

Dounreay fast reactor, and of the original composition of the rods. At the end of the year, some of these rods had been through reprocessing: here ^{235}U can be measured easily only at the end of the flow, and by neutron activation analysis in the cans (which are stripped off at the beginning of the process).

When the 11 kg accounting loss was discovered, great efforts were made to recalculate the quantity and check measurements. The new figure was different (the authority will not release it) but it was agreed to keep to the original accounting value. However, the difference was great enough to indicate that the uncertainties in the original estimate were of the same order as its value — about 10 kg. For example, the recalculated figure for ^{235}U in the original rods was 2 kg different from the first estimate.

However, still no calculation was made of the uncertainty, or "error", on the quantity. And this despite a statement a year ago by Dr A. G. Hamlin, director of the UKAEA Nuclear Materials Accounting Control Team, that "in order to determine whether MUF is really indicative of diversion of material, the safeguards authorities need to know, among other things, the expected level of errors. . .".

Robert Walgate

US research planning

NIH reprieved

Washington

The National Institutes of Health (NIH) have avoided the threat of new legislation which would have placed much closer congressional surveillance and control on their research programmes, proposed earlier this year by the House of Representatives health and environment subcommittee (see *Nature*, 22 May).

After intense opposition from medical schools and research institutes — and despite the support of the Secretary of Health and Human Services, Mrs Patricia Harris — proposals put forward by Subcommittee chairman Henry Waxman were mostly dropped when the bill was agreed in final form by the House and the Senate.

Also dropped were equally controversial proposals put forward by Senator Edward Kennedy on the Senate side for a Presidential Commission on biomedical research priorities. Senator Kennedy had wanted to attach this to legislation which re-authorizes the operations of the National Cancer Institute and the National Institute for Heart, Lung and Blood, the only two of NIH's eleven institutes at present requiring such legislation.

NIH themselves opposed both innovations, but were told by Mrs Harris to sit on their hands. Opposition was subsequently led by groups such as the American Association of Medical Colleges, which argued that NIH should be given the greatest possible freedom to

decide on their research strategies.

NIH did not, however, escape completely unscathed. Included in the authorization bill are requirements for additional administrative arrangements covering diabetes research — a pet subject of retiring health subcommittee member Senator Richard Schweiker, expected to become Mr Reagan's Health Secretary — and for research on digestive diseases. NIH officials feel that one disadvantage of the changes proposed by Congressman Waxman is that regular re-authorization of NIH research funds makes it easier for such provisions to be attacked by individual congressmen.

David Dickson

European environment

Small gains

Brussels

Agreement has still not been reached by the Environmental Council of the EEC on two pieces of legislation: one concerning the prevention of industrial accidents and the other on the level of mercury discharge. However, new controls on whale imports, the recycling of waste paper, and wildlife habitation have been accepted.

At the meeting in Brussels on 12 December, the so-called "Séveso Directive" again foundered on the French intransigence over transfrontier notification procedures. It had been proposed that information on potentially hazardous plants near frontiers should be made available on a Community basis. The French would prefer notification of neighbouring states bilateral — an idea swiftly rejected by Belgium and Luxembourg. This disagreement is bound to step up the campaign against French nuclear reactors near the Belgium and Luxembourg borders.

The directive on mercury is also meeting resistance from France and Britain. The UK delegation insists that environmental quality objectives be used instead of standard emission limits to measure pollution. In the draft directive — the first to be based on the controversial directive on the control of discharges of dangerous substances into the aquatic environment — it was suggested that the United Kingdom stick to its use of quality controls while the other EEC states use the limit value approach. The French, however, object to this, feeling that pollution abatement costs should be the same throughout the Community. Both this and the industrial accident proposals will now go back to the Committee of Nine's Permanent Representatives for further discussion.

On the bonus side, from 1 January 1982 imports of commercial whale products will be banned. Would-be importers will have to apply for a licence not only for primary products but also for any goods (such as leather) which have been treated with a whale product. Denmark's insistence that

Greenland be excepted from this rule was accepted.

A recommendation obliging the nine member states to take steps to recycle waste paper and pulp was also adopted. Inks or glues which adversely affect the recycling process may fall victim should the legislation be seriously applied.

