At the policy level, as a resultant effect of degradation rhetoric pastoral nomadism is considered as primitive to settled cultivation. Policy documents also refer to pastorals as lazy in comparison to intensive labour put by cultivators. This has resulted in schemes like 'land to landless' by using pastures ultimately affecting forage availability.

Chapter 9 discusses the theoretical framework of the analysis. It would have been better to have it before the case study of Uhl valley. The concluding chapter highlights the major conclusions from each chapter.

The arguments in the book are well supported by fieldwork and references. But at a few places statements seem illogical like the author contradicts the statement on lower herb diversity in alpine meadows of Bara Bangahal mountain range in Uhl valley of Himachal Pradesh made in a report in 1930s on the basis of the author's work in 1990s (pp. 152). Also repetition of geographical descriptions especially regarding terrain and environmental conditions of Siwalik Hills diverts attention from the context.

In summary, as part of a scientific exercise this is an excellent work on global rhetorics of environmental degradation. However, from the point of view of local issues the work may not have immediate applicability.

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Plant Tissue Culture and Biotechnology: Emerging Trends. P. B. Kavi Kishor (ed.). Universities Press (India) Ltd., 3-5-819, Hyderguda, Hyderabad 500 029. 1999. 313 pp. Price: Rs 525.

This book is a collection of fifty seminar papers presented during the symposium on 'Emerging Trends in Plant Tissue Culture and Molecular Biology' held at the Department of Genetics, Osmania University, Hyderabad during 29–31 January 1991. It offers an overview of the present scenario in the field of plant cell/tissue culture and a few aspects of molecular biology are also included. A brief review of the historical progress of Indian plant tissue culture presented by H. Y. Mohan Ram in the first chapter introduces the subject and also highlights some important problems that are faced by commercial tissue culture. The second general article 'Research Trends in Genetic Modification of Crop Plants: An Overview', deals with genetic engineering and recombinant DNA technology of crops. Specific DNA technological applications such as antisense RNA, transwitch, transposon gene isolation and plastid transformation are vividly explained. Commercial ventures in the introduction of transgenic tomato and cotton as well as the genetically engineered oils such as stearate oils, high laurate oils and high erucic acid rapeseed have also been dealt with. However, scientific presentations on rDNA technology are lacking.

The third paper on 'Haploids from Wide Hybridization in Grass Genera, Progress and Perspectives' (N. C. Subrahmanyan) introduces the mechanism of chromosome elimination which can lead to haploidy. By deploying these novel haploids, one can examine interspecific/intergeneric chromosomal rearrangements and can easily construct a chromosome-based library by genomic subtractive cloning to facilitate gene mapping and tracking of transposable elements.

Tissue culture investigators often face the problem of rejuvenation in micropropagation. Practical guidelines are offered to them in the fourth paper. The authors (Leo D'Souza *et al.*) have discussed the possibility of rejuvenation of adult materials indicating morphological as well as biochemical markers of adult materials. The paper on 'Xylogenesis *in vitro*' (Krishnamoorthy *et al.*) makes an attempt to list the markers for xylogenesis. In fact, this should help the scientific investigator to identify organogenic calli from embryogenic calli even at very early stages of differentiation. In this connection, comparative study of the development of zygotic and somatic embryos of chickpea (*Cicer arietinum* L.) by Sagare *et al.* assumes importance.

This book contains five papers on the production of medicinally important secondary metabolites. Kuruvilla *et al.* have used three permeabilizing agents to enhance the secretion of azadirachtin of which triton X100 was found to give better yield. Besides *Agrobacterium rhizogenes*-mediated hairy root culture of *Plumbago indica* (S. Jaya and S. V. Ramakrishnan) shows rapid proliferation in the liquid medium. But enhancement is not very significant. Hairy root culture can be effectively employed as a tool for enhancing the production of secondary metabolites. The same authors have also done experiments to assess a suitable medium for the production of ajmaline from callus culture of *Catharanthus roseus* cv. *alba*. Another interesting paper on the study of different factors that affect *in vitro* production of artemisinin (K. Vishweshwara Rao and M. Lakshmi Narasu) offers new insights in the production of artemisinin, an antimalarial agent. The investigators, using different media, varied nitrogen sources, precursors such as mevalonic acid, geraniol, linalool, methanol and camphor, and fungal elicitors, have come to the conclusion that incorporation of boron, casein hydrolysate and gibberelic acid enhanced artemisinin production by about 25%, 36.5% and 65%, respectively. H. Gokul and D. H. Tejavathi in their paper on '*In vitro* production of alkaloids in *Cissampelos pareira* L. (Menispermaceae)' have studied curine accumulation in the callus. They are of the opinion that ABA has considerable influence on the production of curine in relatively slow growing calli.

Reports on somaclonal variations are declining in recent times for various reasons. The study of Susan Eapen *et al.* on somaclonal variants in peanuts brings in new knowledge and offers hopes for using *in vitro* culture technique and screening of subsequent regeneration in the field, thereby rendering it possible to isolate agronomically important useful mutants in peanuts. Proceedings on micropropagation of commercially important plants such as *Eucalyptus* species, mango hybrid, papaya, cashew, vanilla and coffee are of great help to the tissue culture workers.

