advantage of his pioneering work and also of investigators such as Heinz Saedler and Eliott Meyerowitz on genes controlling flower development. She has thus launched a pathbreaking study of the area of the evolution of floral morphogenesis and this naturally includes molecular biology of differentiation of special organs and shapes, making good use of the extensive studies on speciation by Verne Grant.

Another article of phylogenetic and evolutionary interest is that by Jo Ann Banks on *Selaginella*, which is a pteridophyte and a genus of great interest representing not merely the evolution of the terrestrial habit from primitive bryophytes, but also evolution of heterospory. Work on its genome sequence was completed recently. *Selaginella* appears also to be the plant which in Indian ancient texts is known as 'Sanjeevani' – the review cites a reference in which studies have been carried out in collaboration with Syed Hasnain (formerly of the Centre for DNA Finger Printing and Diagnostics, Hyderabad) claiming extraordinary beneficial properties of extracts of *Selaginella.* The article is a good example of the type of investigations that will come in the next decade at the interface of molecular biology and evolution. Although *Selaginella* is a rather small plant, its relatives (lycopods) were plants that almost reached a height of 30 m in the Carboniferous era, and advances in genomics are expected to shed light on this remarkable group of plants, which is largely extant now.

The article by Pamela and Douglas Soltis on 'The role of hybridization in plant speciation' highlights the role of polyploidy in the evolution of angiosperms. Following the work of George Stebbins, Jens Clausen, and Verne Grant in USA, polyploidy became a major focus of biosystematics research. Since the majority of angiosperms are polyploids, it has become important to know the precise mechanism (whether a group is homoploid, autopolyploid or allopolyploid), its prevalence and role in evolution. With the sequencing of several genomes, research on polyploidy has acquired a new level of sophistication. In recent years, polyploidy has attracted a lot of interest also of molecular biologists, since there is often a strong dosage effect and many genes are silenced by chromatin remodelling (*Arabidopsis* itself appears to be a polyploid).

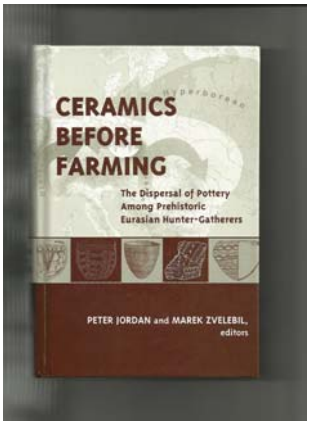
Miscellaneous – applied aspects and techniques

Certain other articles pertain to applied or biochemical aspects. The American plant biologist, Christopher Somerville is well known for his role in promoting research on *Arabidopsis*. However, Somerville has had strong interest as much in applied as fundamental aspects of plant biology and here, along with Andrew Carroll, he reviews the subject of cellulosic biofuels (a few years earlier he had reviewed the area of cellulose synthesis) which is of great topical interest these days. There is another article by James Kirby and Jay Kearling on the biosynthesis of isoprenoids, a group which includes such important molecules like menthol, taxol, carotenoids, vitamin A and artemisinic acid (effective against malaria). A third article is by Peggy Lemaux on 'Genetically engineered plants and foods: a scientist's analysis of the issues (Part II)'. Presently, there is a lot of controversy in regard to genetic engineering. There are those who are convinced about its great benefits to man and there are those who are not. And, surprisingly, even in advanced countries in the West, not everyone has accepted the idea of genetic engineering. We have the example of Germany, scientifically one of the leading countries (DNA was first isolated here), where genetically engineered crops have not been accepted. My own knowledge is limited on these issues, but Lemaux has a well-researched, readable article (contained in this volume in Part II). She is in favour of the new technologies; yet, she clearly states that many issues still need to be addressed (one example is her concern on the use of the new technology for obtaining pharmaceutical or industrial proteins).

There is not sufficient space to discuss even briefly all articles. However, mention can be made of a review by Stacey Simon and others on the 'New shortread technologies for transcriptional analyses', which differ from conventional capillary-based sequencing. The new 'next generation sequencing' has departed from the Sanger sequencing chemistry. In 2000, Sydney Brenner introduced the MPSS technique, in which sequencing was performed on templates formed as beads or spots of DNA. In the last 5 years, many other improvements and new technologies have been introduced, especially by Roche, Illumina, Applied Biosystems, and Helicos Biosciences (here, true single-molecule sequencing is done). However, the tremendous depth of analysis available now also points to challenges in future in the integration of data. There is also an article by Achim Walter and colleagues on 'Environmental effects on spatial and temporal patterns of leaf and root growth'.

