Europhysics Notes

Compiled from correspondents' reports.
Contributions should be sent to the Editor.

● Neutron Sources

The upgraded reactor for neutron scattering work at the **Hahn-Meitner-Institut**, Berlin, went critical to the full 20 MW of power on 13 April after a long delay owing to an operating ban stemming from environmental concerns. However, two legal appeals are pending: one must be decided upon by the courts more-or-less immediately, the other has five years to run. Meanwhile, a cycle of experiments at the high flux reactor at the **Institut Laue-Langevin**, Grenoble, has been postponed (see page 91) almost a year to the day after operations restarted in April 1990 following the discovery that the reactor had been running above rated power owing to a long-standing calibration error.

● Poland

CERN Council agreed unanimously on 14 December 1990 to admit **Poland**, an Observer since 1963, as a full member (the 16th and the first from central or eastern Europe) and to accept a considerable reduction in membership payments (about 1 MSFR annually until 1995 when the contribution will rise to an estimated 1% of the total annual Member States contribution — currently 908 MSFR — by the year 2000). The Polish Physical Society has written to say that some 100 Polish scientists work at CERN on experiments for multiparticle and charm production, excited hypernuclei states, proton collisions leading to particles with high transverse momentum and LEP. The official joining ceremony is on 1 July 1991. Back at home in Poland, the first semi-annual call for research grants under the new peer-reviewed grants scheme netted a huge number (about 8000) applications to a recently constituted central funding agency for science. Physicists are hopeful that after weeding out the less serious applications, the review presently underway will result in all the funds formerly earmarked for science actually ending up on their budgets.

● Colliders

Protons were stored for the first time in the 6.3 km circumference **HERA** superconducting electron-proton ring at DESY, Hamburg, on 14/15 April. The radiofrequency setting of the ring was found to be correct and the machine's working point and chromaticity were as expected. The next step is to accelerate the beam. The US Administration's 1992 budget request announced in February calls for an additional 300 M$ (a 120% jump to 534 M$ from the 1991 budget) for the **SSC collider** in Texas *en route* to completion in 1999 for 8250 M$ (up from a Department of Energy estimate of 5900 M$ made two years ago). The American Physical Society said "that the SSC should be built in a timely fashion but not at the expenses of a broadly based scientific research program". Overall, the Administration seeks a 7.7% increase (to 13000 M$) for basic research, but judging from the past record and the budget capping agreed with Congress in 1990, it is unlikely to be met. The National Science Foundation is slated for a 17.5% increase (to 2720 M$) with 110 M$ to begin work on a gravity wave detector and 16 M$ to continue work on two 8-metre optical telescopes. An increase of 42% has been requested for the NSF's individual, peer-reviewed, research grants — an area that has been boosted recently. With a 31% acceptance rate for a total of 59 M$, this initiative across several of the five NSF Directorates resembles the European Commission's 167 MECU SCIENCE Programme 1988-92, whose 518 MECU successor in the new 1990-94 **Framework Programme** is presently stalled in political negotiations between the EC Parliament and Commission (calls for proposals for what the EC Research Commissioner F. Pandolfi originally conceived as a "human mobility" programme were expected in March 1991 but are now unlikely before the autumn).

● Italian Physics

The Examiners' Report of science and technology policy in **Italy** issued by the the Organization of Economic Cooperation and Development (OECD) in February praises the high quality of physics research, demonstrated by good cooperation and an unusually larger number of physicists in industry. It recognized that the dominance of physics reflects the comparatively large resources devoted to "big science", notably nuclear physics and space. However, the examining panel of four experts also appreciated that government spending on R. & D is only about 1.3% of GDP, low by comparison with other major European partners in the era of economic union in 1992. Instead of a shift in resources to small science, it therefore preferred that the political commitment to develop strategic areas be applied to other R. & D. sectors.

● Restructuring

FOM (the Foundation for Fundamental Research on Matter) the dominant government funding agency for science in The Netherlands announced last year that it was to combine nuclear and particle physics, with about 42% of the total FOM budget (140 MHFL in 1991), into a new division of sub-atomic physics. It is then planned to reduce the budget for these activities to 33% of budget. Discussions at a FOM organized "strategic conference" on 6/7 June will form the basis of implementation proposals due in the autumn. The meeting will involve representatives of the principle interested parties from FOM, the NIKHEF and

university committees for nuclear and high energy physics and from NWO, the funding agency that meets 90% of FOM's budget out of a 350 MHFL grant from the Ministry of Education and Science. No decisions on entering new collaborations in subatomic physics will be engaged until the strategic plan is agreed. Unaffected are the existing major commitments to operate both the upgraded MEA linear accelerator and the Dutch-French AGOR superconducting cyclotron (see *Europhysics News* **21** (1990) 157) for six years once they are commissioned in 1992 and 1994, respectively.

● Science Management

The EPS Action Committee on Physics and Society is to hold a Study Conference on **"Management of Science"** at Shloss Dagstuhl in the Saarland, Germany on 18-21 August 1991. Organized in the framework of the Society's east/west programme with financial help from the NATO Scientific Affairs Division, Brussels, the aim will be to analyze and discuss with invited representatives from professional bodies and funding agencies how science, especially physics, is democratically funded and structured. For further information, please contact
E.W.A. Lingeman,
Secretary of the Organizing Committee,
POB 4395, NL-1009 AJ Amsterdam
(tel: +31 (20) 592 21 17;
Email: ed@nikhefk.nikhef.nl).

