

# Bulgarian Revival

A workshop called Marketing Scientific Products took place in Sofia on 5 March. Organized by the Sofia branch of the Bulgarian Union of Physicists, it gathered scientists (mainly from the Bulgarian Academy of Science and Sofia University), businessmen and administrators, writes Michael Bushev.

The opening speeches of officials pointed to the following trends. Bulgaria is slowly crawling out of the deep potential well it was thrown into for nearly half a century by Communism. It is astonishing how ineffective a Communist regime can be in organizing the economy, use of energy resources and of raw materials. Science was an unwanted guest in the megalomaniac industrial and agricultural projects of the Communist government. Thus, a lot of unused scientific (and, generally speaking, intellectual) products have accumulated. On the other hand, poor financing (some 0.14% of the gross national product) deteriorated conditions of scientific work, and consequently an ever growing brain-drain is the overwhelming feature of present-day science in Bulgaria. The main objective of the workshop was to give a good start for the rational use of scientific products.

An accompanying exposition demonstrated laser installations, semiconducting optoelectronic devices, various types of synthetic crystals, metal and plastic details moulded by the method of 'Counter pressure', holographic products, systems for monitoring ecological conditions, computer products and computer simulations.

The discussion boiled down to the following conclusions. 1. Bulgarian science offers high intellectual potential which deserves much more attention by national and international scientific and business circles. 2. The science market should attain a well developed infrastructure conformable to international standards. 3. In periods of economic crises investments in science offer the best payoff (as proved by the US investments in science during the years of the Great Depression).

Bulgarians have a phrase for it: "God helps those who help themselves." Bearing this in mind, the participants proposed to call the workshop on a periodical and broader basis.

Michael Bushev is the Bulgarian correspondent for *Europhysics News*



## New Online Journal

In Autumn of this year the British and German physical societies will launch a new general physics journal which will be free to readers. To be called the *New Journal of Physics*, the Internet-based journal will require authors to pay for articles accepted. And being free to anyone with access to the Internet, it will be significantly different from other general physics journals.

The Institute of Physics, which already owns a whole bunch of successful journals, and the German Physical Society (Deutsche Physikalische Gesellschaft), which doesn't own any, agreed on the way forward on 25 March by signing a declaration of intent. The two partners will co-own the journal.

The charge for articles will probably be US\$ 500 (450 ecus) per article. It may be cheaper for authors in Eastern European countries. And may be cheaper for theoreticians, too. "For our colleagues in Germany, for the theoreticians, in the first few years, it will be very difficult to get this money from their university budget," says Markus Schwoerer, President of the DPG, who hopes to find help from money-giving foundations.

The online journal will have no paper version. But will have page numbers so that articles can be cited. And articles will be peer reviewed, as they are for paper-based journals, but published on the Internet as soon as they are accepted. In

**Above** Markus Schwoerer, President of the DGP, which has decided, together with Britain's IOP, to move online and publish a physics journal with no subscription charge

this way a continuous flow of articles will appear on the Web. Keeping up with new developments in physics will then require regular self-motivated trips to the Website.

The aim is to make reading articles easier. "Writing a scientific article is not difficult. Publishing it is also not difficult," says Schwoerer. "But normal journals have become very, very expensive – so expensive that public libraries have reduced their number of journals." Making it harder to find journals and actually read them. Access to the new journal will be available at any Internet connection.

The journal will not be the first of its type. The Optical Society of America launched *Optics Express* last July in the same format. Schwoerer hopes his journal will attract other European physical societies, and attract European papers: "If it is good, about a quarter of those publications which are published now in American journals, will come back to Europe."

**Other news:** *EPJ* to absorb *Nuovo Cimento D* The Italian Physical Society look set to agree to become partners in that other European venture, *The European Physical Journal*. If an agreement is reached *EPJ* will absorb *Nuovo Cimento D*, the condensed matter section of the journal owned by the Italians. Some of its editors will make the move also. At the time of writing an agreement is due in May.

*EPJ* began life in January as a merger of *Journal de Physique* and *Zeitschrift für Physik*, and is co-owned by the French Physical Society and Springer-Verlag.

## APS Meet

World's biggest physics meeting in La-La Land, by *Ben Stein*. It's the largest annual gathering of physicists in the world, and this year it took place in Los Angeles. Approximately 5000 people convened at the March Meeting of the American Physical Society from March 16 to 20 at the Los Angeles Convention Center. All around downtown LA, one could immediately pick out physicists by the phone-book-sized, one-thousand-plus-page program they carried around.

