

Riesenhuber favors cuts for CERN, is cautious on SDI

Heinz Riesenhuber, West Germany's Minister of Science and Technology, started his career as an industrial scientist with a PhD in chemistry. He entered the Parliament of the Federal Republic in 1976 as a member of the conservative Christian Democratic Party and soon emerged as an articulate advocate of nuclear power. He is respected by friends and adversaries as a capable politician and science official, and persistent rumors suggest that he may soon become Germany's Defense Minister, where he would face the challenging task of refining the Federal Republic's response to President Reagan's Strategic Defense Initiative. In the May issue of *PHYSICS TODAY* (page 77), we described Riesenhuber's role in the German decision to join in planning for the permanently manned space station. In the following interview, based on written questions and follow-up questions submitted to the Science Ministry, Riesenhuber states his views on German science policy, major European projects, and questions of armaments and arms control. The questions and answers printed here are condensed from the original material.

—WS

PT: *What is your general assessment of the state of physics in Germany today, 40 years after the end of World War II?*

HR: We have to consider two aspects: German physics compared with other countries such as the US or Japan and compared with the outstanding performance by German scientists in the first 30 years of this century. In 1945, not only was Germany's infrastructure in ruins, but the loss of leading personalities had led to a particularly painful loss of "schools of thought." In the following years, many of the most capable young physicists turned their backs on the Federal Republic. Great efforts were required to overcome this situation in the 1960s.

The recognition that only a joint European effort could mobilize enough forces enabled German scientists to take the lead again in the 1970s in such fields as high-energy and nuclear physics, and also in condensed-matter research by way of synchrotron radiation and neutrons. In recent years German physicists have also caught up with the developments in solid-state research, including such excellent examples as the von Klitzing effect [the fractional Hall effect] or the development of the tunnel microscope by the German physicist Gerd Binnig and the Swiss

physicist Heinrich Rohrer. [See *PHYSICS TODAY*, July 1983, page 19, and April 1982, page 21.] Also, in the important field of laser research German physicists make an internationally acknowledged contribution. So we can say today that there is again a broad base in German research.

PT: *Given the big increases in funding for US science research under Reagan, do you worry about keeping step in Germany?*

HR: According to OECD figures, Germany spent 2.6% of its gross domestic product on research in 1983, compared to 2.7% in the US. Research and development funds are concentrated in civilian areas. In 1983, for example, only about 15% of government research money went to the Ministry of Defense. But irrespective of differing national priorities, we certainly view American and also Japanese efforts in research and development as a challenge.

In the past few years, the R&D budget in the Federal Republic of Germany has been growing more strongly than the total federal budget. Moreover, industry's expenditures from private funds have been growing even more than government funding.

As regards promotion of basic re-

search, we traditionally have had a strong position. In 1982 the share of basic research in the Science Ministry's budget amounted to approximately 27%. In 1985 it will reach about 34%, and according to our plan this share will have gone up to about 35% or 36% by 1987.

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PT: *It would seem that young physicists in Germany face uncertain prospects, with the size of the university system stabilizing, just as your baby boomlet generation of the early 1960s enters the labor force.*

HR: It is to be hoped that physicists, after their graduate or post-graduate studies, will first gather experience in the demanding research and development work of a national research center, for example, and then contribute their enriched knowledge to the more practical industrial activities. BMFT [the Science Ministry] has set up programs intended to promote cooperation between research institutions and industry and to facilitate the transfer of personnel to industry and independent entrepreneurial activities. All in all, compared with other countries, conditions for young physicists in the Federal Republic of Germany are not bad.

CERN, Grenoble

PT: *As we go to press, it is rumored that England's Kendrew Commission, which was set up to evaluate British spending on particle physics, will recommend substantial reductions in European funding for CERN. What is your position?*

HR: For many years now, the Federal Republic has advocated an economical and efficient use of funds at CERN. After intensive discussions, the Large Electron Positron storage ring (lep) was adopted in a markedly reduced form. Most of the budget of CERN will be tied up in the construction of this large facility until the end of this decade. For the time after that, I expect a reduction in real terms of CERN's contribution income in response to reduced demand for investment, a long-term reduction of staff, the full exploitation of possibilities for rationalization, and further technological progress with regard to new accelerators, experimental facilities and auxiliary units (for example mainframe computers). I consider it particularly important to reach worldwide harmonization regarding the construction of new large-scale equipment for particle research in the 1990s and later on to permit the optimum use of research funds, which are scarce in all countries.

