

Engineering in the Ancient World. J. G. Landels. Universities Press (India) Limited, 3-5-819, Hyderguda, Hyderabad 500 029. 1999. 224 pp. Price: Rs. 175.

At a time when the book market is flooded with computer-related books, the book under review is bound to bring joy to all those who are fascinated by mechanical inventions/innovations. Those of us who at times have wondered about improving the efficiency of animal-pulled carts or admired the design of old cuckoo-clocks, which with just mechanical devices could do whatever they were so well-known for, will find in this book a treasure of many similar devices. The book is divided into nine chapters covering power and energy sources, water supplies, water pumps, cranes, catapults, and sea and land transport. The book is based on mostly literary and some archaeological sources. The book is targeted for audience midway between those who look for all the technical details along with the engineering numbers and the figures and those who are interested in just the broad mechanics involved in a device. As a result, some sections of the book have technical terms which are not pre-defined but in quite a few cases can be looked up in a dictionary. Similarly, some sections have technical description which without the accompanying figures showing various details are hard to understand. For example, while writing about man-power, the author states (p. 10), 'There are two important devices for harnessing man-power. One was the capstan or windlass, particularly useful on cranes or aboard ship. The power could be transmitted over a distance by ropes, its direction could be changed by pulleys, and the force could be multiplied by block-and-tackle arrangements'. (No other details are provided.)

Difficulty in understanding technical details at some places, however, does not deter a reader from continuing and enjoying the book as anecdotes and other amusing facts are interspersed throughout the text. For example, cult of 'Bald Venus' is shown to be related to women folk giving away their hair at war time to make torsion spring of catapults used to throw huge projectiles at enemies. Similarly, while explaining why oxen are favoured over horses for

tough work, the authors states 'Bovines are the best adapted of all herbivorous animals. Their intake of food passes first into the rumen, where microorganisms work on it, and convert almost every type of protein present in the food into microbial protein, which can subsequently be absorbed into the system via the stomach and intestines and fully utilized... Equines, by contrast, have no rumen, and can only assimilate certain type of proteins directly. Therefore, if a horse and an ox of the same body weight consume the same quantity of some food, the ox is likely to gain quite a lot more nutrition from it.'

One weakness of the book is its misleading title. The author is an expert on ancient Greek and Roman cultures. Like his other book *Music in Ancient Greece and Roman Cultures*, the present book also could have been more appropriately titled as *Engineering in Ancient Greece and Roman Cultures* as it addresses only these two cultures. The western world, which traces its roots to Greek and Roman cultures, may find nothing objectionable in such a title but Indians and others, who at around the same time were equally advanced in many areas, may expect to find a coverage of their ancient cultures also in a book with a title such as this.

On the whole, the book should be useful to those interested in the history of engineering and technology; it also offers a good starting point for beginners with good bibliography. The book is recommended for those interested in objects of mechanical origin. I for one read the book with just this aptitude and enjoyed it.

SANJEEV KUMAR GUPTA

*Department of Chemical Engineering,
Indian Institute of Science,
Bangalore 560 012, India*

Silent Valley – Whispers of Reason. T M. Manoharan, S. D. Biju, T. S. Nayar and P. S. Easa (eds). Kerala Forest Department, Vazhuthacaud, Thiruvananthapuram 695 014, India. 1999. 425 pp. Price: Rs 1200.

'Silent Valley Campaign' in the early seventies and eighties in Kerala has

marked a milestone in the conservation history of tropical forests all over the world. The book under review, an anthology of this vociferous 'Silent Valley saga' is compiled in 4 parts worth reading with 38 contributions.

The first part describes the social history of formation of the conservation movement. Historical events regarding anthropological influences in the Silent Valley are described in the second part. The remaining two parts give accounts of natural history of this tropical rain forest. The book also contains excellent photographs of the forest as well as flora and fauna shot by eminent photographers.

Modern man first entered the Silent Valley by the middle of the 19th century. The British government started logging in the area and also leased part of the land for coffee plantation. But logging was abandoned due to the difficult terrain for transportation of timber. Coffee plantations were also unsuccessful; ultimately affecting 25% of this 90 sq km area due to human disturbance (p. 80). In 1931, i.e. ten years after the proposal of a hydroelectric project, a forest engineer named Dawson conducted a preliminary survey in the area. After independence, in 1951 another survey was conducted. But details of any of these surveys are not mentioned in the book. Technical investigations were carried out in 1958 (p. 24).

By 1973, the Silent Valley Hydroelectric Project was sanctioned with an estimated cost of Rs 24.88 crores. The project was modified twice in 1976 and 1979. By 1979 scientists had vouched for abandoning the project. Non-governmental organizations like Kerala Shastra Sahitya Parishad (KSSP) were spearheading the conservation movement by convincing people with the help of street plays, dramas, public meetings, etc. Newspapers like *The Hindu* and *Mathrubhumi* wholeheartedly supported the cause of conservation of tropical forests. In October 1979, the Swaminathan Committee suggested to declare the whole area under the project, which was around 390 sq km, as Rain Forest Biosphere Reserve. In August 1980, the Government of India and the Government of Kerala formed a joint committee for an objective analysis of the project. The committee submitted its report in 1982. In 1983 the project was abandoned and in 1984 Silent

Valley was declared as a National Park.

