Japanese education

Nakasone plans for reform

Tokyo

THE first step towards a major reform of Japan's educational system was successfully taken last week, when Prime Minister Yasuhiro Nakasone succeeded in winning sufficient support from opposition parties to establish a reform commission.

Last month, a private advisory panel set up by Nakasone had come out in favour of drastic changes in the university and school systems. Nakasone quickly embodied these ideas in a bill setting up a special commission to recommend how best to bring about reform. With support gained from two of the smaller opposition parties, the passage of the bill in the Diet is now certain, and the commission, all of whose members will be appointed by the prime minister, will begin work on 1 July.

Both the private advisory panel and popular opinion identify the university entrance "examination hell", and its overwhelming importance in deciding the lifetime success of students, as the real villain of the educational system. Entrance into a top state university virtually assures success for life. The influential ministries and the major companies take virtually all of their staff from this elite group.

To enter an elite university requires high scores in a series of examinations which largely test students' ability at rote learning. Incredible feats of endurance are required — government surveys show that throughout their school careers, more than half of school students put in more than two hours of extra study each night, while 20 per cent are averaging three and a half hours a night. Further efforts still are required around examination time, when the dictum "Sleep five hours pass, sleep six hours fail" holds.

This pressure to succeed has warped the whole school system, down to the primary school level. Primary education has become little more than a competition for entry into a good junior high school, and junior high school a competition for entry into a good senior high school — where the cramming for the university entrance examination begins in earnest. At each stage there are tests and more tests and ever-increasing reliance on after-school cramming colleges. As Japanese schools are traditionally unstreamed and class sizes are rising towards the legal limit of 45 students, those who cannot keep up soon find themselves abandoned.

The results may include the increase in violence against teachers in junior high schools, principally from poorer students whose families have not been able to afford after-school cramming, as well as a 25 per cent a year increase in juvenile delinquency and a rapid increase in the school drop-out rate. At graduation time now, more than ten per cent of junior high schools require the presence of police guards.

What directions may reform take? One possibility raised by Nakasone's private advisory group is that individual university departments could decide their own entrance criteria: instead of the overall test score determining entry, medical schools could, for example, take the revolutionary step of interviewing candidates to see if they would make good doctors. Or college applicants could be given the choice of applying on the basis of test scores, essays or high school assessments.

Further down the system, high school entrance could be decided by taking into account teachers' reports and extracurricular activities as well as test scores. One stage of competition could even be done away with by fusing junior and senior high schools, although this would controversially require revision of the basic law on education that established a democratic education system at the end of the Second World War.

Reforms along these lines are nevertheless all popular. But another feature of Nakasone's programme explains why the Socialist and Communist parties have consistently opposed his special reform commission. Together with an "increase in flexibility" of the system, Nakasone has also called for "moral education" to strengthen the Japanese spirit of "unity, industriousness and loyalty" which he sees as stemming from the combination of Japanese "ancient national traits" with Confucianism, Buddhism and democracy. Plainly this appeal seems to the left wing a recipe for returning to the narrow dogmas of pre-war nationalism.

Teachers also worry just how such "moral" training might be implemented. Already suggested are the "retraining" of teachers, the majority of whom are members of the left-wing Japanese teachers' union which has consistently opposed Nakasone's policies, and increasing the already tight control over the contents of school textbooks. Just what might happen in this latter sphere was well illustrated two years ago when an attempt was made to reinterpret Japanese history by referring to the invasion of China as an "advance" and the forced conscription of Korean labour during the war as "labour mobilization".

Those supporting the new commission are calling for its first recommendations to be put into operation within two years. But most members of the public take a much more cynical view: proposing reform will help to boost Nakasone's popularity as he heads into the November contest for the party leadership, but the reliance on pure examination results for university entrance and the old boy network that ensures success for elite university graduates are just too deeply embedded in Japanese society for any real changes ever to be made.