S. C. MAHESHWARI

School of Life Sciences,
Jaipur National University,
Jagatpura,
Jaipur 302 025, India
e-mail: satish_maheshwari@hotmail.com



Ceramics Before Farming. The Dispersal of Pottery Among Prehistoric Eurasian Hunter-Gatherers. P. Jordan and M. Zvelebil (eds). Left Coast Press, Walnut Creek, CA, USA, 2009. 589 pp. Price: US$ 99.00.

Archaeologists have been traditionally viewing ceramic production and use to be the product of agriculturally based societies and equating it with Neolithic revolution. However, researches done in the last few decades have shown that pottery emerged in various parts of the world towards the end of the prehistoric period. In northern Eurasia, it has been shown that the tradition of using pottery long predated the introduction of agriculture. This began initially in east and northeast Asia and progressed westwards across Siberia. This volume is an attempt to understand the origins of pottery in the region. The authors appear to have succeeded remarkably in this endeavour.

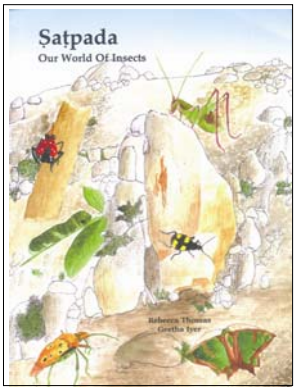
This 'synthetic overview' volume has had a long incubation period. It began

with the 'Conference on Hunting and Gathering Societies' (CHAGS) held in Edinburgh, Scotland during September 2002. A separate discussion during the 2003 European Association of Archeologists (St Petersburg) revealed a hitherto unknown (to the Western world) abundance of pottery material from the erstwhile USSR. This appeared also to bridge the chronological gap between the earliest pottery obtained from east Asia with those from northern Europe. This discovery firmed up the incipient plan to bring out a synthetic overview of northern Eurasian pottery. The drafts of the chapter were then presented in the 'Theoretical Archaeology Group' (TAG) meeting held in Sheffield in December 2005. This meeting helped identify the gaps and smoothen the corners of the historical continuum, which eventually lead to the emergence of this publication.

This volume contains 21 chapters. The first (Part I) is a long (p. 58) introduction by the editors, Peter Jordan and Marek Zvelebil both of whom are university teachers of archaeology. The last two concluding chapters (Part 4) give a global perspective on ceramic dispersals and the ^{14}C chronology of all the findings of the region (William Barnett and Peter Hommel).

The main chapters are divided into two parts. The first part (Part 2 of the volume) deals with 'Early ceramic innovations and dispersals' (14 chapters), and the second (Part 3), with 'Early pottery in forager–farmer interaction zones' (4 chapters). Part 2 contains chapters covering pottery and ceramic findings from Japanese Archipelago (Simon Kaner), the Russian Far East (Irina Zhushchikhovskaya), Korea (Daeyoun Cho and Ilhong Ko), eastern Siberia (Hugh McKenzie), the Urals and western Siberia (Natalia Chairkina and Lubov Kosinskaia), eastern Europe (two chapters, by Ekaterina Kashina and by Pavel Dolukhanov, Andrei Mazurkevich and Anwar Shukurov), Karelia (the region east of Finland, by Konstantin German), Finland (Petro Pesonen and Sirpa Leskinen), Sweden (four chapters, by Mats Larsson, Ludwig Papmehl-Dufay, Fredrik Hallgren, and Ole Stilborg and Lena Holm), and lastly, Norway (Marianne Skandfer). A major omission is China. It is here that the earliest dated pottery known so far to science has been discovered. A planned commissioned chapter on China could not materialize, according to the editors. Therefore, they have made it up partially in their introductory chapter by dealing with it in some detail.

The oldest examples of pottery discovered so far are from some cave sites in south China that show stroke- and cord-marked, round-based quartz tempered pottery jars (ca. 17,200–14,700 BP). In north China, they were manifested by a cluster of microlith cultures identified in open sites across north China plains. In southern China, a cave-dweller culture emerged along the northern and southern foothills of Nangling mountains. The



Satpada: Our World of Insects. Rebecca Thomas and Geetha Iyer. Rishi Valley Education Centre, Rishi Valley, Chittor 517 352, India. 2009. 171 pp. Price not mentioned.

The authors have to be complimented for this refreshing effort at writing a readable and informative book, obviously meant for school children; but it is really more than that. This is the sort of book that has been missing from our bookshelves and which should be written by many more such teachers in all areas of science. It is original in content and approach.