Not an all-encompassing physics conference, the APS March Meeting instead concentrates on such heavily populated areas as condensed matter, materials science, and chemical physics, and a few smaller areas such as fluid dynamics. Travelling from many parts of the US, and in quite a few cases the world, physicists with even the most active labs in these areas commonly shut down their operations for a good part of the week so that they can bring their students to the meeting. Indeed, the March Meeting "is part of the education" of many physics graduate students, says Eberhard Bodenschatz, an assistant professor at Cornell University. Students typically give long practice talks in preparation for the meeting, he said. It is a chance for them to network with prospective employers, meet graduate students from other universities, and hear well-known and respected physicists speak.

Patrick Tabeling, a fluid dynamicist from the Ecole Normale Supérieure in Paris, and an invited speaker at the meeting, noted the "high level of curiosity" of meeting attendees about his work, even if they were not in his field. In turn, he enjoyed selecting from the large menu of sessions on disciplines other than his own.

And what an eclectic menu it was: physicists presented a nanometer-scale mechanical device which can count tiny quantities of electric charge, an explanation of how barn owls can encode auditory signals onto their nerve cells with surprising precision, and the determination that one needs to cluster together at least six H<sub>2</sub>O molecules to produce a droplet that has properties similar to liquid water. *Ben Stein is a science writer working for the American Institute of Physics*

*Next year the American Physical Society will celebrate its 100th year at a 20 to 26 March 1999 meeting in Atlanta*

## New Russian Institute

A new research center for 'Space Material Science' has been opened in Kaluga, Russia. The main scientific activities of the Center are: 1. Investigation of crystal growth under conventional gravity and space microgravity. 2. Diffusion, convection and crystallization processes and their influence on crystals grown under conventional gravity and microgravity (especially micro and macrohomogeneity). 3. Analyses of the composition, structure and properties of the crystals obtained. 4. Mathematical and physical modelling of heat and mass transfer processes in melts and gas mixtures at different levels of gravity. 5. Creation and development of the equipment necessary for crystal growth in space-flight conditions. **B.G. Zakharov is the new director of the Center.**

*Svetlana Koretskaya and Vsevolod Gantmakher (see also the report opposite)*

## Hewlett-Packard Europhysics Prize

This year's prize, which is awarded for outstanding contributions to condensed matter research, has been won by Maurice Rice of the Federal Institute of Technology in Zurich, 'for his contributions to the theory of strongly correlated electron systems'. Professor Rice is a theoretician who draws "much of my inspiration from experimentalists. I see myself as a broad interested theorist" who likes to work on all aspects of a problem - "the underlying electronic structure, the microscopic theory," he says.

He has contributed to our understanding of many things, including high temperature superconductivity and so-called 'Ladder compounds.'

## Review A short trip into the list of most cited physicists, by Claude Sébenne

Get out your Internet browser, the list of the 1120 most cited physicists, ranked by total citations from 1981 to June 1997, has appeared on the Net.

The winner uses mathematical physics to model particle interactions (knowing the name I looked in the alphabetical author index in *Physical Review Letters*). He appears to be a model researcher himself: not only has he nearly 37 per cent more citations than the runner up (23235 against 16994), he also has a high rate of citations per article (over 168). This latter eliminates the self citation effect and demonstrates the high impact of a reasonable number of papers (he published less than 10 a year).

But some authors are prolific: both group leaders and persons in charge of widely used facilities figure in the 10,000-citation range with many more articles than the winner. However, in this category the champion seems to be the electron microscopist who co-signed 1401 articles - that is 85 per year for the 16.5 years in the survey - but his average number of citations per paper is less than 8.

At the other end of the scale, some authors write only a few papers, but they have a very strong impact: who could be more efficient than the one who has published 3 articles and got 4301 citations?

A quick look at the subjects of the first 25 authors shows two main fields: one concerns the growth and properties of semiconductor nanostructures (heterojunctions, quantum wells, superlattices *etc*), the other covers the field of high temperature superconductors. This is no surprise since these two domains have been very popular for more than a decade among solid state physicists, who make up more than half the total population of concern.

I strongly recommend everyone to make his or her own trip into the list, it is both fascinating and instructive, after some effort. *Claude Sébenne is the French correspondent for Europhysics News, and a member of the Editorial Advisory Board*  
Is someone you know in the list?  
*Find out [flu.uv-lemans.fr:8001/1120physiciens.html](http://flu.uv-lemans.fr:8001/1120physiciens.html)*