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

dissolution. Discussion now focuses on functions and whether or not PAS institutes should be transferred to another organization. While recognizing the enormous contribution that the PAS has made in many areas of Polish life, the review favours a limited, more traditional role for the PAS, possibly as an advisory umbrella organization for a handful of US-style national academies. Professor Wróblewski argues for a more executive-like strategic role in which the PAS becomes responsible for advanced study institutes so as to be able to maintain existing centres of excellence and to avoid having all basic research concentrated in universities.

The PAS has already formed, on its own initiative, several research centres of international standing (in physics, there is the Centre for Theoretical Physics in Warsaw, the Institute for High Pressures in Warsaw, the International Laboratory of High Magnetic Fields and Low Temperatures in Wroclaw — see above). The Science Council favours the transformation of PAS institutes into national laboratories, each directly supported by government and free to collaborate with the Academy if it wishes. But there are other models (a multidisciplinary research agency such as Italy's CNR, France's CNRS and Germany's semi-private MPG). Meanwhile, the government has more pressing priorities so significant changes to the status of the PAS are unlikely in the short term.

The review also considered higher education (it urged greater integration of autonomous professional institutions with traditional universities to create comprehensive universities with more autonomy) as well as industrial R&D (it urged rationalization and specialisation of public sector institutes with indirect measures such as tax incentives to promote private-sector R&D). The OECD Examiners reported that they were impressed, in spite of the obvious problems, by the Polish scientific community's views on its place in Europe and the changes that remain necessary. They urged further discussion since the complexity of the transition process inevitably leads to recommendations that contain small contradictions. Professor Wróblewski also points out that the complexity may lead to misunderstanding if one is unfamiliar with the situation.

But perhaps most important of all, the report says that an effort must be made to reach, in the "very near future", a target of 1% of GDP for R&D activities at a time when spending seems stuck at about 0.5% (0.52% in 1995; 0.54% proposed for 1996). Unfortunately, the reforms heralded by the KBN were not matched by increasing support for science, and recent statements by the Minister for Finance (and Deputy Prime Minister) indicate that he sees no need to change the situation.

ERRATA

Invited presentations at the 22nd European Plasma Physics Conference (Bounemouth; 3-7 July 1995) will be published in *Plasma Physics and Controlled Fusion*.

The report on the EPS Interdivisional Group for Physics for Development [*EN* **26** (1995) 115] failed to mention that the Group has a Vice-Chair, namely, J.J. Steyaert from Louvain.

With regard to the Special EPS High-Energy and Particle Physics Prize [*EN* **26** (1995) 95], the spokesmen of JADE and PLUTO were R. Felst and U. Timm, respectively, and not the other way around.