reviewed by Malandro and Kilberg. Characterization of transporter genes should help in understanding the molecular basis of the autosomal recessive genetic disease cystinurea which is characterized by high levels of urinary cystine and cationic amino acids leading to cystine stones and renal disease.

Biochemistry of the '21st amino acid' selenocysteine and the enzymology of selenocysteine-containing proteins is reviewed by Stadtman. Proteasome are essential components of ATP-driven proteolytic pathway in eukaryotic cells. They are also involved in the conversion of transcription factors NF–κB and NF–κB2 from inactive to active forms and antigen presentation. These aspects are reviewed by Coux, Tanaka and Goldberg. The physico-chemical factors that influence interaction of sugars with lectins are becoming clear with the determination of the X-ray structures of several lectin–carbohydrate complexes. These aspects are dealt with by Weis and Drickamer. The 3D structures of the primary subunit, TATA box-binding protein and the core promoter of the transcription factor 11D have helped in understanding its molecular architecture. These aspects and recent functions on the complex interactions of the basal transcription machinery with regulatory transcription factors, especially through co-activators have been reviewed in detail by Burley and Roeder. Various aspects of structure and function of connexons and connexins, i.e. proteins that form gap-junctions that aid in intercellular communication, electron transfer in proteins and hematopoietic receptor complexes are subject of reviews that deal with protein structure.

In the area of cellular signalling there are reviews on signal transduction in the early stages of development in *Dictyostelium* (Parent and Devreotes), lipo-chitooligosaccharide molecules as signal factors used by rhizobia (Dénarié, Debellé and Promé) and cross-talk between the nucleus and the mitochondrion that enable assembly and proper functioning of proteins in the mitochondria (Poyton and McEwen).

Protein prenylation and protein transport across the endoplasmic recticulum and bacterial inner membranes have been popular topics for reviews and essays in recent years. Hence, it is somewhat surprising to find reviews on these two areas. While almost all the reviews are topical and exhaustive, four articles related to DNA repair are perhaps unnecessary in one volume.

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Deterministic Chaos: Complex Chance Out of Simple Necessity. N. Kumar. University Press, 3–6–272, Himayatnagar, Hyderabad 500 029. 1996. pp. 96 + xiii. Rs 70.

About a decade ago in *The New Physics* (ed. Paul Davies), Joseph Ford wrote a chapter entitled, 'What is chaos, that we should be mindful of it?*' . The asterisk at the end is for a footnote informing us that this is in fact a quote from Psalms in the *Bible*. The chapter begins with a quotation from *Hamlet*, 'There are more things in Heaven and earth, Horatio/Than are dreamt of in our philosophy'. The subject of chaos has truly linked together such diverse aspects of human intellecual existence, from spirituality to aesthetics to . . . well, the hard core determinism of classical physics. Deterministic equations governing the change in space and time of realistic natural objects are inevitably nonlinear. Chaos is a consequence of nonlinearity. No other branch of theoretical physical sciences has generated so much excitement in the last decade as chaos. Hoards of papers and a large number of books have appeared on this.

Spirituality and quotations aside, most books on chaos address Ford's question in colourful pictures of beautiful objects, real and abstract. In such a crowd of books on chaos, why another book? Well, for one, most of these fascinating books are nothing but library treasures and that too only available in a few libraries in a country like India. N. Kumar's book is a greatly needed monograph affordable for every college student.

But does it have everything that those books that are tens or hundreds of times more expensive have? Not really. But then, none of those books has everything you want to know about chaos either. James Gleick's popular book is nice to read once over, but it is too pedestrian for any serious student of science. Books with colourful pictures of turbulent smoke and fractal landscapes are attractive, but there is always something missing. Of course, books like the one by Georg Schuster are more comprehensive and certainly a necessity for most researchers in this area.

The JNCASR monographs are meant to be educational for students and teachers who may or may not be engaged in active research. This is where Kumar's concise and yet comprehensive monograph wins over the rest. It provides a reasonably comprehensive answer to Ford's question cited above.

Kumar starts the first chapter with a general overview, intentionally written in a discursive style. The second chapter elaborates the basic concepts like phase space, flows and Poincaré section, etc. Then come four chapters on details – simple models, strange attractors, conservative systems and fractals. A chapter on concluding remarks is followed by four appendices. These, though required as supplements to the text at different points, may be looked at right after the first chapter. Another appendix with a detailed analysis of an oscillating chemical reaction may have been useful.