It was also agreed to finalize the Community's adherence both to the Strasbourg Convention (the Berne Convention) on the protection of European wildlife and their natural habitats and to the Geneva Convention on trans-frontier air pollution.

Jasper Becker

High-energy physics

New man, new style

The next director of DESY, the West German particle physics laboratory at Hamburg, will be 49-year-old Dr Volker Soergel, at present a member of the directorate of CERN, the European centre for particle physics in Geneva. Departing DESY director Professor Herwig Schopper announced the appointment during his leaving party at DESY last week.

Schopper moves to CERN in January as director-general; and Soergel will step into his shoes at DESY, even to the point of taking over his predecessor's professorship at the University of Hamburg. But from there on the similarities between the two individuals stop. Schopper had proved himself an extremely able politician in his period at DESY, but is less well known as a physicist; Soergel is a recognized expert on the weak decays of elementary particles, but has yet to learn the ways of Bonn.

However, he is by all accounts an extremely able administrator. According to one ex-CERN physicist, he could complete in ten minutes meetings that should have taken an hour — by resolving conflicts of interest beforehand. In this sense his style is ordered and Germanic. But at the same time, it is said, he can wax enthusiastic "and talk for hours about some harebrained scheme".

At DESY there are plenty of schemes, harebrained or not. A 30-beam synchrotron radiation laboratory opens in January; PETRA, the big electron-positron ring, is being pushed up to 22 GeV per beam in an attempt to find the elusive t-quark; superconducting magnets are being developed; and there are long-term plans for HERA, an 800-GeV proton on 35-GeV electron collider. But first, Soergel must find cash for DESY to pay its electricity bills (see *Nature* 4 December).

Being interested in the weak interaction, he will be keen to run PETRA at the energy where it can take data fastest on weak-electromagnetic interference, and check — in a hitherto impossible way — the Nobel-prize winning Weinberg-Salam unified theory of the weak and electromagnetic interactions. DESY physicists now

estimate that this requires experiments at 16 GeV per beam — not DESY's top energy, but enough to break the present budget if pursued for more than half 1981 running time. Given the cash, they say, they could have a result by May or June. It will be interesting to see if Professor Seorgel can get it.

Robert Walgate

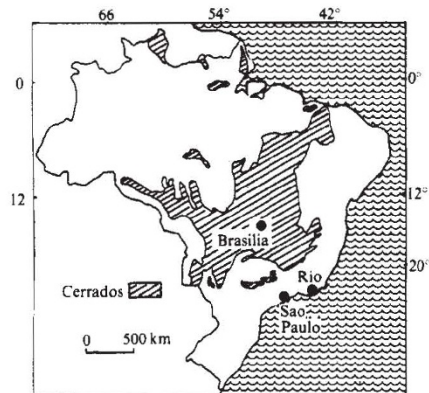
Brazilian agriculture

Soya beanfeast

Brasilia, November

In the scramble to develop its unexploited resources, officials say that Brazil is turning away from the Amazon Basin to an area of savannah, known locally as the Cerrados, covering about 180 million hectares mainly in the centre of the country. Attempts to open up the Cerrados, including the building of Brasilia, have so far produced only moderate results. But scientists have now convinced the government that the region offers great potential for agriculture.

The problem with savannah regions is that the very old soils have been leached of plant nutrients so only rough scrub supporting inefficient cattle grazing will grow. Aluminium concentrations in the Cerrados are also up to three times more than will be tolerated by most crops. Yet the soil structure and climate are good.



The problems of cultivation in the area are largely the responsibility of a government research institute, in the middle of the region, about 20 miles outside Brasilia. According to Dr Elmar Wagner, its scientific director, the aluminium and acidity problem can be solved by adding limestone, in quantities of roughly 2 tonnes per hectare depending on the crop to be grown. Fertility can be finally restored by adding approximately 150–180 kg of phosphate per hectare, and then maintained by the addition of nitrogen, phosphate, potassium, a trace of zinc and good soil and crop management.

Although Dr Wagner claims that agriculture can be maintained with less fertilizer than is commonly used in industrialized countries, fertilizing such a vast area would be a costly undertaking for Brazil, which has to import most of the raw materials for its fertilizer. So the search is

on for suitable nitrogen fixing crops.