Alun Anderson

UK nuclear energy

Research plans scrutinized

THE United Kingdom Atomic Energy Authority (AEA) is resisting government proposals to hive off some of its programmes and establish them as independent companies. The authority, a statutory body financed by parliamentary grant, is now the subject of a "wide-ranging overall review" by the Department of Energy. The department is looking especially hard at the work the authority does for the Central Electricity Generating Board on the safety of pressurized water reactors and advanced gas-cooled reactors, and at its non-nuclear research.

AEA officials maintain that the authority's strength lies in the wide variety of engineering specializations that it is able to bring to problems. They say that it would be weakened by the removal of any sector of its activities. Officials also point out that much of the safety research supporting the nuclear power programme is already self-financing. AEA is pressing for more freedom to initiate research into alternative methods of radioactive waste disposal; it has been a long-standing grumble that the same government department that regulates radioactive waste disposal, the Department of the Environment, is also the sole sponsor of research in the field.

The fast reactor development programme, centred at Dounreay in the north of Scotland, absorbed nearly half of AEA's net expenditure of £205 million in 1982-83. Earlier this year, the Comptroller and Auditor General criticized financial controls on the authority's spending, especially on the prototype fast reactor (PFR). The auditor's report concluded that present arrangements do not require AEA to work to sufficiently clearly defined objectives and time scales. AEA officials say the report is misleading, however, and that it appears to confuse the cost of the PFR at Dounreay and the overall research programme of which it is part.

Sir Peter Hirsch, the authority's chairman, recently explained that despite the delays which have dogged the PFR, a commercial-scale fast reactor could now be built up to 20 per cent more cheaply than would have been possible in the 1970s, when one was originally planned before electricity demand projections fell. The total cost of the fast reactor project, including work on fuel cycle development, is now expected to reach £3,700 million. Technical problems with leaking welds in the secondary coolant circuit at Dounreay have delayed the PFR but it is now expected to run at full power late this summer, and 15 per cent fuel burn-up, the target for a commercial fast reactor, is "confidently predicted". AEA insists the difficulties of the past 10 years have been overcome.

The authority is now in the process of negotiating with its foreign partners the details of the fast reactor research collaboration agreements that it signed in March. AEA has been given an assurance that the current review will not interfere with that process. UK expenditure on fast reactor development is to settle at £75 million a year for the foreseeable future (1984 prices), considerably less than the expenditure a few years ago and rather less than France and West Germany are putting into fast breeder development.

The government will now be looking for further ways of achieving savings at AEA. There are some fears that short-term financial targets may reduce the supply of nuclear engineers to a level below that necessary to support any expansion of the nuclear power programme next century. Energy strategists perceive a danger that failure to plan for future manpower needs could result in over-rapid expansion of the industry with consequent over-capacity: the French reactor construction industry is cited as an example. **Tim Beardsley**

Biological weapons

Soviet Union accused

Washington

THE US Department of Defense (DoD) said last week that the Soviet Union appears to be trying to apply genetic engineering research to an already broad biological warfare research effort that violates the Biological and Toxin Weapons Convention of 1972. Although the allegation, contained in the department's latest annual assessment of Soviet military power, is not accompanied by any evidence, the DoD pamphlet argues that genetic engineering could open up a large number of biological warfare possibilities. Natural organisms could be modified to carry diseases for which an opponent has no cure, and agents now thought too unstable for storage or biological warfare could be turned into practical weapons.

DoD says the Soviet Union has at least seven biological warfare centres, including one in the city of Sverdlovsk. It was this centre, the United States believes, which was responsible for a major anthrax leak in 1979 that may have infected as many as 3,000 people. The Soviet Union says the anthrax was caused by contaminated meat sold on the black market.