PT: *We also are hearing rumors that some of the smaller European countries may pull out of the project to build a European Synchrotron Radiation Facility because of dissatisfaction with the selection of Grenoble as the site (see PHYSICS TODAY, May, page 19).*

HR: Preparations for the facility have involved the strong participation of a large number of European scientists, with the European Science Foundation providing coordination. I would consider it highly unfortunate if the small

number of countries which have so far been in favor of the proposed location at Grenoble were to go it alone. From the beginning we wanted to enable small countries to make use of the excellent research possibilities offered by such equipment. I agreed with my French colleague, Science Minister Hubert Curien, on his choice of location, and there is no reason to revise my position.

'Star Wars,' plutonium

PT: *Would you comment on what technologies German scientists might find worth pursuing if your government were to decide in favor of participating in the Star Wars research program?*

HR: We are now in a discussion process which has not yet come to an end. What SDI stands for and where cooperation with our American and European partners would be best suited has still to be examined. Financing is also a question to be settled. The same applies to the US, where the subject has been under discussion for more than two years now. We need more time for information and reflection.

In his government declaration of 18 April, the Chancellor stated that we were going to support this program in principle. It is of major importance to develop a defense system that also is suited to ward off arms specifically directed at Western Europe. Then it has to be clarified whether we will be mere subcontractors for the US or whether we will be equal partners contributing whole systems developed and constructed in the Federal Republic, for in my view a fair partnership means an exchange of knowledge and technology among equal partners. However, I am quite confident that a free exchange of knowledge and technology in the Western world will be preserved. At any rate, the German and American governments have issued policy statements clearly advocating an unhampered flow of knowledge and scientific findings.

PT: *During the Carter years, differences*

Education

Physics department chairmen meet again

On 17-18 May, some 250 chairmen of physics departments met in Washington to discuss education for professional work in physics. This was the second such Conference of Department Chairs in Physics, the first having taken place two years earlier in Washington. The American Association of Physics Teachers and The American Physical Society were the conference sponsors.

Featured speakers at this year's conference included a spokesperson for Rep. Don Fuqua, chairman of the

of opinion over plutonium policy were a major irritant in US-German relations. Carter terminated commercial reprocessing and fast-breeder reactor development, saying he wanted to set an example. He also tried to get the German government to cancel the sale of sensitive nuclear technologies to Brazil. What is your assessment of the situation now?

HR: It has become clear that the internationally accepted safeguards system initiated by the International Atomic Energy Agency is an instrument precluding abuse of peaceful nuclear technology with the aim of nuclear weapons production. It is a noncontroversial fact among all partners of the Non-Proliferation Treaty that nuclear energy should everywhere be used under international control to an extent corresponding to national needs.

The enrichment plant in Resende near Rio de Janeiro is a pilot project designed for the testing of the new separation jet technology, and it is not suited for the production of large quantities of enriched uranium. Furthermore, this technology is not suited for enriching uranium to more than 20%. At present, there are no plans for building a reprocessing plant in Brazil; they have been suspended for economic reasons.

Plans for an integrated radioactive waste management center in Germany have been abandoned because projections of a major increase in energy use have proved to be unrealistic. Instead the responsibility for building waste treatment and reprocessing complexes has been divided among state governments.

As for fast breeder reactors, the SNR 300 is being built, and commissioning is underway. Soon German and European utilities will award a planning contract for SNR-II, in a way the counterpart of the Superphénix. The Superphénix at Creys-Malville is being constructed and operated by the French NERSA, in which SBK [a German-Belgian-Dutch utility] has a share of 16%.

House Committee on Science and Technology; William F. Brinkman of Sandia Corporation; Roland W. Schmitt of General Electric; Dale R. Corson, president emeritus of Cornell; and Robert Resnick of Rensselaer Polytechnic Institute. Resnick presented the results of a survey of department chairmen on how student interest in physics is affected by course offerings and program design. The survey was sponsored by the APS Education Committee and done in cooperation with AAPT.