This cumulative cycle has resulted into the exponential growth of Takers' population.

Further, Ishmael demonstrates with example that the effect of breaking this law by any species leads to extinction of many species, eventually also including the species which broke the law.

Now, Ishmael turns our attention to a widely accepted but hardly understood mythological story about Adam, Eve and their sons – Cain and Abel. It is an attempt to reason out the mythology with new interpretation and see its relevance from Leavers' point of view.

Ishmael and his student got engaged in a longest conversation and inferred the following points:

- Takers' civilization, starting from the Fertile Crescent[6], was expanding all around before about six to ten thousand years.
- Within about four thousand years, they were confronting another civilization: Semites – the herders. Semites saw Takers acting like Gods – as if they had the knowledge of Gods (knowledge of good and evil who should live and who should die – knowledge of the rulers).
- The story of Cain murdering Abel must have been war propaganda of Semites in their long drawn battle against Takers.
- The story thus has Abel – representing Semites – as the God's favoured son whereas Cain – the agriculturist Taker – as the cursed son.
- The story of Adam and Eve is a sort of reconstruction whereby Semites sought to justify how Takers happened to be the way they are: acting like Gods after eating the forbidden fruit of knowledge.
- Had this story been originated among Takers, fruit of knowledge would not have been forbidden, and further, the agriculturist Cain in that case would not be the cursed son.
- All the same, if the Takers had authored these stories, then eating of the forbidden fruit would not be called 'fall', rather it would be called 'ascent'.
- Had this story been written by the Takers, agriculture would not have been portrayed as a curse. Semites believed that the Takers have been cursed to live a laborious life of producing food for themselves.

It can be seen that the author has made a full circle. He started by showing the way we see the world and ourselves. Then he went on to analyse the premises that explain our perception and lifestyle. He further shows us, through a beautiful analogy, where we are heading to with this way of living and that our search of 'How to live' has been confined to religious or philosophical realms only. And then he formulates the law of limited competition by observing community of life along with the implications of breaking this law. He returns to examine the roots of Takers' premises and establishes that the most widely accepted belief regarding Takers' origin has been a 'mistaken story'! Thus, he has put together all the elements of a story – a scenario interrelating man, the world and the Gods – and reconstructed a new mosaic of understanding from the same factual pieces!

Proceeding further, he winds up with the quick view at Leavers' premises and also shows the new role for the mankind – not only to survive but to lead by setting an example!

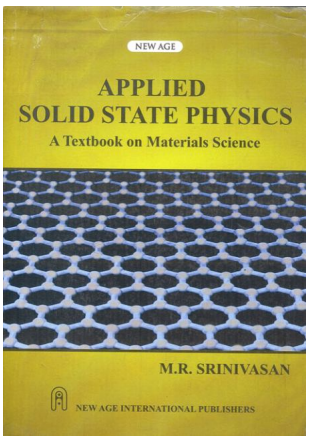
Leavers believe that they belong to world as any other species does. They respect and preserve the knowledge of what works well for them to live in harmony with their surroundings. More importantly, they have their own way of living but do not believe that it is the only right way. The author suggests that in order to survive forever, the Takers must spit out the fruit of knowledge by giving up the idea of controlling the world. Every species continues on its own path of evolution to become intelligent and self-aware. Man being the first, should make room for other species for their evolution. It does not mean that we should go back and live like hunter–gatherers or herders; rather, we should start inventing ways to live in harmony with the life and world around us.

By the end, Ishmael apparently dies leaving a message: 'With gorilla gone, will there be hope for man?'

1. http://readishmael.com and http://www.ishmael.org/welcome.cfm
2. http://dictionary.reference.com/browse/ishmael
3. Alfred Kazin (b. 1915), US critic, 'Ishmael and Ahab,' Contemporaries, Little, Brown (1962); http://www.multimedialibrary.com/articles/kazin/alfredmelville.asp
4. http://www.blupete.com/Literature/Biographies/Philosophy/Malthus.htm
5. http://www.britannica.com/EBchecked/topic/360609/Thomas-Robert-Malthus/222944/Malthusian-theory
6. http://www.public.iastate.edu/~cfford/342-worldhistoryearly.html

KALPESH JOSHI

Indian Institute of Technology Gandhinagar
Ahmedabad 382 424, India
e-mail: kalpeshjoshi@iitgn.ac.in



Applied Solid State Physics: A Textbook on Materials Science. M. R. Srinivasan. New Age International Publishing, 7/30A, Daryaganj, New Delhi 110 002. 2012. 816 pp. Price: Rs 399.

The area of materials science/solid state physics is so vast that no single book can even attempt to cover all the topics in this area. The present book is different in that crystal structure, mechanical and thermal properties are treated in far greater detail than books typically used in a first course on solid state physics. There is also a chapter on composites. A good feature of this book is the number of worked examples and problems at the end of each chapter. This is useful for both teachers and students and not common in many typical materials science or solid state physics books. Therefore this is a good book for a first course in materials science.

