etc. As an alternative path for the future, Khare described the developments in the areas of spintronics and orbitronics.

M. A. Pathan (Aligarh Muslim University) in the mathematical sciences section spoke on 'A new perspective on lie theory and special functions'. He threw light on differential equations and special functions via Lie algebra, representations of Lie groups, Lie derivatives, and so on. He also included the details of Rogers–Ramanujan identities, Hurwitz zeta function, Selberg function and multi-variate differential equations in his talk.

The new biology section (including biochemistry, biophysics, molecular biology and biotechnology) had R. V. Hosur (TIFR, Mumbai) speaking on 'NMR in structural biology'. He reviewed recent advances in concepts and techniques that have led to newer applications in spectrometer designs and technologies. His talk also included NMR determination of macromolecular structures, structural propensities in unfolded and partly folded proteins, secondary chemical shifts, nuclear Overhausser effect, residual dipolar couplings, dynamics in proteins, etc.

R. S. Sirohi (IIT, New Delhi), in the chemical sciences section, spoke on 'Speckle interferometry and some of its biomedical applications'. He gave a detailed description of superposition of speckle patterns, uses of speckle interferometry for electronic recording of flight fields as well as biomedicine ranging from deformation studies to imaging.

R. C. Rajak (Bundelkhand University, Jhansi), in the plant sciences section, covered 'Fungal diversity: Perspectives, issues and opportunities'. He described how relevant fungi are in the present scenario of global biodiversity programme. Inadequacies in resources have posed some critical problems for proper development of mycology in India. However, the launch of the BIO-NET International in 1993, marked an important step forward in relieving the taxonomic impediments, thus providing a mechanism to maximize the use of available resources.

Saroj Kr Sanyal (Bidhan Chandra Krishi Vishwavidyalaya, West Bengal), in the agriculture and forestry sciences section, spoke on 'Arsenic contamination in agriculture: A threat to water–soil–crop–animal–human continuum'. His presentation overviewed the complex problem of arsenic toxicity in agroecosystems receiving contaminated groundwater for irrigation purpose with emphasis on soil as an efficient sink and entry of arsenic in the food chain. He explained how accumulation of arsenic in soil, plants, plant organs, livestock, and livestock products is a combined function of arsenic input to the time period of arsenic loading in as well as arsenic retention capacity of the system.

Mahesh Bhargava (Haraprasad Institute of Behavioural Studies, Agra), in the anthropological and behavioural sciences section (including archaeology, psychology and educational sciences), spoke on 'Positive psychology and holistic health'. His lecture covered life problems and challenges, positive concepts of holistic health, behavioural manifestation indices and also Bharatiya concept of health and happiness.

A new chapter of cooperation opened up in Indo-Pak relations by the visit of Anwar Nasim, Chairman of Pakistan's National Commission on Biotechnology during the Science Congress. Nasim said that Pakistan was keen to cooperate with the Indian scientific community and discuss solutions to common problems in agriculture, and the eradication of poverty. He also felt that there is a wide scope for Pakistan to seek India's expertise in the field of cultivation of bio-saline land. He announced that a formal meeting of scientists of both the nations would be held in Lahore to solve some of the problems facing South East Asia.

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# The Berlin-3 meeting*

The Berlin-3 Meeting (Progress in Implementing the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities) was hosted by the School of Electronics and Computer Science, University of Southampton, with financial support from UK Joint Information Systems Committee and the Network of Excellence in Digital Libraries.

Incidentally, this School is headed by Wendy Hall, who was the President of the British Computer Society last year. Also, Tim Berners Lee, the inventor of the World Wide Web is on the faculty here. More importantly, it is here that the Eprints software, used by many institutional archives around the world, was created and perfected.

The meeting was to monitor the momentum and increase implementation of the Berlin Declaration on Open Access. It was attended by some 70 participants, including those from major European Union research organizations such as CNRS and INSERM (France), Max Planck (Germany), CERN (Switzerland) and many universities from UK, Portugal and Italy. There were also advocates of Open access (OA) such as Jean-Claude Guedon, and representatives of SPARC, PLoS, BioMed Central and the Electronic Publishing Trust. I was the only participant from the developing world.

The most important outcome of the meeting was the agreement on recommendations for a concrete practical policy that institutions can now adopt in order to implement the Berlin Declaration and provide open access. Until now, all we had was an abstract expression of principle and assurances of support.