Brazil has already experienced considerable success in breeding soya beans, now its main export crop, which fix all their nitrogen requirement. But attempts in 1979 to introduce nitrogen-fixing soya beans into the Cerrados from the southern coastal states were unsuccessful. Now a team at the Rural University of Rio de Janeiro claims to have discovered why.

According to Joanna Dobereiner, leader of the team, the sudden cultivation of newly-reclaimed tropical soils seems to increase *Streptomyces* fungi which produce antibiotics that kill off nitrogen fixing *Rhizobium* bacteria on the plants' roots. By isolating those strains of *Rhizobium* which survive and inoculating them into soya bean roots, she obtained good soya bean yields in a recent field trial in the Cerrados. She claims that by careful rotation of crops and by use of streptomycin-resistant *Rhizobium*, it may be possible to eliminate most of the need for artificial nitrogen fertilizer which accounts for 70 to 80 per cent of all fertilizer investment.

Most of the growth in farming in the Cerrados since 1975 has been in rough pasture for cattle raising. But Dr Wagner thinks that greater efficiency could be achieved by concentrating on grain crops and forestry. By cultivating most of the area available with improved methods he estimates that the total annual yield of grain crops could rise from 7.5 million tonnes now to 125 million tonnes and that of forestry from 15 million tonnes to 600 million tonnes. Meat production, he says, could be increased from 2.2 million tonnes annually now to 8.0 million tonnes even with pasture area reduced from 144 million to 80 million hectares.

With ambitious plans to cut oil imports further by using alcohol substitutes for petrol and vegetable oil substitutes for diesel, Brazil's need to open up more land to cultivation is becoming crucial. The problem was highlighted this year when Brazil was forced to import black beans from Mexico because some black bean land in the south had been turned over to alcohol production. The question now is whether the Cerrados could be used to grow food, leaving the traditional agricultural lands of the south free for sugar cane for alcohol, or whether the Cerrados itself could be turned over to sugar cane production.

Whatever the decision, the government will be faced with the problem of encouraging the growth of the Cerrados. It has been criticized in the past for encouraging the exploitation of land by wealthy southerners who seek quick profits and who have little interest in long-term development. A major challenge now will be transferring the results of research to the farmer and helping Brazil's underprivileged farming community in the north-east region to take part in the developments.

Judy Redfearn

Schmitt stars again

Washington

Eight years ago he was collecting rock samples on the Moon. This summer he was a key fund-raiser for presidential candidate Ronald Reagan. And next year he will be the central figure for science in the US Senate, with responsibilities ranging from the programme of the National Aeronautics and Space Administration (NASA) to the budget of the National Institutes of Health (NIH).

A graduate from the California Institute of Technology with a PhD in geology from Harvard, Harrison (Jack) Schmitt won a surprise election victory as Senator for New Mexico in 1976.



Astronaut (right) and Senator (left) Schmitt

Last week he was appointed to head the Senate Commerce Committee's subcommittee on science technology and space. The committee is responsible for overseeing the programmes of both NASA and — if Senator Schmitt has his way — the National Science Foundation.

Not surprisingly, Senator Schmitt has been a keen supporter of the space research programme. With Senator Adlai Stevenson, the subcommittee's present chairman, he has been strongly critical of the Carter Administration's "unimaginative" approach to space policy — and his appointment has been welcomed in the space science community.

More controversial is his selection as chairman of the Senate's labour, health and human services subcommittee — responsible, among other things, for the biomedical research budget of NIH. This post was expected to go to Senator Charles Mathias, a liberal Republican and an enthusiast for biomedical research. But Senator Mathias has now shifted his attention to the Judiciary Committee, where he will counterbalance that committee's new chairman, conservative Senator Storm Thurmond.

Senator Schmitt's attitude towards this area of research is little known. Although a member of the present subcommittee, he has played little part in its deliberations on the NIH budget. As a geologist, he is expected to favour support for basic science; as an astronaut, NIH officials fear he may be drawn towards the high technology aspects of medical care, rather than its social and environmental dimensions.

David Dickson