I briefly point out what, in my opinion, are the shortcomings of this book. It does not treat electronic structure of solids in any detail (like basic ideas of band theory) and constitutes a major omission, especially for a first course. Solid state

physics (and materials science) is about real materials. The author could have included examples of real materials and also brought to the attention of readers some typical applications of the material of a given chapter. This would have significantly improved the usefulness of the book. For instance, in the discussion of mechanical properties, it would have been useful to point out the relevance to MEMS or in the discussion of strain to the strain engineering of materials. I confess that the choice of these examples is driven by the bias of the reviewer. To be fair, most books do not focus on real materials or stress the possible applications. It is hence all the more reason for a modern book to do this and I hope that it will be rectified in a subsequent edition.

There are many errors – some arising primarily due to inaccurate statements. For example, the statement on p. 604, 'The Fermi level plays the role of a potential which directs the flow of electrons.' A more accurate statement would be: 'The gradient of the electron (hole) quasi Fermi level is proportional to the electron (hole) current.'

Another example on p. 593 states, 'Metal films having thickness greater than 100 nm are totally absorbing'. In reality, metal films have high reflectivity and only the fraction not reflected can get absorbed. There is some clarification in the following page – but can add to the confusion of the student. Similar confusion exists in a discussion related to the plasma frequency. There are many such errors in the book and these should be corrected at least in the next edition.

Notwithstanding these shortcomings, overall this is a good textbook on materials science. The publishers have not priced it prohibitively high and hence it can easily find a place in college libraries. This fact, along with the worked examples makes it a good reference book in a first course on materials science.

K. L. NARASIMHAN

Department of Electrical Engineering,
Indian Institute of Technology Bombay,
Powai,
Mumbai 400 076, India
e-mail: klntifr@gmail.com

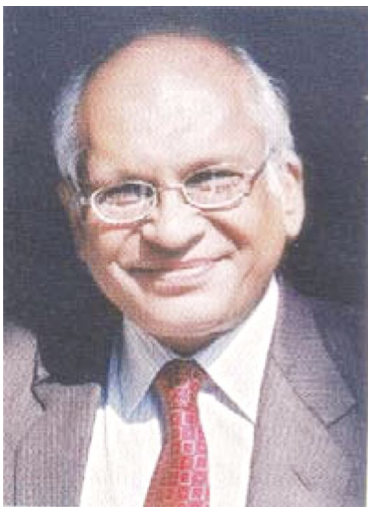
PERSONAL NEWS

Shyam Swarup Agarwal (1941–2013)

S. S. Agarwal, former Director, Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGI-MS), Lucknow, passed away on 2 December 2013 following a massive heart attack. He was a legendary figure in medical sciences, who excelled in whatever he did and acted as a role model for his students and colleagues.

Agarwal was born in Bareilly, Uttar Pradesh (UP) on 5 July 1941 to Satya Swarup Agrawal and Shyam Dubari. After obtaining his B Sc in 1958 from Lucknow University, he qualified for MBBS (Hons) with distinction in 9 out of 10 subjects in 1963, and MD (also with Hons.) in medicine in 1966. This performance in his UG course continues to remain a record for the institution till date. He was awarded the Chancellor's Gold Medal for being the best student amongst all the faculties of Lucknow University in 1963. In 1967, he was awarded a postdoctoral fellowship of the International Agency for Cancer Research, and proceeded to work at Fox Chase Cancer Centre in Philadelphia, USA, where he specialized in the fields of genetics and immunology. His major research contribution was the discovery of the role of DNA polymerase in initiation of DNA synthesis in resting human lymphocytes upon stimulation with phytohemagglutinin. He also made significant contributions to studies on fidelity of DNA polymerases and DNA repair.

Agarwal returned to India in 1970 and started his teaching career as a lecturer (1970–73) in medicine at his alma-mater, the King George Medical College (KGMC), Lucknow and then became a



reader (1973–86). Soon after joining KGMC, he set up a Medical Genetics Unit in the department which started spreading the importance of genetics in medicine. This led to the department getting several multi-centric ICMR Task Force projects in the field of medical genetics, such as study of genetic effects of MIC gas leak in Bhopal and delineation of Handigodu disease, which has peculiar geo-ethnic traits from Shimoga district and few talukas in Chikmaglur district of Karnataka. Agarwal's studies identified it to be a unique type of autosomal dominant spondylo-epiphyseal dysplasia, which has been recognized in the international classification on sketal dysplasias as a separate entity. Another of his major contributions during this period was the clinical trial of gugulipid, a product developed by the Centre Drug Research Institute (CDRI), Lucknow as a hypolipideamic agent, based on gum guggul (an important drug of Ayurveda). During the course of this project I had an opportunity to closely interact with him. It was a pleasure to see his depth of understanding in designing the clinical trial protocols and the meticulousness with which the phase I–IV clinical trials were carried out and monitored. Results of these trials were closely monitored by a high-powered committee set up by DCGI, and cleared without any questioning. This led to the marketing of gugulipid in India as a modern