The provisional recommendation agreed on is as follows: In order to implement the Berlin Declaration, institutions should (i) implement a policy to require their researchers to deposit a copy of all their published articles in an open access repository, and (ii) encourage their researchers to publish their research articles in open access journals where a suitable one exists and provide the support to enable that to happen.

Significantly, the recommendation places the need for depositing papers in an OA archive ahead of publishing the paper in an OA journal. Also, this recom-

*A report on the Berlin-3 Meeting held at Chilworth Manor, at the Research Park for the University of Southampton during 28 February–1 March 2005.

mendation is in stark contrast to the recent US National Institutes of Health policy that allows journal publishers to prevent authors from archiving their papers till 12 months after publication.

In his keynote address, Tony Hey (Southampton) spoke about how we could enhance the scientific value of archived documents by linking them to the major scientific databases and the need for setting up digital curation centres. This was followed by reports on experiences of a number of major European organizations. It was interesting to note that OA-awareness was high in universities in Scandinavian countries, The Netherlands, Italy and Portugal, but less so in France (apart from INSERM and CNRS) and Germany (apart from Max-Planck). The experience in CERN was encouraging and positive, and within four weeks of the Southampton Conference, CERN has adopted and registered its Open Access Policy. http://www.eprints.org/signup/sign.php and http://www.eprints.org/signup/fulllist.php

Stevan Harnad explained his 'keystroke strategy' and stressed the importance of informing authors around the world that international impact, etc. was just a keystroke away for them.

In my presentation I gave an overview of the current status of OA in India. At the Indian Institute of Science (IISc), Bangalore the archive is growing steadily, but what is more important is that Rajashekar and colleagues are carrying out research on OA. For example, they have integrated the features of Greenstone into Eprints as well as made CDS/ISIS-based databases OAI compatible. In Mumbai, D. K. Sahu (MedKnow Publications) is bringing out two dozen medical journals, all of them in OA. He has recently shown that going OA has improved the visibility and citability of papers published in these journals. At the Indian Statistical Institute, Bangalore, A. R. D. Prasad has set up a repository for library and information science. All the journals of the Indian Academy of Sciences, Bangalore and the Indian National Science Academy, New Delhi are OA journals. Beyond these, there was not much to report. Although many workshops are held to train librarians and scientists in the use of Eprints and Dspace, rarely does anyone set up an archive. Nor are policy makers taking steps to implement OA. Before the end of 2005, we may see some change for the better.

Finally, Fred Friend (University College of London, JISC and Open Society Institute) outlined the road map to 100% OA. He said that the barriers to full implementation included author motivation and acceptance that OA was respectable. We need to gain support from key scientists and need to obtain powerful allies (e.g. patient groups, telecommunication companies – which would benefit from full OA). We need to allay the fears of societies, and add value for scientists.

Three additional presentations were made in the morning, ahead of the main programme. Alma Swan presented results of some surveys she had conducted. According to Swan, a large proportion of scientists are ignorant of the benefits of OA archiving and there is therefore a need for focused advocacy. Her surveys have also revealed that many scientists will gladly archive their papers if they are asked to do so. Should we then recommend that universities and funding agencies mandate self-archiving by authors? There is some reluctance among scientists to mandate anything. Even in India, senior researchers are not happy with 'mandating'. It was suggested that the authors would be encouraged to deposit their papers in an institutional archive, if such depositing could be linked to performance assessment. Other practical benefits of having all university research output deposited in the university repository include internal record-keeping, asset management, CV-generation, grant applications and research visibility. These should be sufficient in themselves to motivate making self-archiving an official university policy. Bill Hubbard (SHERPA project) mentioned that 93% of journals acquired by the University of Nottingham allowed self-archiving. Derek Law stressed that Scotland was ahead of England in having a national information strategy.

The next Berlin Declaration follow-up meeting (Berlin-4) will take place in Germany at Potsdam in October 2005; the draft programme is already on the way (see http://www.zim.mpg.de/openaccess-berlin/index.html). It has been proposed that there will be a session on OA and developing countries at this meeting. OSI is willing to support such a session.

Journalists from *The Guardian* and the *Chronicle of Higher Education* and Richard Poynder, who writes on developments in information access, were there to cover the conference.

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