Japanese conservation

War on war on migrating birds

Tokyo

JAPAN may not have much of reputation abroad when it comes to protection of wild life. But inside the country, conservation groups are growing stronger. In the coming weeks, volunteers from the Wild Bird Society of Japan will be taking to the hills in force to try to prevent the mass netting of migratory birds.

During middle to late November, migrating birds pour into northern Japan to escape the Siberian winter. In olden days, many were netted out of sheer necessity;

the farmers of the northern provinces were poor and the birds provided one of the few sources of protein in winter. Now that Japan is an advanced technological power, poverty has disappeared and there are not many people left in the bird netting business. But advanced technology has also made it possible for a few people to catch an enormous number of birds.

Nowadays, Japan makes the world's finest mist nets — light, strong and so fine that they are invisible to the bird's eye — and plenty of inexpensive audio systems that can be used to broadcast recorded bird calls. The result is that flocks of thousands of birds may be drawn into a large net and captured at one time. Those most frequently taken are *tsugumi* (dusky thrush, *Turdus naumanni*), *kashiradaka* (rustic bunting, *Emberiza rustica*) and *atori* (brambling, *Fringilla montifringilla*). Last year alone it is estimated that more than four million birds were killed and mostly sold to restaurants. And as a thrush can fetch as much as 1,000 yen (nearly US \$5) it is a profitable business. Recently it has attracted the interest of criminal gangs.

The setting of mist nets has actually been illegal since 1947, but as there is no restriction on their sale and fines for illegal taking of birds are small, the law has had little effect.

Increased concern for wild birds is now beginning to make inroads into the poachers' takings. The membership of the Wild Bird Society of Japan has increased

seven or eight times since the end of the 1970s to its present 16,000. This year, for the first time, volunteers from the society will patrol the hills all through the key November weeks, searching for illegal mist nets. If any are found, the evidence is guarded and the police called.

The society would like to take things a step further and ban manufacture of mist nets altogether. That would please environmental groups in Italy and Spain which are fighting a mass capture of migrating birds in their own countries. Mist nets are imported from Japan. The Environment Agency, which has been pressing local governments to crack down on the poachers, is also backing a ban on mist nets. But the agency lacks regulatory powers and has yet to move the ministry responsible, the Ministry for International Trade and Industry (MITI). So far, MITI has tended to take the manufacturers' side, for a variety of rather spurious reasons, including the possible effect of a mist net ban on the hair net industry.

Alun Anderson

New Soviet guidelines

THE new draft programme of the Communist Party of the Soviet Union, the first since 1961, includes not only a strong commitment to scientific and technical progress, but also a code of conduct for scientists.

The party, it is stated, "supports the bold quest, the rivalry of ideas and approaches in science, and fruitful debates and discussions". Contraindications for science therefore include: scholastic deliberations, the passive recording of facts without drawing bold generalizations, jumping on bandwagons, and severing oneself from reality. In view of the complex and interconnected nature of current problems, a deepening of the links between the natural, technical and social sciences is required. Forms of organization of science should be developed that will facilitate interdisciplinary study of topical problems and the necessary mobility of scientific cadres. The structure of scientific institutions and of research and development procedures must be made more flexible.

An "essential condition for the progress of science", it is noted, is the constant influx of fresh forces, including forces from the production sector, and the skilful utilization of scientists' creative potential.

Finally, and tacitly admitting that ideology is not enough to get and keep Soviet research working at full capacity, the programme specifically urges the provision of financial incentives for scientists "depending on their real contribution to the study of theoretical and applied problems".

Vera Rich

French ceramics

Plans for silicon carbide fibres

HERMES, France's answer to the US space shuttle, will be made of ceramic composite, and will thus avoid the sticky tiles that caused complications in the early days of the US craft. At least, those are the plans of Société Européenne de Propulsion (SEP), the company charged with preparing the curved nose, leading edge of the wings and underbody of Hermes, the parts that will face re-entry temperatures of up to 1,600 degrees centigrade for periods of some 20 minutes.