I was always dismayed by the absence of good science books published in India, written by Indian authors. This is in contrast to say a Batliboi for accountancy or bookkeeping. Engineering texts and medical books tend to be reprints or Indian editions of classics. When it comes to producing original teaching material, in spite of committees and institutions devoted to it, we are bereft of both imagination and action.

It was a pleasant surprise hence to see a book like this. In fact many more books like *Satpada* should be written. There is room for several hundreds of such books and particularly if they are written by careful teachers like these two authors, it would make a great difference to teaching science in this country.

Owl moth (*Erebus* sp.).

The really nice thing about the book is that the authors have managed to make it interesting without destroying scientific accuracy. The details of select insects are accurate and adequate. The choice of species ordinarily found around their campus will significantly aid the children in learning by experience and daring to experiment. The illustrations are crisp and valuable. The part on 'entomology as a pastime' is innovative and educational. The photographs, while not all of them are extraordinary, are quite useful in the field. I did not notice a price tag; I do however hope that a large number of students will be able to get hold of this book through bookstores.

K. S. KRISHNAN

National Centre for Biological Sciences,
GKVK Campus,
Bangalore 560 065, India
e-mail: ksk@ncbs.res.in

flat-based pottery in China appears somewhat later than the earliest pottery in southern China, and also after the earliest pottery in Japan and the Russian Far East. Further and interestingly, the northern tool tradition appears to have been linked to similar adjacent areas of northeast Asia, while the southern pebble lithic industry bore resemblances to the Hoabinhian culture of adjacent continental Southeast Asia. Throughout East Asia (China, Korea, Japan and East Siberia), pottery traditions are older than 10,000 BP. Then, as one moves westwards, pottery use by foragers in western Siberia dates back to 8000 and 7000 BP in eastern Europe, 6500–5600 BP in Sweden, and 7000 BP in Karelia (east of Finland). Chapter 20 (Barnett) is a brief overview with a perspective on pottery and foragers. The last chapter (no. 21, Hommel) is a ^{14}C chronology of all the hunter-gatherer pottery discovered in the region and beyond. They range all the way from >13,000 BP (uncalibrated), broadly in east Asia – to <4500 BP (uncalibrated), mostly in northern Europe.

This volume is the first continent-wide synthesis of pottery use of the vast North Eurasian zone (55 million km^2, almost thrice the combined size of USA and Canada). The careful choice of regions and authors and the structuring of the chapters have ensured that the reader gets a clear, almost panoramic picture of the history and development of pottery in this enormous region extending from south China, Korea, Japan, and eastern Siberia, westwards along Siberia, the Urals, eastern and northern Europe, and Scandinavia. It has also established that pottery emerged long before farming was taken up, thus putting at rest the long-held belief that pottery was a part of the Neolithic revolution.

Initial pottery is a coarse-ware fired at low temperature, having thick walls and conical shape. Most pot volumes are relatively modest. The presence of carbon crusts inside confirms that they were primarily cooking pots. Their low numbers retrieved over extended periods suggest that they were used only selectively and not widely by people following semi- or seasonally sedentary lives and spanning several thousand years, and possibly in sites where aquatic resources were important.

What is not clear yet is why pottery technology was developed by foragers/hunter-gatherers initially and the motivations behind its initial development and use of pottery. Their answers remain in the realm of speculation. The volume clearly brings out that in some regions, the earliest pottery is older than the start of the Holocene and that it predates farming in many regions. Though there are no evidences to it, it would appear also that pottery was invented independently at different locations and time. In the words of the editors, 'the data (presented) here provide unequivocal evidence that hunter-gatherer societies of the upper Palaeolithic invented the first pottery and that they were also responsible for the early westward dispersals of ceramic technologies during the Pleistocene–Holocene transition. . . . There is fetching irony in the fact that Child's concept of *ex oriente lux* (the light from the East) still features poetically the key features of this ceramic dispersal; the origins of pottery are definitely *ex oriente*, but the notion of East now extends further in time and space to encompass the Palaeolithic hunter-gatherer societies of east Asia (present-day China, Japan and the Russian Far East), rather than (the) early Holocene communities of Anatolia'.

This is a good and definitive publication. It is laced with more than 100 figures, mostly line drawings, and 25 tables. The editors are commended for the thoughtful choice of themes, authors and the excellent editing.

N. M. NAYAR

Department of Biology,
University of Kerala,
Kariavattom,
Thiruvananthapuram 695 651, India
e-mail: nayarnm@dataone.in