

Editorial

Priti Shankar, Associate Editor

A young friend recently presented me with a book entitled *Gardner's Workout, Training the Mind and Entertaining the Spirit* by Martin Gardner, who occupies a unique position in the mathematical community. Gardner was the author of a column called "Mathematical Games" which ran for twenty five years in the *Scientific American* magazine. Author of more than fifty books, a top class magician and debunker of pseudoscience and quackery, Gardner worked with Roger Penrose, John Conway and Donald Knuth among others, on recreational mathematics. Without a doubt, many students who went on to make mathematics their life's work, did so because of his inspiring and enlightening articles which indeed provided athletic workouts for under-exercised minds. Gardner has dedicated the book to "all the underpaid teachers of mathematics everywhere who love their subject and are able to communicate their love to their students." In an interview with him appearing in the July 2005 issue of the *Notices of the American Mathematical Society*, he acknowledges the influence his inspiring high school physics teacher had on his remarkable career.

An unfortunate phenomenon in today's world is the fact that very few students of science and mathematics aspire to become teachers. There have been several initiatives undertaken by our national bodies to attract bright young people towards a career in mathematics and science. But it goes without saying, that without a continuous reinvestment in the development of the very foundation of our scientific work force, namely school and undergraduate college teachers, our scientific capabilities are going to be at high risk. There may be doubts in some quarters about whether research scientists and mathematicians understand enough about pedagogical issues in university education, to contribute significantly to improving teaching techniques. However, they can perhaps contribute to improving the



Email:priti@csa.iisc.ernet.in

Without a continuous reinvestment in the development of the very foundation of our scientific work force, our scientific capabilities are going to be at high risk.



Concern for man and
his fate must always
form the chief
interest of all
technical endeavors.
Never forget this in
the midst of your
diagrams and
equations.
Albert Einstein

mathematical expertise of high school and college teachers by providing breadth and insight via courses, and, hopefully, by writing articles in magazines like *Resonance*. The debate over stressing pedagogy at the expense of content, versus content at the expense of pedagogy is an old one, and may perhaps never be resolved. However, we encourage readers to convey their feedback on the readability of articles that have been published in *Resonance*.

Featured on the back cover of this issue is the great mathematician and teacher, Saunders Mac Lane. I was amazed to read in the *Mathematics Genealogy*, that he supervised his last PhD student at the age of eighty eight and had, at the last count, over a thousand known academic descendants (PhD students, and *their* PhD students, and so forth). His book with Garrett Birkhoff, *A Survey of Modern Algebra* is an excellent reference for those wishing to apply the basic concepts of algebra to the applied sciences.

The year 2005 has been declared by the United Nations as the “World Year of Physics” to commemorate the publication of three celebrated papers of Albert Einstein. *Resonance* has brought out several articles on the life and work of Einstein. In this issue, Kamal Datta gives an interesting account of the early life of Einstein, and events that shaped his political and social views. It appears that his friendship with the Austrian socialist Friedrich Adler and the atmosphere of philosophical and political ferment in Zurich, where Einstein was at the turn of the century, contributed greatly to his socialist leanings. One of the 1905 papers of Einstein was on Brownian motion. Debashish Chowdhury emphasises the importance of Einstein’s quantitative theory of Brownian motion and its diverse manifestations.

The work of various mathematicians on group theory leading up to the Eilenberg–Mac Lane Cohomology theory of groups is outlined by Sridharan. Spintronics is a field which has extensive commercial applications; an introduction to the basics of this field is provided by Srinivasan. And finally, Ramesh Maheshwari provides an interesting insight into the lives of heat-loving organisms or thermophiles.