SEP has chosen for the task one of its most advanced ceramics, consisting of silicon carbide fibres bonded into a sintered silicon carbide matrix: "a kind of ceramic concrete", according to one British ceramicist. A major problem with such materials is to produce curved forms, and Hermes is of course full of aerodynamic curves. But SEP has been working on similar composites, including carbon-carbon matrices, for a decade, and has already produced trial curved silicon carbide/silicon carbide sheets some 50cm-1m across. This is a long way from the many metres required for Hermes sheets, but SEP reckons it has another ten years to develop the technology. If all goes well with the development, the ceramic will be more than mere cladding and will act as a structural part of the craft, although it may need support from more conventional stress-bearing structures underneath.

Meanwhile, according to M. Roger Lesgards, president of SEP, the company's first priority will be to establish French independence in the supply of the silicon carbide fibres, which at present come from Japan. SEP intends investing jointly with the French chemicals giant Rhône Poulenc in a factory to produce the fibres and the composite. SEP did the same with carbon fibres a year ago, in setting up a factory near Lyons to manufacture the fibres in concert with the steel company Alstom Atlantique.

Lesgards describes SEP as having a "really good position" in the world market for high thermal resistance composite ceramics. Japan asked SEP for samples of the silicon carbide/silicon carbide matrix, says Lesgards, and the US Department of Defense is interested in using the material for missile nose-cones. The composite is already in use as brake disks for Formula One racing cars, and is also being tested for use as vanes to direct the thrust of rocket motors.

SEP foresees three possible world markets for the material. The first, requiring production levels of a few tonnes per year, would be a market for space and military uses. The second, raising the market tenfold, would be in aeronautics (for example, in turbines). The third and largest,

involving another tenfold increase, would involve uses in diesel motors and other common equipment, which could raise demand to a few hundred tonnes a year, Lesgars estimates.

The material is costly to produce, but economies of scale could reduce cost tenfold at the highest market levels. Lesgars predicts. With this in mind, SEP recently entered into cooperation with the German diesel engine manufacturers MAN to develop ceramics for diesel motors, with support from French and German government agencies.

SEP also plans to extend its international cooperation to work on ceramic turbines with companies in Norway, Sweden, Spain and Italy, if support is forthcoming from this week's ministerial meeting on Eureka at Hannover. Under Eureka, SEP has put forward a plan for a FF 200 million (£18 million) research programme on ceramic turbines. The company has also proposed the development of a commercial demonstration ceramic diesel engine (FF 100 million) and two varieties of ceramic turbine (FF 100 million each). SEP would be happy if half of the total FF 500 million were supported by governments or banks, Lesgars says. **Robert Walgate**

British nuclear research

Harwell goes half-private

In the UK Atomic Energy Authority (AEA), 1 April 1986 is known as Vesting Day. This is Civil-Service-speak for the day on which AEA ceases to be a division of a government department and becomes a "trading fund", equivalent in status to that of a limited company in which the British Treasury is the only shareholder. Among other things, the authority will thus be able to lend and borrow money on the open market. The Treasury will set financial targets, and there will be high hopes on the government side that the authority will be able to generate a surplus.

AEA's largest establishment, the research laboratory at Harwell in Oxfordshire, is also the best placed to profit from the new regime. A year ago, an encouraging 33 per cent of its research was supported by non-governmental contracts, but now the figure is nearly 60 per cent.

To continue at its current level of activity, Harwell needs funds totalling £100 million a year. From next April, there will no longer be a subvention from the De-

partment of Energy (DoE) to cover research carried out on behalf of government departments and other parts of AEA. Instead, separate contracts will be negotiated to cover each research programme — including fast reactor research, fusion research and work on thermal reactor and general safety research. It does not follow that the individual contracts will together compensate for the lost lump-sum contribution, the two being calculated in different ways, which is another stimulus for Harwell to look further afield for contracts.