The DoD assessment reports that defence research and development by the Soviet Union is growing at a rate of six to

claims, is a coordinated campaign to poach scientific and technological expertise from the West. The Soviet Academy of Sciences and several of its institutes follow Western science and technology and subscribe to the growing number of computerized databases established in the West to disseminate findings. Although it concedes that the bulk of such technology transfer is legal, DoD says much of it is not. It complains that the Soviets acquired crucial information on magnetic bubble memory through a Hungarian scientist working at a US university on a US-funded grant.

The pamphlet says the Soviet Union has made good use of its student exchange programme with the United States. At least three-quarters of the students it sends to the United States are scientists or engineers, whereas their US counterparts tend to be from the social sciences or humanities. Soviet candidates have "nearly always" proposed research involving technology with military applications. **Peter David**

Refusnik freedom?

SOVIET Jewish scientists may have reason to hope that the regime of Mr Konstantin Chernenko will prove less harsh than that of his predecessor. Dr David Goldfarb has now been given permission to emigrate although previously he had been several times informed that, in his former work as a molecular biologist, he had had access to classified data, and therefore could not be allowed to leave the country.

Moreover, Dr Viktor Brailovskii, who has just completed a term of Siberian exile for (in effect) having hosted the Sunday seminars for "refusnik" scientists, has been allowed to return to his Moscow home. Previously prominent activists who had served terms in Siberia were not allowed to return to Moscow or Leningrad.

Even so, pessimists among the refusniks point out that only 51 Jews were allowed to leave the Soviet Union in March, the smallest number since the emigration movement started in 1968. Optimists suggest this figure was an aftermath of the Andropov era. **Vera Rich**

Hungary

Week exposes weak links

THE "Hungary Today" week in Britain (9-13 April), although it included some peripheral cultural events, was intended primarily to promote Hungarian technology. The first such event for twelve years, it included a small technical and trade exhibition in London, and briefing seminars in London and Manchester. Held in the afterglow of the visit of the British Prime Minister, Mrs Margaret Thatcher, to Hungary in February, and a successful "British week" in Budapest, despite diplomatic pleasantries, the week highlighted the many difficulties inherent in East-West cooperation.

In nuclear power, for example, Hungary is committed to a programme based on Soviet VVER light-water reactors and Soviet fuel. Hungary provides the generating equipment and the resulting station is more than a simple matching of the two components, since the Hungarians have introduced a number of improvements of their own. Notably, they have developed a special containment system for the VVER reactor which they have managed to sell back for a Soviet power station. Since it would be unrealistic to envisage British nuclear reactors in Hungarian power stations, the only possibility of major cooperation would be in the joint supply of equipment to a third (preferably neutral or nonaligned) country.

In some sectors, cooperation in knowhow seems more promising than in hardware. The Hungarian modification of the PROLOG programming system, M-PROLOG (the M stands for modular) seems to offer a number of possibilities. In one case, the construction of dry-cooling towers for conventional power stations, Hungary has to some extent stolen a march on Britain; using a principle pioneered at Rugeley in the 1960s and since abandoned in Britain, the Hungarians have secured several valuable construction contracts in arid countries. The Hungarian visitors, incidentally, seemed only too willing for future British partnership in such ventures.

But many obstacles stand in the way of further cooperation. For instance, the Csepel machine tool works can offer high-precision computer controlled machine tools at prices attractive to British entrepreneurs. But if the device breaks down, up to a fortnight of valuable production time could be lost while the maintenance engineer applies for a visa for his service call. Perhaps, in future, events aimed at promoting technological cooperation should include a session in which the technologists and customers could tell the bureaucrats how the latter could best help by removing or ameliorating tiresome non-economic constraints. **Vera Rich**

seven per cent a year and supports a network of 3,200 research institutes. The Soviet scientific enterprise, DoD ruefully points out, enjoys several advantages over that of the United States. Soviet educational institutions graduate five times as many scientists and engineers; and funding for strategically important programmes is not subject to the political uncertainties endemic in the United States.

Buttressing this indigenous effort, DoD