The articles in the first part repetitively state the above-mentioned history of events during the period of struggle. But as the editors have mentioned in the preface, the context of the theme of individual articles would have been lost if this repetitive information was edited. Hence, as the name of the book suggests the first part gives justice to the whispers of the common people who voiced against the destruction of the Silent Valley forest.

It is interesting to know when the Silent Valley came into limelight as a heritage of tropical rain forest for the modern world. According to various articles in the book, in the early seventies inventories were done for the study of the lion-tailed macaque, the endangered primate which followed a series of inventories on birds, plants and other animals in the area. Two major works on the fauna and flora in 1977 probably proved the Silent Valley to be a treasure trove of the tropical rain forest ecosystem. Most of the articles on the flora and fauna are mainly of checklist nature; a few of them are on ecology and biogeography of the organisms. Hence, for taxonomists the book is a treasure of various details of the tropical forest species like orchids. Many articles on natural history try to emphasize the similarity between the Silent Valley biota and the Sri Lankan forest biota. Dominance of Orchidaceae family in the Silent Valley and in Sri Lanka is one of the examples. Excellent treatment of family Orchidaceae in the Silent Valley is given in the book with a description of 54 genera and photographs of several orchids including *Ipsea malabarica* which was recorded after 130 years in 1982. It would have been useful for the students to have a key for such rare descriptions of the family Orchidaceae. Interestingly, Silent Valley is ranked low in terms of wild relatives of cultivated plants in the area compared to the other parts of the Western Ghats like Pulney hills, Agastyamalai ranges, Coorg, etc. Species of family Araceae are economically exploited all over the world. But inventories are done rarely specifically for the species of this family. The account on family Araceae describes 9 genera with 21 species along with a genera level key.

There is a record of 315 species of animals, of which 28 species are new additions, 8 are new records for India while 37 species are new records for the Western Ghats. With all these efforts scientists have claimed the unexplored potential of the Silent Valley for a large number of insect species. The ecological study on the lion-tailed macaques and Nilgiri langurs about the choice for food-plants shows the web of life in the tropical forests and the bleak future of these interlinked species due to habitat destruction.

In a nutshell, the book is everything about the Silent Valley. It forms a good documentation of its history as well as its flora and fauna. In India, such kind of documentation for a national park is rare. The Kerala State Forest Department has shown a progressive attitude by bringing out this book.

A major lacuna in this book is that none of the articles, especially in the first section, analyses or compares the situation in the 1980s and in the present after 21 years, when the book was published. The obvious curiosity of any layman to find out what were the circumstances which forced the government to bow down to the people's opinion is not even partially fulfilled. The merits of campaign lie with the literacy and progressive attitude of the people of Kerala. The Silent Valley people had fought against the interests of Government of India. But imagine a situation when there are more than one party having vested interests in the benefits of a project. It is beyond the scope of this book.

YOGESH GOKHALE

*Centre for Ecological Sciences,
Indian Institute of Science,
Bangalore 560 012, India*

Dynamic Himalaya. K. S. Valdiya. Universities Press (India) Limited, 3-5-819, Hyderguda, Hyderabad 500 029, 1998. 178 pp. Price: Rs 160.

The Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, publishes Educational Monographs, which address the needs of students at the graduate and post-graduate levels,

and the general research community. The book under review is a recent addition in the series. Perhaps there could not have been a better choice of author and the subject to make the present monograph very attractive, exceedingly interesting and quite useful for students and teachers and also all other interested readers. This small book (178 pp.) embodies a scientific synthesis anchored in an exceedingly large volume of work, quite a significant part of which is based on the author's own extensive studies made during the last four decades. For the understanding of general readers who may not have a strong background knowledge of the subject, the author portrayed a quite simplified picture of the evolutionary history of the colossus called the Himalaya. In doing so he did not seem to have compromised with the scientific truths in any significant way. However, in process of simplifying facts mainly for the sake of the general readers, some broad generalizations have been made, which may not be outside the scope of critical scrutiny.

The Himalaya, the highest mountain on the land, is also the most conspicuous geomorphic feature on the surface of the earth. Appearing as chains of arcuate ranges, the Himalaya not only defines the geographic boundary of the Indian subcontinent, but it has also contributed a huge bulk of sediments in building up the largest flood plain on its lap. This great fertile flood plain was destined to become the cradle for human evolution, and a very congenial setting for the growth and development of one of the oldest civilizations in the world. Besides forming a geographical barrier, the Himalaya greatly influenced the atmospheric circulation of the Asian continent. It not only protects the subcontinent from the cold northerly blasts, but is also responsible for the monsoon climate typical of the region.

In tracing the evolutionary history of the mountain, the author emphasized Purana (= Early to Late Proterozoic) antiquity of the Himalayan sedimentation. In the time-scale showing evolutionary history of the Himalaya, the date of the start of sedimentation is indicated at 2050 Ma (Ma, million year age before present). The cessation of sedimentation by around Ordovician has been related to the Pan-African diastrophism. The next phase of sedimentation report-