

any are discovered the plan is to manufacture them with bacteria containing synthetic genes.

Searle may also use biotechnology in the less glamorous pursuit of producing, more cheaply than at present, the two amino acids that are fused together to make aspartame, Searle's low calorie sweetener which was approved for tabletop use in the United States last year. Both amino acids come from bacterial fermentation and so it is possible that the bacteria could be genetically manipulated to produce either amino acid more efficiently than at present.

Peter Newmark

Remote sensing

What war use?

Landsat, the US remote sensing satellite launched by the National Aeronautics and Space Administration (NASA) could have been used by the Argentine and British governments to obtain images of the Falkland Islands, but probably to little effect. While Landsat can pick up data from all over the globe, it passes over the Falklands only every eighteen days and a further twenty-four hours are then required to process images. Landsat has a resolution of 80 metres and could pick out — with luck and favourable weather conditions — an object as large as an aircraft carrier.

Landsat-3 is a near-polar orbiting spacecraft launched in March 1978. It carries visible and infrared wavelength sensors which send back images used in agricultural surveys, mineral and oil exploration and pollution monitoring. NASA collects the satellite data at Goddard Space Flight Center in Greenbelt, Maryland and it is then sold by the Interior Department through the Geological Survey's EROS (Earth Resources Observation Satellite) Data Center in Sioux Falls, South Dakota.

Fresh images can be obtained from NASA by prior arrangement but the usual time-lag is anything from one to six months. Ground stations within a 2,000 km range can pick up real time broadcasts by radio link. The British defence department's National Remote Sensing Centre at Farnborough, Hampshire, is licensed under ESA's Earthnet programme to tune into transmissions over Europe. Argentina also has a ground station at Mar Chiquita (600 km north-west of Buenos Aires), but to obtain fresh images of the Falklands, it would have to make a special arrangement with NASA so that the data would not be wiped off the recorders on board, which are limited in the amount of information they can store.

The delay in obtaining fresh images and the coarseness of their resolution makes the strategic use of Landsat dubious. Landsat images may, however, have provided information about prevailing terrain conditions.

Jane Wynn

Nairobi environmental meeting

More and less

A Japanese environmental delegation is this week trying to recover its pride, after its proposal for a "Brandt commission" on the environment took a battering at a series of environmental meetings in Nairobi.

Japan had proposed that a group of independent and widely respected personalities get together to produce a weighty document on the global environment to the year 2000. Much to the delegation's chagrin, however, the Group of 77, representing developing nations, proved solidly opposed to the idea. The group wanted direct development aid — for re-forestation, for example — and not simply another expensive report for the bookshelves.

This was only one of the little battles which have coloured Nairobi life in recent weeks, during the three meetings which celebrated the ten-year anniversary of the Stockholm environment conference. The meetings held were one for non-governmental organizations concerned with the environment, a "meeting of special character" convened by the United Nations Environment Programme (UNEP) to review the decade, and the general council of UNEP itself.

Environmentalists have left the meetings with mixed feelings. A lot of hard political and scientific lessons had been learned over the decade, said one, but there was still a consummate lack of will to do anything practical.

The current governmental attitude was represented by the level of the delegations sent by most countries to the "meeting of special character". UNEP invited all heads of state, but in the end there were just three — Presidents Mobutu (of Zaire), Nemeiry (Sudan) and Arap Moi (Kenya). The United States sent its head of the Environmental Protection Agency (EPA), Anne M. Gorsuch, who made a fine speech recording US environmental support in the 1970s. Ms Gorsuch has been generally regarded as President Reagan's ax-woman at EPA, so her speech came as a surprise. However, she left her cutting comments for a press conference — the US contribution to UNEP would fall from \$7 million in 1982 to \$3 million next year, she said. James Buckley of the State Department added that the US government saw UNEP as a "catalyst" rather than a prime actor.

One bonus for UNEP, though, came from a surprising quarter. Britain's junior environment minister Tom King promised an increase in the British contribution from £600,000 this year to £750,000 next. Even allowing for inflation, this is a substantial increase, which the UK Department of the Environment must find within its cash-limited budget. "We are conscious that resources are strained", said Mr King, and "now is the time for action".

Libya also promised its first ever contribution to UNEP — \$1 million. The Netherlands offered another 50 per cent; Japan, Finland, Malaysia, Uganda and Thailand also promised more. But these increases would not cover the big cuts threatened by the United States.

There was agreement on one thing, however: a declaration, now to be known as the "Nairobi declaration", sixteen pages of fine prose. "The world community of States solemnly reaffirms its commitment" says the declaration "to the Stockholm Declaration and Action Plan . . . It also reaffirms its support for strengthening UNEP as the major catalytic instrument for global environment cooperation . . .". The word "catalytic" is to be noted.

Robert Walgate

Information technology

Europe wakes up

Brussels

Europe's leading electronics and information technology companies are taking seriously the European Commission's grandiose plans to pool all their research efforts. Dubbed "Esprit", the European Strategic Research Programme in Information Technology, it has evolved in a series of meetings that the Commission has held with leading European electronics firms during the past year.

The first fruits of these discussions have been leaked from a communication sent to the Council of Ministers in preparation for the EEC's Science Council to be held on 30 June. Yet despite industry approval, it is in the political arena that the real fight will take place to get the Commission's ambitious ideas implemented. Discussions with UK government bodies such as the Department of Industry and the Science and Engineering Research Council have left officials in Brussels with the impression that although there is token acceptance of Esprit's principles, the national officials doubt that they can ever be realized.

Europe is losing out to Japan and the United States in the race to develop information technology, argues the Commission, not for want of spending vast sums on research. Siemens alone devotes around \$800 million a year to research. Yet Siemens, ICL and the others are in financial difficulties and failing to reap the rewards from their research investments.