There are a number of frontier problems judiciously left untouched except for brief comments in the concluding remarks. These include quantum chaos and controlling chaos. While these are important questions currently being pursued by active researchers, detailed discussion on these could not be made part of such a concise monograph with the specific purpose that it has – namely to supplement texts on nonlinear differential equations, classical physics, or statistical mechanics.

Kumar is one of the most well-known Indian physicists. The long span of his research career in classical physics and his experience as a physics teacher brings an authenticity to his rendering of the subject matter. In addition, he has a rare combination of smooth and precise diction. At times, however the necessary brevity makes the reading a bit condensed and for a beginner, it is likely to be difficult. For a graduate student, on the other hand, it should be a useful pocketbook to carry around. A major lacuna, and a surprising one from Kumar, who is known to indulge in problem-solving with any student who approaches him, is the absence of exercise problems. This is compensated by occa-

sional provocations to carry out the various cases investigated in the text. This can be said about the discussions on the logistic map (the famous model used by Robert May for the measles epidemic) and baker's transformation, for instance. A number of good books are referred to now and then.

This and the other monographs published in this series are not yet widely known to most students and teachers in the country. Greater effort in publicising these books will be useful. A suggestion from this reviewer for a future monograph is for one on geometry and topology for students of physics and chemistry. This could be a complementary reading to a chaos.

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Errata

Plant life under extreme environments

H. Y. Mohan Ram
Curr. Sci., 1997, **72**, 306–315

The cover caption on page 290 should read: The vegetation in deserts is scanty. Goats have learnt to feed on whatever is available to sustain them (H. Y. Mohan Ram).

Page 310. Right-hand side, 2nd Figure, the caption should read: Sewan grass (*Lasiurus sindicus*) growing on sand. It is one of the most productive grasses of the Thar desert (M. M. Bhandari).

Page 311. In legend to the figure on left top, the name of the plant should read: *Suaeda fruticosa* and not *Suade fruticosa*.

Science policy in neo-liberal India: Corporate culture, basic science and scientific credibility

Suresh K. Mahajan
Curr. Sci., 1997, **72**, 295–299

Footnote on page 295: read 25 January instead of 24 January; read Dept of Civics and Politics instead of Dept of Civics and History.

Page 298, middle column, line 11 from top: read Rs 14,000 crores instead of Rs 1,400 crores.

Manganese mobilization from the Western Continental margin of India

D. N. Yadav
Curr. Sci., 1996, **71**, 900–905

Page 903, Table 2, column 2, 1st line. Number should read as ~21 instead of ~35.

Page 904, Figure 4. All units given for F_r, F_s, F_{Mn} should read as g/y instead of μg/y.

Page 905, 2nd line. Units for F_s, F_{Mn} s as g/y.

Conformation of ATPMg(II) b at the specific site on bovine s albumin: ^{1}H-nuclear magmetic resonance study

Hari Pada Maity and Gotam K. Jarori
Curr. Sci., 1996, **71**, 906–914

1. Equation (5),

$$W_{ii} = \frac{\gamma^4 \hbar^2 \tau_c}{10} \left[1 + \frac{3}{1+\omega^2\tau_c^2} \quad \frac{6}{1+4\omega^2\tau_c^2} \right] \sum_{k \neq i}$$

should be

$$W_{ii} = \frac{\gamma^4 \hbar^2 \tau_c}{10} \left[1 + \frac{3}{1+\omega^2\tau_c^2} + \frac{6}{1+4\omega^2\tau_c^2} \right]$$

2. In Table 2

$$\tau = \frac{\nu_2}{\cos} p \quad \textit{should be} \quad \tau = \frac{\nu_2}{\cos p}$$

3. In page 909, under '*Binding of ATPMg(*

$$|\omega_A + \omega_B| = \Delta\omega_M < \tau_A^{-1}, \tau_B^{-1}$$

should be

$$|\omega_A - \omega_B| = \Delta\omega_M < \tau_A^{-1}, \tau_B^{-1}$$

Edited and published by Prof. P. Balaram and Prof. S. Ramaseshan, Current Science Association, Bangalore
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