

GRENOBLE

## Disassembling Alpine science city

If France were the Soviet Union, this Alpine city would be named Akademgorodok and everybody would be a little self-conscious about its strategic and economic importance. But the city's ambitions seem to lie somewhere between an upmarket ski resort and a smaller version of Paris (to which every provincial city aspires).

As if in that cause, the mayor of Grenoble, M. Carrignon, has in the past few weeks put the city on the national political map by advising members of the Republican (centrist) party to which he belongs to vote Socialist in the local elections so as to defeat the candidates of the extreme-right National Front. For his pains, Carrignon has been suspended from party membership.

But the nature of the place is apparent from the autoroute from Lyon, just over 100 km away. First, there are traditional conveyor belts carrying limestone from a scar on a miniature alp to the east to the cement factories in the valley of the Isère, then the unmistakable outline of a particle accelerator taking shape at about the point at which the exit signs read "*Polygone scientifique*". The circular hole is, of course, the European Synchrotron, the 6 GeV electron synchrotron designed to be a purpose-built source of X-rays and  $\gamma$ -rays when it is commissioned in 1993.

Grenoble has grown to be the place it is by a sequence of accidents, among which the first was its choice as the site for the basic research laboratory of the Commissariat à l'Énergie Atomique (CEA). Another influence is more personal — that of Dr Louis Néel, who was still a member of the physics department at the University of Grenoble when he won a Nobel Prize (in 1970) for the discovery of antiferromagnetism. Néel laid the foundations for tempting to Grenoble the half a dozen CNRS laboratories, mostly centred on condensed-matter physics, that constitute the Polygone.

What more natural than that the city should also be the site of the thermal nuclear reactor which, under the name of Institut Laue-Langevin (ILL) is one of Europe's most prolific sources of thermal neutrons, used mostly for structural studies? The institute is jointly financed by France and West Germany, with smaller contributions from other members of the collaboration. Tucked away in the same *polygone* is a Max-Planck Institute of solid state physics, visible proof of West German commitment to the place.

Guessing at the numbers of scientific and technical people is more difficult at Grenoble than at, say, Novosibirsk, but CNRS is thought to employ about 700 qualified scientists here, CEA perhaps twice as many, while the less permanent populations of ILL and, eventually, of the

European synchrotron laboratory, may account for a further 1,000. Then there is the university. Allowing for technicians and administrative people, direct employment in Grenoble's public laboratories is probably not far short of 15,000, a substantial proportion of the regional population, estimated at about 400,000.

But that, people are quick to say, overlooks the uncounted scientists and engineers working for the small technical enterprises that have sprung up (with the encouragement of the local authorities) at Grenoble, originally as suppliers of goods and services to the public laboratories, but which have now cultivated national and international ambitions. (The continuation of the autoroute from Lyon is plainly marked "Turin", but francophone Switzerland is even closer.)

Grenoble, in other words, is a living proof that life outside Paris is possible, and can even be rewarding. One benefit has been that the laboratory-based culture has been able to forge a strong relationship with the University of Grenoble, to their mutual benefit. CNRS laboratories regularly have academics among their staff members, while researchers teach courses at the university. (The incentive is not monetary, but the simple consideration that teaching experience counts as a plus when promotions are considered within CNRS.) Similarly, academics and people from the various laboratories sit on each others' assessment, promotion and strategic committees.

The academic links with research are plain to see. At the CNRS Laboratoire d'Études des Propriétés Electroniques des Solides, graduate students (from other universities as well as Grenoble) outnumber fully fledged researchers (a third of whom are Grenoble academics).

This fruitful symbiosis rests in part on bread-and-butter considerations: academics have access to more sophisticated equipment than university laboratories can usually provide, while laboratories can profit from the flexibility of the funds provided by the university towards the overhead costs of their academics' and their students' research costs.

But there is more to say than that. Dr Guy Aubert, head of the CNRS Service National des Champs Intenses until two years ago says that, in the physical sciences, CNRS offers the only mechanism in France by which the quality of the research people do can be sympathetically and objectively assessed. To link a university with the CNRS system provides it with a yardstick for the measurement of self-improvement and the means thereto.

It goes without saying that the symbiosis provides the laboratories with recruits who can hit the grounds running. Gre-

noble is both the originator and an enthusiastic exponent of the *magistère* programme (see opposite) by which students are introduced to research while still working for their first degrees, partly by being taught by researchers and partly by working in research laboratories or at computer consoles. The *polygone* has provided a sparkling new building in which to house the *magistère* students.

There is a general lesson to be learned from all this: CNRS laboratories can profoundly influence a nearby university. It is not just that CNRS laboratories can provide neighbouring academics with facilities for research that would otherwise be lacking (thereby making the universities attractive to potential teachers), but that they can also hope to mould both the university curriculum and the composition of its faculty.

But the symbiosis requires readiness on both sides. Other CNRS laboratories complain that they must take in graduate students from neighbouring universities over whose curriculum they have had virtually no influence. *Formation*, the academics say, "that's our responsibility". Then the symbiosis cannot work. Nor can it when there is no CNRS or INSERM laboratory within reasonable range.

It is no wonder that Grenoble (with Strasbourg, Orsay and Toulouse) has been singled out as one of the outstanding university centres in France. In reality, there are both the Polytechnic University, with 2,000 students, and the three campuses of the University of Grenoble dealing (by numbers) with science and technology (the Joseph Fourier University), with social sciences and with arts and literature. The city has a student population of 30,000.

Not everything in Grenoble is lovely. The worry about salaries, generally through CNRS, quickly bubbles to the surface. Working researchers say that industrial salaries are generally 50 per cent higher than their own. Most people acknowledge that it is worth paying something for the extra freedom and interest that their laboratories allow. But 50 per cent? Guy Aubert says that even laboratory chiefs are now regularly head-hunted — most expect to get one reasonable offer a year.

Promotion is also a constant worry. Becoming a *directeur de recherche* (a salary grade), requires not just a *concours*, but passing through the eye of a needle which appears ever to shrink in aperture.

Some at Grenoble are also alarmed at the shrinking proportion of CNRS's income available for the direct support of research. This relatively well-heeled group of laboratories is well placed to secure outside contracts, and does well, but is alarmed that external dependence may eventually threaten what it considers to be its core research. □