Recent investment in the facilities at Harwell should help in the push for more outside contracts. A new radiochemical handling laboratory has been built, based on experience gained at Los Alamos in the United States and at Karlsruhe and Jülich in West Germany. The five high-integrity concrete cells can contain any combination of alpha, beta and gamma radiation. Each cell is ventilated separately so that a chemist measuring, say, a caesium isotope in one cell need not fear that someone else's experiment is generating just that activity at the other end of the containment area. Experiments are set up in large stainless steel boxes, or "cassettes", before being hoisted into the containment cell on cranes.

The new laboratory was opened last week by Sir Frederick Dainton, on his last day as chairman of the National Radiological Protection Board. The date was chosen to mark an anniversary of sorts — 40 years ago, on 29 October 1945, Prime Minister Clement Attlee announced in the House of Commons that Harwell, a disused airfield near Didcot, was to become Britain's first nuclear research laboratory.

Main customers for the new facilities will be British Nuclear Fuels Limited, the Central Electricity Generating Board, other AEA divisions and Amersham International, the radiochemicals company spun off from AEA several years ago. Although the company is now branching out into the increasingly popular field of non-radioactive assay kits, Amersham's isotope business is still large, and will be an important part of Harwell's plans, managed through Amersham's own offices on the Harwell site.

While Harwell can contemplate a future of at least the same level of activity as now — provided that in the long term it is able to adapt to the changing needs of industry — some other AEA divisions have fared less well in recent government reviews. Spending on fusion research at the Culham laboratory, for instance, is to be reduced by £1 million, £2 million and £3 million in three successive financial years. However, support for the Joint European Torus (JET), also sited at Culham, is not affected. **Charles Wenz**

New Soviet space agency is formed

THE Soviet Union has established a new space agency to make use of space research results in the national economy. The existence of the Main Administration for the Creation and Use of Space Technology for the National Economy and Scientific Research (*Glavkosmos*) was revealed last month in an unremarkable middle-page interview in *Izvestiya* with the new agency's head, A.I. Dunaev. This reticence is all the more remarkable because, when the Soviet press daily castigates President Reagan's strategic defense plans, *Glavkosmos* might have been used as evidence of the more peaceful Soviet approach to space.

Reticence, however, seems to be the keynote of *Glavkosmos*. The interview does not reveal when it was established, only that it "has been set up and has started working". Dunaev, however, refers to all its activities in the future tense, suggesting that it is a very recent innovation. Dunaev's own identity, too, remains obscure. Nothing is said of his career or academic qualifications, his background or even his given name and patronymic.

Even the purpose of *Glavkosmos* itself remains obscure. Dunaev notes the benefits of space research to the Soviet economy; long-distance communications (including the simultaneous printing of Moscow newspapers in Siberia and the Far East), meteorology, land-resources survey, navigation and the international "Kosmos-Sarsat" air-sea rescue system as well as the production of new superpure and biologically active materials aboard manned spacecraft. But his list reads like a

summary of the Soviet presentation at the United Nations conference on the peaceful uses of space (UNISPACE-82) three years ago.

Within the Soviet Union, the main purpose of *Glavkosmos* seems to be administrative. A number of ministries and government departments, Dunaev said, are concerned as are scientific organizations.

A special coordinating body is now needed, and *Glavkosmos* will have charge of the planning and space projects for the collection and dissemination of space information for practical purposes, and will also be responsible for Soviet participation in international cooperation programmes, both the Comecon "Interkosmos" project, and broader programmes such as the current *Veha* (Venus/Halley) probes in which nine countries are cooperating.

Whether *Glavkosmos* will be responsible for Soviet manned programmes is unclear. Dunaev's reference to future long-term stations is part of a general outline of space plans, not of the specific functions of his agency. Also unclear is the relationship of *Glavkosmos* with the Space Research Institute of the Soviet Academy of Sciences, which so far has acted as coordinator for the transmission of space data to the production sector.

Glavkosmos will not, it appears, be responsible for research planning, and its creation seems merely to interpose one more body between research and production. But it is precisely here that endemic delays in the transmission of results occur.

Vera Rich