Alpinia calcarata Rose. is an important rhizomatous Zingiberacean medicinal plant whose active principle compounds are alpinine and glagin.

Hence, micropropagation through organogensis of *A. calcarata* (K. P. Martin and Molly Hariharan) will be of interest. *In vitro* plant regeneration study of *Curcuma aromatica* as well as clonal propagation study of *Acorus calamus* L. may be of great help to pharmacologists.

The paper on 'Use of Molecular Markers in Coffee' (H. L. Sreenath) offers innovative knowledge to geneticists. Better information on the degree and distribution of genetic variation is essential for developing more efficient ways of evaluating, utilizing and conserving biodiversity. For this, Restriction Fragment Length Polymorphism (RFLP) analysis seems to be time consuming and in its place a novel technique RAPD (Random Amplification of Polymorphic DNAs) by the polymerase chain reaction is finding extensive application in plant genetics. It can be used for clone identification, pedigree studies, genetic mapping, estimation of outcrossing rates, population differentiation, etc. Yet another new technique known as AFLP (Amplified Fragment Length Polymorphism) overcomes the disadvantages of the earlier techniques and can be effectively employed for coffee genome analysis.

Optimization of PCR-based DNA fingerprinting in rhizobial bacteria done at the Institute of Microbiology, Prague, Czech Republic comes across to the readers as an invaluable article. In this study, RAPD has been optimized by using two arbitrary oligos individually in eight strains of rhizobial DNA isolated from different cultivars. A very important finding is that optimum conditions have been standardized for generating the genomic fingerprints of each individual bacteria.

Indeed, this book comes as a collection of scientific papers on diverse scientific investigations on plant tissue culture and biotechnology. Readers will certainly be enlightened with new trends in this field of research in India.

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Annual Review of Neuroscience 1998. W. Maxwell Cowan, Eric. M. Shooter, Carles. F. Stevens and Richard. F. Thompson (eds). Annual Reviews Inc., 4139 El Camino Way, Palo Alto, California 94303-0139, USA. Vol. 21. 524 pp. Price: Individuals US $ 65; Institution US $ 130.

The major focus of research in the next millennium will be the brain. Anatomy, biochemistry and physiology will give way to an integrative approach. Multidisciplinary research aimed at understanding the nervous system functioning will have to begin with educating the uninitiated and reorienting the practitioners. The sheer pace of progress and volume of new discoveries and thoughts make it difficult to keep pace with the literature. More and more current information will go electronic and the only printed material that will not be dated will be reviews. One will need to have comprehensive reviews to guide one through the mass of information on the super highways. The *Annual Review of Neuroscience* that has been eminently successful in help update one's understanding each year may then fill in this role even better. The current issue reflects a breadth that is likely to set the trend in neuroscience research in the coming years.

The nature vs nurture debates have been the most bitter in the context of human intelligence. The lack of real biological perspectives and biased views of what is desirable or undesirable have often resulted in unresolved intellectual controversies and dubious interventions by the unscrupulous based on faulty or tailored results of so-called measures of intelligence. Thus, even a discussion on genetic basis of human behaviour, leave alone a systematic study of such, has acquired a shade of taboo. But one cannot escape paying attention to genetic influences on human behaviour even as one has to be cautious. Genes do determine the basic structure and circuitry as well as lay the foundations for the substratum on which environment can imprint its influence. What is important is that the environment can enrich this in many ways. Decidedly hence, genetic changes will put certain limits resulting in deficits or cause pathological conditions and understanding these will be of value in alleviating them in an informed manner. In one sense, every human being is a different combination of genetic alterations and we are several billion such. This will thus provide the largest pool of variants if properly studied. Given the rate at which the human genome is being sequenced it will not be too long before we can identify a whole slew of behaviourally relevant molecules if the genetics of complex human behaviour can be objectively analysed. McGue and Bouchard's review of recent studies on genetic and environmental differences in psychological and psychopathological characteristics is of great significance and timely. This theme appears once again in the review by Price and Sisodia.

Eve Marder focuses on computational implications of synaptic mechanisms. A rich repertoire of behaviour reflects the dynamic changes in neural circuits resulting from synaptic activity. The neuronal and synaptic properties that are provided by cellular and molecular neurobiology need to be assimilated into the system neuroscience attempting to understand the ensembles of neurons that underlie behaviour. This review is an attempt to highlight information on cellular and synaptic properties that will have important implications in network properties. The review stands out as an example of the more desirable in content and style.

The visual cortex is a much-studied system and a model for analysis of nervous system function. A detailed understanding of functional architecture that began with electrical recordings has been in recent times enhanced by functional imaging and *in vivo* optical recordings. We now have a better understanding of orientation and ocular dominance columns, direction selectivity, movement encoding and frequency tuning. The review details new studies on the macaque. These animals being close to humans afford useful extensions to our own visual perception. A companion review by Parker and Newsome (Sense and the single neuron) traces developments in cognitive neuroscience and methods of analysing relationships between neuronal firing and perception. The focus is on enlightening the relationship between cellular neuronal signals and psychological processes.

The cell biology of synapse has become one of the most exciting and expanding areas of research in the past five years. Thomas Sudhoff has contri-