Polish Society Celebrates its 75th Year

This year's biennial *Congress of the Polish Physical Society* (the 33rd) in Wroclaw on 18-21 September attracted some 500 participants, not only because it marked the Society's 75th Anniversary but also because it gave an excellent opportunity for many to learn more about a region that has a long and proud tradition in science. Eight Nobel laureates (including two in physics) worked at some stage in their careers in Wroclaw, where physics is based at the University of Wroclaw, the Technical University, the Polish Academy of Science's Institute for Low Temperatures and Structural Research (see below) and its daughter laboratory, the International Laboratory of High Magnetic Fields and Low Temperatures. Research in biophysics is also carried out in two pedagogical academies.

As befits such an occasion, two Nobel laureates (K. von Klitzing and K.A. Miller) gave plenary lectures and many distinguished Polish physicists spoke on various aspects of physics, including the history of physics in Wroclaw in the early years after Poland regained its western territories 50 years ago. The region now sees itself as being once more at a strategic cross-road in Europe, where user facilities such as the international high magnetic laboratory have a natural home.

The 33rd Congress of the Polish Physical Society took place in Wroclaw Technical University's Institute of Physics.

Ryszard Sosnowski was awarded the Marian Smoluchowski Medal — the Polish Physical Society's highest distinction — at the Society's 33rd Congress for his contributions to high-energy particle physics. He has worked at the Institute for Nuclear Studies, Warsaw, since graduating in physics from Warsaw University in 1955. His study, in collaboration with CERN, of multiple hadron production in collisions began in the early 1960s and led to analyses of different aspects of the process using data from CERN, the JINR (Dubna) and Fermilab in the US. In 1964, he co-authored the paper which introduced the so-called "principal axis" analysis that is now widely used to describe multiple hadron production, albeit under the term "thrust". Professor Sosnowski presently participates in the DELPHI collaboration at CERN's LEP collider.

Bilateral Cooperation Now More Important

Szymon Bauch from the Institute of Physics of the Polish Academy of Sciences, Warsaw, and a member of the Polish Physical Society's Committee for International Cooperation reports on bilateral cooperation agreements.

The Polish Physical Society (PPS) has a long tradition in a bilateral contacts with other national physical societies. However, prior to 1989 these contacts were rather formal and limited to societies based in the eastern bloc. The only exception was an agreement with the Federal Republic of Germany. PPS activities had to be approved by the Polish Academy of Sciences (PAS, a governmental institution) so many possibilities, apart from the exchange of physicists which was financed on the Polish side by the PAS, were not developed.

Experience over the last six years has convinced the PPS that bilateral cooperation agreements between national societies have become more important in today's quite different political and economic climate. They complement and support the more general efforts of the European Physical Society and other bodies to bring together physicists from different countries.

The main goals of the bilateral cooperation agreements are:

- To facilitate scientific contacts between individual physicists and physics institutions from both countries;
- To promote the regular exchange of scientific literature and of information about scientific meetings, physics education at all levels, career opportunities, *etc.*;
- To make available physics journals published by a national society to members of another society by offering special discounts;
- To encourage the exchange of physicists.

It is clear that the agreements provide a direct and rapid flow of information between the two partners, something that is especially valuable when the societies have to solve similar problems. On the other hand, it must be emphasized that realising all the obligations connected with the agreements can be expensive. For instance, an agreement typically calls for the two societies to arrange for financial support enabling the participation of physicists, notably those under 30 years old, from one country in conferences, symposia, specialized seminars, summer schools, and suchlike in the other country. Hence, the sending side often aims to meet the return fares of its own physicists while the receiving side defrays the costs of accommodation and living expenses of incoming visitors, as well as travel within the country necessitated by the scientific programme. Economic constraints oblige poor societies such as the PPS to limit the number of agreements and/or their scope. This tends to imply drastically reduced opportunities for exchange.

At present, the Polish Physical Society has cooperation agreements with The American Physical Society, The Institute of Physics (UK), the Physical Section of the Union of Czech Mathematicians and Physicists, and the Ukrainian Physical Society. Agreements with German Physical Society and with the Slovak Physical Society will be signed shortly, and negotiations with The Japan Physical Society have started.

INTERNATIONAL USER FACILITIES

Wroclaw's High Fields at Low Temperatures

It is often overlooked that there exist in east and central Europe several truly international user facilities. A case in point is the International Laboratory of High Magnetic Fields and Low Temperatures in Wroclaw (IL for short). It was spun off from the Polish Academy of Sciences' Institute for Low Temperatures and Structural Research (INTiBS) in 1968 by an agreement between the Academies of Sciences of Bulgaria, the former German Democratic Republic, Poland and the former Soviet Union (FSU). INTiBS itself was founded in 1966, essentially following the merger of groups created in the late-1950s by scientists that moved from Illov when the position of the Polish-Ukrainian border changed at the end of World War II.

The successors to the various academies re-established themselves as the IL's main partners in 1992, and were joined in 1994 by four Associate Members (the National Academy of Ukraine and physics institutes in Cologne, Dresden and Moldavia). The IL, with a staff of 55, now operates under the umbrella of the INTiBS that maintains departments for physical chemistry, metals and magnetism, and superconductivity and low temperatures based on a staff of about 230. J. Klamut, the IL Director, served as the Director of INTiBS until J.Z. Sznajd took over in 1993.

The IL currently provides some 200 person-weeks of facility time to visiting users. The facilities comprise several conventional and superconducting steady-state high-field magnet systems and a 45 T/10^{-35} ms pulsed field magnet. The laboratory is especially proud of its facilities for low-temperature (10 mK) property measurements at high field (16 T). Its original, essentially political, concept was based on the Soviet Union meeting half the cost of an international laboratory that would then find it easier to attract support. The IL now has a more scientific basis, with Poland aiming to cover infrastructure and running costs and the other mem-

The main INTiBS building and J.Z. Sznajd, the Institute's Director.

