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# European subnuclear physics goes American

THE news (page 122) that American subnuclear physicists wish to spend increasing sums on design studies for a new generation of accelerators — for fear of European competition — was aptly paralleled last week by an announcement from CERN, the European Centre for Subnuclear Physics near Geneva. It made official an earlier understanding that Professor Herwig Schopper, a Czechoslovak-born (but now German) physicist who is presently director of the German national accelerator laboratory, DESY, is to be CERN's next director-general. This should send a shiver up every American subnuclear spine.

Why? Because Schopper's reputation rests on transferring the 'American', pragmatic style of accelerator design to Europe, and specifically to DESY, the Deutsches Elecktronen Synchrotron laboratory near Hamburg. Moreover, DESY is an electron laboratory, specialising in accelerating electrons and their antiparticles (positrons) and colliding them with one another and with protons. CERN has been exclusively a proton accelerating laboratory, but has plans for building a giant electron-positron collider, LEP. To CERN, Schopper will bring not only his Americanism, but also his expertise in electron machine design — a problem quite different from proton machine design because of the low mass of the electron (1837 times less than the proton).

In the past America has taken a firm lead in subnuclear physics, starting with Lawrence's cyclotron (which created the pion) and the Berkeley Bevatron of the early 1950s, (which found the antiproton). At that time Europe was recovering from the Second World War, and it was a great feat of political will to create CERN just seven years after the war's end. It was initially a theoretical institute; ultimately accelerators were built, at CERN and in European nations, but always the US was in the lead. The first close race was in the early sixties, for the 'omega minus' predicted by Gell-Mann and Ne'eman's SU3 theory (which lead to the concept of quarks). The Brookhaven laboratory on Long Island won. Of the more recent fundamental discoveries — scaling in electron proton scattering (evidence for point-like quarks), of the J/psi and charmed quarks, of the neutral current weak interaction, of the 'upsilon' containing 'bottom' quarks — only one (neutral currents) was European, despite roughly equal spending on both sides of the Atlantic.

DESY, under Schopper's guidance, was the first to break this potential barrier, with the construction of PETRA, a 19 GeV on 19 GeV electron-positron collider, more than a year ahead of the American equivalent PEP. Unfortunately nature was not kind: there has been only one (contended) discovery, evidence for the decay of the 'gluon', the photon of the inter-quark force. The 'top' quark, possibly the last quark, is probably accessible to PETRA but it is still hiding. More significant was the way PETRA was built — very fast, cutting all corners, finding money from all sources (including a federal budget for propping up an ailing civil construction industry). Schopper's objective was clearly to produce PETRA physics as fast as possible — not, as has arguably been the case with CERN, to produce beautiful accelerators that turn on at the switch of a button.

The interesting questions now are whether HERA, DESY's effort at a very high energy electron proton collider (to probe proton and quark structure), will go ahead so well without Schopper's guidance, and whether the 4000-staff, 12-nation CERN establishment at Geneva will respond as well as DESY to the Schopper shake-up. It is also interesting to see that Schopper's mentor in the US, ex-Fermilab director Robert Wilson, is also flexing his muscle again (he created Fermilab at breakneck speed and low cost and beat CERN to 400 GeV), and is talking of attaching electron rings to existing or planned American proton machines in a bid to beat HERA to its 1989 target. The game may be more even now than it was over the 400 GeV race (where there was a long European squabble over siting) because the sites for HERA and LEP are already agreed; and government money in the US and Europe for subnuclear physics is probably equally tight.

Schopper's plans for CERN involve an absolute minimum version of LEP, sparer even than the 'minimum LEP' defined by CERN design teams. His budget-LEP would just reach the predicted intermediate vector boson (a keystone of modern theories), but be capable of upgrading when the money is available. He also wants to bring the physicists and the accelerator design teams closer together, by encouraging more flexible arrangements for exchange of posts for limited periods. In CERN, the two groups have long been suspicious of one another. There is also a very active staff union, which may prove conservative; and there is the problem of 12-nation politics on CERN Council. It will be very interesting to see what Professor Schopper, who takes up his post on 1 January 1981, can do. We wish him well. □

## Editor of Nature

Dr Peter Newmark, Acting Editor of Nature since the beginning of the year, hands over to John Maddox from the next issue. Dr Newmark remains Deputy Editor. Mr Maddox, Editor of Nature between 1966-1973 and lately Director of The Nuffield Foundation, resumed the post of Editor on 13 May.

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