Young Physicists Set Up Network

Hadronic physics with a future 10-30 GeV electron probe (see *Europhysics News* **21** (1990) 213) involves quark interactions inside nucleons and nuclei, and the transition between the perturbative and non-perturbative descriptions of the strong interaction.

The few groups already active in the field, especially their young physicists, realized early on the necessity to work together with all their European colleagues. It was therefore decided to create an international group of young theorists and experimentalists from both the nuclear and elementary particle physics communities. The Dourdan conference on hadronic physics last October was a good opportunity to gather about 50 people and to form a new association called the Hadronic Physics Network (HPN).

To improve the overall efficiency of the active groups, the HPN's goals are to develop communication among young physicists and to exchange information, by forming international working groups and to develop tools which may help young physicists in their studies. Secondly, the association wants to help physicists not working in the field, but who are interested in the physics, by keeping contact with other teams *via*, for example, seminars and working groups.

As a first step, all HPN members submitted an abstract of their present activities and/or interests. A preliminary list, corresponding to the work of about 30 people, was collected by the end of the Dourdan workshop and distributed afterwards. The exchange of abstracts continues *via* computer networks. As networks emerged as the first straightforward means HPN could use to reach its goals, two network tools have already been developed:
– For rapid, general information concerning every member (*e.g.* abstracts, news, conference reports, job offers), a mailbox is installed in Italy. Files sent there are immediately forwarded to all HPN members.
– A server which can be interrogated from any IBM or VAX terminal has been set up at DPhN, Saclay, to promote the exchange of program code. HPN members may also consult news items and a database carrying references, mail addresses and the complete list of abstracts.

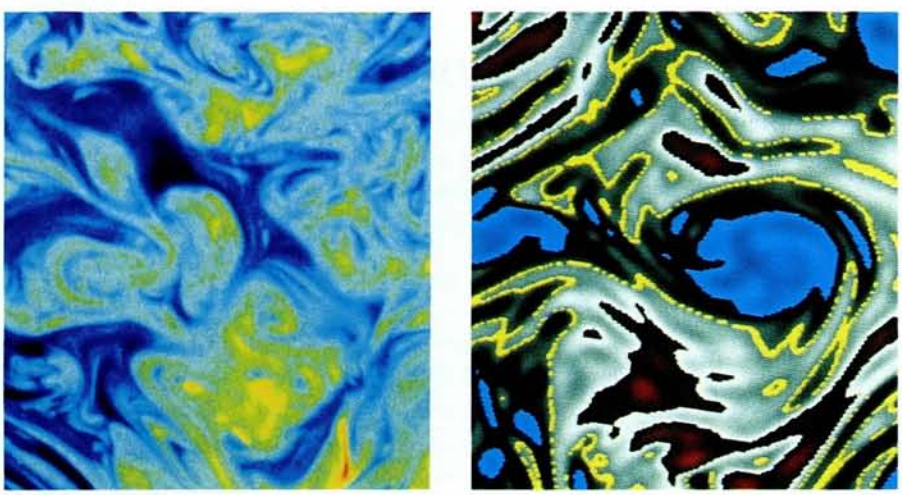
Organizationally, HPN is trying to remain as informal as possible. There was, however, a strong need for a contact person in each country, whose main duties are to create links with the rest of the community, and to dispatch information. The contacts are aided by a central core of active people. For further detailed information on HPN, please contact the following correspondents:

France:	Sonia Fleck: FLECK @ FRCPN11
Germany:	Nicolaus Pavel: F35PAN @ DHHDESY3
Israel:	Eli Piasetsky: EIP @ TAUPHY
Italy:	Omar Benhar: THEO @ IRMISS
Netherlands:	Joachim Levelt: JOACHIM @ NIKHEFK.NIKHEF.NL
Poland:	Anna Lipniacka: LIPNIACK @ PLEARN
Spain:	Pedro Sarriguren: IMTEM22 @ EMOCSIC1
USA:	Charles Hyde-Wright: HYDE @ UWAPHAST
USSR:	Vladimir Gavrilov.

The contacts met again last December in Amsterdam to discuss problems, ideas and suggestions they had collected in their own countries. The main conclusions were the need to pursue the exchange of information and to strengthen the involvement of members in working groups step-by-step, according to each country's or laboratory's capacity. HPN also plans to organize a school at the end of 1991 (possibly in Perugia, Italy) to promote a better understanding of hadronic physics with electrons.

F. Staley, *CEN Saclay, France*

FRACTAL FORMS



Left: The complex multiple scale structure of very turbulent flow is revealed by passing a two-dimensional sheet of laser light across a jet seeded with fluorescent dye (Sreenivasan and Prasad, 1989). Right: A computer-generated image of a numerical simulation of turbulent flow showing a multi-fractal structure (Farge and Sadourny, 1989). It bears a striking resemblance to the observed structure, which is fractal and independent of the large flow pattern at an intermediate range of sizes.

An exhibition titled "De près comme de loin" — Formes Fractals (From close-up as from afar — Fractal Forms) was opened on 13 May by H. Currien the French Minister of Research and Technology at the Palais de la Découverte in Paris. It presents a remarkable collection of exhibits, games, experiments and above all images illustrating how the concept of fractals has permeated science. The example shown above is taken from a comprehensively indexed and annotated album *Fractal Forms* that accompanies the Exhibition. Containing more than 50 colour images of fractals in their many disguises, copies, in English or French and in multiples of 10 costing 200 Guilders, are obtainable by contacting the book department of the publisher, Elsevier, POB 103, NL-1000 AC Amsterdam.