Industrialists feel strongly that to get the best out of Europe's research expenditure a new body should be set up to coordinate activities. Far from wishing to build empires, Commission officials dismiss the idea that they themselves should tackle this. A more professional body such as the United Kingdom's National Research and Development Corporation with experience in turning research into marketable products would be given the job. It would be co-financed by the companies involved

and the member states, and topped up from the EEC's budget.

The management of Esprit would be decentralized and controlled by industry. The aim would be to copy the Japanese by setting clear strategic objectives and concentrating research and exploitation on a few large companies. Areas already singled out for concentrated exploitation are: advanced microelectronics; advanced information processing systems usable by the man in the street; systems for office automation and computer integrated flexible manufacturing; and fourth and fifth generation computers. The Commission is also asking for some \$11 million to spend on preliminary pilot projects to sort out the best ways of implementing cooperation.

Radical though the scheme is, the Commission is pressing for an agreement by December 1982 and a start in January 1984. Without such a European effort being launched quickly, officials in Brussels are saying, European companies will increasingly be forced to take minor roles in cooperative deals with Japanese or American competitors — in the United Kingdom ICL is already moving in this direction.

While the Commission may be accused of being over-ambitious, it is clear that Esprit is being taken very seriously by Plessey, GEC, ICL, Nixdorf, Siemens, AEG, Honeywell-Bull, CIT Alcatel, Thomson-CSF and Philips. **Jasper Becker**

Space research

UK goes national

For the first time in ten years, Britain is trying to devise a coherent space policy. The impetus has come from the recognition, later than in other Western countries, that there is money to be made from selling space technologies and services. The British government's apparently sudden decisions, earlier this year, to allow and even encourage direct broadcasting by satellite and cable television point to its fear of losing out on new technologies now coming of age elsewhere in Europe and which are already well established in the United States. The plans now being discussed for a national remote sensing programme, based on the European Space Agency's recently approved Earth Resources Satellite 1 (ERS1) are thus meant to prepare British industry for the time when money can be made from remote sensing data and hardware.

But if the spirit has changed, where will the money come from? Public money will not flow freely, so what about private investment? A select group of financiers and representatives from the space community met last week in the Surrey country house belonging to Logica, the software company, to address that question. Disappointingly the sound of

money changing hands was muffled.

What little space policy Britain has had has been directed through its membership of the European Space Agency at the space segment, the hardware in orbit. Now it seems to be agreed that more attention must be paid to the use of data sent back from space — and to persuading people that they must pay for it.

Financiers, still wary of the risks involved in satellites, see more scope for helping to market space on the ground.



Based on the experiences of direct broadcasting and cable in the United States, they are convinced that there is a market in Britain, while industry seems keen to produce antennae and dishes for receiving direct satellite broadcasts. What the financiers want to know is how big the market will be.

Remote sensing, for which the market is diffuse and ill-defined, faces different problems. A programme of scientific research using ERS1 data has been worked out by the Natural Environment Research Council and the Science and Engineering Research Council, but nobody yet knows who will pay for remote sensing data. According to Sir Hermann Bondi, chairman of the Natural Environment Research Council, Britain is fortunate that ERS1 will be an oceanographic monitoring satellite. The need to analyse ocean data quickly because its usefulness is often only immediate will, he says, pave the way for the later use of land data.

Land remote sensing data may be more saleable, perhaps to mining companies and agriculture, but only in the long run. The experience of the National Aeronautics and Space Administration in running Landsat is, however, unhelpful; the early promises made for the data have not been fulfilled. The meeting last week seemed, however, confident that data from Landsat D, to be launched later this year, and from Spot, the French national remote sensing satellite, will be more attractive.

One problem that perplexed the meeting is that the applied science of remote sensing falls administratively between two stools, the Science and Engineering Research Council (science) and the Department of Industry (application). This is why there has been a spate of interest in the question whether Britain should have a space agency of its own. Given departmental jealousy, the outcome will probably be some kind of coordinating agency, more modest, for example, than the French.

Judy Redfearn

British radioastronomy

Fear of flying

The British propensity to jetset may cause acute problems for Cambridge radio-astronomers. In the next few months Graham Eyre, QC, the inspector at the public enquiry into the proposal to site the third London airport at Stansted in Essex, will hear evidence from the University of Cambridge that an expanded airport at Stansted would seriously impede work at Mullard Radio Astronomy Observatory.

The Mullard Observatory, which is situated some 35 miles from Stansted, has for many years had an agreement with the Home Office whereby aircraft interference is controlled. Interference occurs when ground transmissions are reflected back into the radio telescopes and when aircraft



In-line for interference — the 5-km radio telescope.

equipment gives out radio waves on the telescope's frequency.

If Stansted were to be expanded to take 15 million passengers a year, the option favoured by the British government, the increase in air traffic would mean that aircraft approaching the airport would start their landing manoeuvres within 4 to 5 km of the observatory. Work using low frequency wavebands — observations of the solar and interplanetary medium and of supernova remnants, for example — could be completely disrupted.

In support of its evidence to the enquiry, the observatory will also present a technical document assessing the amount of interference and the consequences for research, which are not easily quantified. The problem is that the frequency bands allocated to radioastronomers are also shared by other radio users, at present not allowed within 50 km of the observatory. With aircraft, the range would need to be expanded to 200 km, which is not a practical option for a busy airport.

The observatory has occupied its present site since 1956 and the area, which was selected for its lack of radio interference, has been kept "clean" ever since. It would be expensive and difficult to find another suitable site.

Jane Wynn