FURTHER INFORMATION

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bers the investments in equipment, which include contributions in kind. Uncommitted resources as well as KBN grants mainly help provide access to visiting scientists. A Scientific Council, with Professor A.S. Borovik-Romanov from Moscow as the President, supervises the lab and requests to use facilities are usually sent to a Council member for recommendation.

Poland also has high-magnetic pulsed field facilities in Poznan (50 T/200 ms) and Warsaw (30 T/150 ms). The IL had planned to build a large steady-state magnet based on an existing 20 MW power supply. This project was dropped following the collapse of the FSU. However, construction of magnet coils for a 60 T/100 ms pulsed design started recently in Moscow. The project will hopefully be completed within two years, thus placing the IL among state-of-the-art high-field laboratories in Amsterdam, Grenoble and the US. The IL's plans are fairly ambitious given that the European Commission is presently funding a design study for a state-of-the-art 70-100 T/1-20 ms pulsed magnet — part of a phased development of a 100 T/0.1-1 s semi-continuous prototype magnet which would become the basis for a proposed European Large Magnetic Field Laboratory (ELMF).

The INTiBS offers many of the experimental facilities expected of a laboratory specialising in the structure and properties of condensed matter. Some have been upgraded recently with grants from the State Committeee for Research (KBN) and the Foundation for Science that acts in strategic areas. Like most research institutes in Poland, the lab's budget, which presently includes some 10% from KBN grants, leaves only about 10-15% for research projects once salaries and overheads have been paid. Nonetheless, the INTiBS has an impressive publications list (over 160 research papers in reviewed journals in 1994) and it presently collaborates with about 120 institutes and departments. Mirroring the strong tradition of solid-state research in Poland, the institute's highly regarded work includes magnetism in uranium compounds, the thermal conductivity of high-T_c superconductors and quantum effects at low temperatures in crystals of molecules such as methane (presented as a plenary lecture at this year's *Polish Physical Society Congress* by A. Jezowski).

SCIENCE IN POLAND

A Broader Backdrop Needed

A review by the Organization for Co-operation and Economic Development (OECD) of Poland's research and technology policy has urged that the unique and highly successful State Committee for Scientific Research responsible for research funding be upgraded to a Ministry in order to create a broader backdrop with which to tackle the next phase in reforming the country's research institutions.

An invited review of Poland's national science and technology policy was submitted by the OECD last June to the State Committee for Scientific Research (KBN) and to the government. The main issue considered was the overlap of strategic and executive tasks which has evolved since KBN's creation in 1990. The KBN comprises five members nominated by Parliament and 12 members elected from commissions for basic research and for applied research, composed of 32 and 42 members, respectively, that are in turn elected by the country's scientists. Since 1991, the KBN, widely considered as one of the country's success stories [see *EN* **25** (1994) 56], has financed research on a peer-reviewed grants basis in institutes belonging to the three main research sectors (the Polish Academy of Sciences, the universities, and the "branch" or sectorial R&D units subordinated to ministries). In breaking with the former hierarchical system, the KBN's structure was designed to ensure democratic representation of the scientific community. The review felt the KBN's philosophy and competitive principles were "basically sound", and it cautioned relaxing today's centralised funding of R&D since it ensures "concentration and selectivity".

However, the OECD assessment questioned whether the KBN is well suited to the restructuring and rebuilding phase that must follow because it combines functions that are normally separated, namely policy and budget decisions at the ministerial level and research assessment and funding allocation at the executive level. It suggests upgrading the KBN to a true Ministry of Research and Technology that is able to focus on strategic leadership and policy and creating research councils and executive agencies. Establishing suitable bodies will not be straightforward because special efforts are needed to tackle problems specific to the reform of Poland's economy. These include the technology gap between the private and public sectors and the need for selective funding to remedy the generation gap in the research community owing to inadequate salaries and institutional rigidity.

A.K. Wróblewski (on the right), an elected member of the KBN, was formerly Rector of Warsaw University and President of Council for Science in the Polish President's Chancellery. He is seen here with G. Berg from Halle who represented the German Physical Society at the Polish Physical Society's 33rd Congress in Wroclaw 18-21 September 1995 marking the Society's 75th anniversary.

Branch Institutes

Another major point of discussion concerns the country's approximately 300 branch institutes which receive some 40% of government funding for research and employed 50000 people in 1993. About 60 branch institutes representing nearly 50% of the sector's scientific potential are now supervised by the Ministry of Trade and Industry, the successor to 13 sectorial ministries. Professor Andrej Wróblewski, formerly President of the Council for Science (the members of this advisory body in the Polish President's Chancellery were asked to stand down following the country's Presidential elections in November) points out that the branch institutes are extremely heterogeneous. They range from small institutes for research in the humanities, major institutes such as the Institute for Nuclear Science that are heavily involved in international collaboration (with CERN in this case), service organizations, and industrial units.

Radical, across-the-board restructuring (*e.g.*, privatisation) seems inappropriate, not least because the high scientific standard of some has led to industrial and international funding at a time when most Polish companies cannot afford R&D services. The OECD review felt that the branch R&D issue has to be set against a broader backdrop than KBN research-grant system since assessment on an entirely scientific basis "does not address what is at stake".

Polish Academy of Sciences

A third long-standing issue is the status of the Polish Academy of Sciences (PAS) which in 1993 supervised some 80 institutes employing 4000 people. The Committee for Scientific and Technology Policy that advised the Polish President indicated in its background report to the OECD assessment that the debate on the future of the PAS has moved on from what Professor Wróblewski calls the old fashioned view of simple