French medical institutes

Twelve-year rule begins to bite

THE French medical research council, INSERM, is approaching its twentieth anniversary — and a time of testing. A government attempt to stop ageing laboratory directors sleeping at their posts, known as the "12-year rule", takes effect next year — when all who have been directors for 12 years or more must resign. Thus 60 out of 250 INSERM directors must go or reapply, which may explain why protests over the "bureaucratic" rule have been more bitter at INSERM than at any other French research council affected.

At the Centre National de la Recherche Scientifique (CNRS), for example, there has been little resistance — perhaps because, despite its size and age, CNRS has only 50 directors affected by the rule. This is attributable to physicists who often change directorships voluntarily before the 12 years are up, and to biologists who have been applying a policy of group concentration and reorganization, thus anticipating directorship problems. Altogether, CNRS seems naturally to have shown more of the flexibility that the 12-year rule is intended to encourage.

Flexibility will come, even at INSERM. Director-general Philippe Lazar is privately delighted that the "majority" of the 60 affected directors have not yet re-applied (with revitalized research programmes), as they are entitled to do by mid-November. This should give him some fun next year, when he will be able to reallocate this research potential according to new priorities now being defined by his advisory science council.

At INSERM, there were two kinds of resistance to the rule: from conservatives, whom — broadly speaking — the rule was designed to shift; and from a group of first-rate directors who are likely to remain directors after reapplication, but who deplore the paperwork and time involved. But among the latter, many have found the exercise of redefining 12-year research programmes "refreshing", Lazar claims.

Lazar, a medical statistician, has set out to refresh INSERM since he took over in 1982. "The image of the ivory tower has gone", he says. The 12-year rule is important to him because it makes it possible for directorships to change hands without the slur of explicit negative judgement on the incumbents.

Another major change at INSERM during Lazar's term has been a shift towards health service research, one outcome of an "honest review of strengths and weaknesses" instituted by Lazar and completed this summer. Some of the changes expected by next spring include:

- The creation of a new scientific committee (there are at present eight) in "the human and social sciences applied to health" with the objective of establishing new research fields and units.

- A general reorientation of priorities for new units established by INSERM, and a similar reorientation of INSERM external grants.

- An improved recruitment system for new scientists — with 60 new posts next year.

Several problems remain unsolved, however. There should be more foreign experts in review committees, Lazar admits, but "we shouldn't expect that foreign experts will do miracles". In INSERM itself, there are "silent experts" who refuse to judge their colleagues, but that is changing. And while INSERM (like the whole of France) is hamstrung by the total lack of postdoctoral fellowships, plans are under way at the research ministry to introduce a fellowship system.

Otherwise, the resolution of one old problem may mean less cash for French

biologists. In its early days, INSERM competed openly with CNRS for the best biologists, to the benefit of many. But under a new agreement between the councils, that boon will end. Laboratories which have been jointly funded for no good policy reason will now have to adhere either to CNRS or INSERM, probably with a consequent loss of funds after a four-year transition period.

But to replace the past *ad hoc* joint support, there will now be three clear structures for collaboration: a few (10–20) existing common laboratories where the basic research goals of CNRS clearly overlap with the medical goals of INSERM; new "concerted development units" where INSERM and CNRS wish actively to set up joint action and "allied units" where, for example, CNRS staff may be working in an INSERM laboratory, or vice versa.

Thus clarity is entering the INSERM–CNRS relationship for the first time in twenty years, and French biomedical belts may tighten as a result. **Robert Walgate**

Soviet geology

Deep boreholes yield data-harvest

ON 7 September 1984, drilling operations began on a projected 15-km borehole through the Ukrainian crystalline shield from a site at Novoivanovka, near Krivoi Rog. This drilling project, involving more than 150 research institutes and "production collectives", marks a new stage in the Soviet deep borehole programme — the sinking of deep shafts specifically related to the search for metals.

Soviet interest in deep boreholes dates back to the beginning of the 1960s when the United States was planning to drill a "mohole" into the oceanic crust down to the Mohorovicic discontinuity between crust and mantle. Soviet plans have concentrated on drilling of several deep boreholes (12,000–15,000 km) at carefully chosen sites — the Kola peninsula, the Kura depression in Azerbaijan, the Urals, the Caspian depression and one of the Kuriles. At the outset, however, Soviet drilling technology was insufficiently advanced to reach the proposed depths. Oil drillings averaged less than 2,000 metres in depth, and the few shafts that passed the 4,000-metre mark were considered exceptional.

Not until May 1970 could work be started on the first deep hole, at a site 8 km north of Zapolyarny on the Kola peninsula, while the second, at Saatly in Azerbaijan, was started only in June 1977. Special drilling rigs developed by the Uralmash plant differ from US deep-drilling equipment in that the string remains virtually stationary while the bit, a miniature turbodrill, rotates. The special-purpose instruments, capable of withstanding high pressures and temperatures, include a miniaturized motor, developed by students at the Kaunas Polytechnic

Institute, which can drill and analyse rock samples at depths of over 11,000 metres.

Already the programme has yielded interesting results. Samples from the Kola borehole have revealed in the Baltic shield aqueous solutions of carbon dioxide and helium at depths of 6,000 metres, the expected granite-basalt boundary at approximately 7,000 metres was found not to exist and the angle of inclination of beds which form outcrops of 45° was found to remain the same at increasing depths, contrary to the expectation that the inclination would increase. Fossilized microorganisms were found in strata believed to be 2,000 million years old. Fossils from the Saatly hole (shells and small corals) have confirmed that there had once been a shallow sea in that area.

In the Kola borehole the temperature at the 12,000-metre mark (on 28 December, 1983) was above 200°C, instead of the expected 100 to 120°. In the Saatly hole, the temperature at 7,500-metres was 140°C, less than expected, suggesting that there is no deep magmatic activity in the Kola depression.

The practical implications of the data have proved more valuable than expected. In the Kola borehole, traces of copper, lead, zinc, cobalt and nickel have been found far deeper than predicted, so the programme has been extended to include a further 20 holes in ore and hydrocarbon bearing localities. Boreholes in oil/gas-bearing regions will include sites in the Tyumen region, the Kuban, the north Caucasus, the Caspian depression and the Timan-Pechora region. The four metal-ore sites will be in the Urals, near Noril'ski in Uzbekistan and at Novoivanovka.

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