D degree from a foreign university or have worked abroad as postdoctoral fellows. Declining quality of students opting for admission to the SAUs is brought out. A SWOT analysis of the HAE system in India is reproduced from an independent earlier publication. The size of the HAE system emerges as its main strength, while serious resource constraint in recent years is the major weakness. The opportunity is to provide the high-quality human resources for transforming Indian agriculture to a globally competitive enterprise. Liberalized imports of food items under the WTO agreements, and entry of the foreign universities in HAE are the identified threats. Chapter 8 examines the outlook for the future, the need for change and what is required to establish a world-class university. The latter includes a paper by Jamil Salmi from a World Bank publication and other national and international papers/reports on HAE are given as Annexures 1–4. Conclusions and recommendations are summarized in chapter 9, which includes restructuring of the ICAR with the Prime Minister as the president of the ICAR Society, larger academic autonomy for the Vice-

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Chancellors, improving State and Centre relationship, and others. The book ends with a positive statement saying that 'India is not short of funds or talent. The first green revolution was achieved due to political will and commitment. Second or ever green revolution can also be achieved if there is strong political will and commitment.'

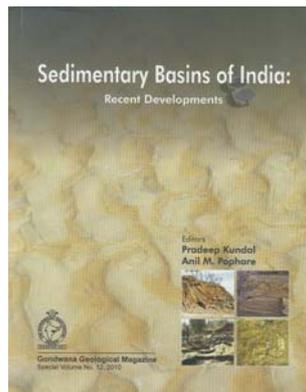
I found considerable variation in research achievements listed for different SAUs. Apparently this information is based on the inputs provided by the SAUs and reflects the perception of the person compiling the information. For example, characterization of late embryogenesis protein from *Vigna radiata*, and anti viral protein from *Bougainvillea spectabilis* are listed among the research achievements of the Tamil Nadu Agricultural University (TNAU). The latter has certainly accomplished much more than this in agriculture.

The book represents a comprehensive compilation of different aspects related to HAE in the country, including the Model Acts for the SAUs and other legal issues. The book would be useful for all connected with HAE. Students aspiring to join SAUs can find all the required information at one place. They and others can restrict their reading to the relevant chapters. Some of the problems discussed are equally valid for traditional, non-agricultural universities. This book should be on the library shelf of all agricultural research and teaching institutions.

1. *The Economic Times*, Mumbai, 15 October 2011.

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Sedimentary Basins of India: Recent Developments. P. Kundal and A. M. Pophare (eds), Gondwana Geological Magazine Special Volume No. 12, c/o Post Graduate Department of Geology, RTM Nagpur University, Rao Bahadur D. Laxminarayan Campus, Law College Square, Amravati Road, Nagpur 440 001. 2010. viii + 375 pp. Price: Rs 1500/US\$ 100.

The book under review is one more useful addition to the stable of edited volumes dealing with varied aspects of the geology of sedimentary basins in India, and relevant mineral potential and prospecting. This volume has a fairly good mix of papers contributed by geologists from various state exploration agencies, including the Atomic Minerals Directorate, Geological Survey of India, and those from the academia. The sedimentary basins covered include the Proterozoic basins of Vindhyan–Maha-koshal, Chhattisgarh, Indravati, Pranhita–Godavari, Cuddapah, Bhima–Kaladgi, and a host of deformed volcano-sedimentary terrains from the Aravalli–Bundelkhand craton, and Central India. Uranium and polymetal deposits form the mainstay of the papers dealing with the Proterozoic terrains, as expected from authors having affiliation with the Atomic Minerals Directorate. The second set of papers focuses on the hydrocarbon-bearing Upper Palaeozoic to Mesozoic Gondwana basins. While some of these papers deal purely with the sedimentological analysis, others bear more on coal/lignite characters, coal bed methane, or the influence of tectonics on these Gondwana basins.

While a few papers deal with the Mesozoic sedimentary systems of Kachchh or other coastal tracts of India, a sizeable fraction of the papers bears on the Quaternary systems in various parts of India. Majority of the last set of papers on the Quaternary basins concentrate on lithofacies description, including granulometric studies, trace fossils, physical and chemostratigraphy, and hydrogeology. There are odd papers that deal with fossil biota, soil and remote sensing applications in the mapping of sedimentary terrain. The overwhelming majority of the papers cover sedimentary systems in peninsular India. However, there are a couple of contributions where Neoproterozoic–Cambrian successions of the Lesser Himalaya, or the Tertiary succession in Manipur have been examined, the latter describing the chemostratigraphy of the Eocene–Oligocene deposits.

That this volume emanated from the proceedings of a National Symposium on 'Sedimentary basins of India: economic potential and future prospects', is brought out not only by the not so well-cemented agglomeration of 43 papers, but also by the inclusion of 14 abstracts towards the end of the volume. The upside of this volume is the variety embodied in 375-odd pages, and the unstated intention to cater to the heterogeneous pool of potential readers possibly with disparate background. Sedimentary basins of all ages have attracted the attention of geologists in the academia and in the mineral industry driven by economic interests. The real success of this volume would be if those in the exploration of hydrocarbon, uranium and other polymetallic deposits find the new data, interpretation or summary articulated in this volume as a guide in formulating new strategies or refining the traditional ones. Moreover, focused academic readers may find quite a few papers catering more to local interests without delving deep into their links with sedimentary basin evolution, and the wider dynamics.

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