

member states are not pulling their weight. Germany, France and the United Kingdom share 80 per cent of Community research and development expenditure while the combined efforts of Belgium, Denmark, Ireland and Greece amount to as little as 6 per cent. The conclusions are being studied in preparation for the next EEC science council of ministers on 30 June.

Jasper Becker

## Luxembourg in space

### TV plan delay

Luxembourg is falling behind in the race to provide the first satellite broadcast for Europe. Unresolved wrangles about the relative sizes of French, Belgian and West German shareholdings in the projected £200 million Luxembourg system have now put back the earliest possible launch date until late 1986.

By then, the national satellites planned jointly by France and West Germany will probably have been up for a year. Also by late 1986, the new all-British Unisat, with two BBC channels, might be aloft.

Radio Tele-Luxembourg (RTL), the commercial company in charge of all broadcasting in Luxembourg, insists that its satellite project is a matter of when, not if. It plans to beam three channels of films, news, entertainment and advertising to a wide swathe from Benelux to Bavaria, and possibly to south-east England. It knows, however, that this ambition represents a big gamble for a small country. RTL, whose current radio and television programmes reach a weekly audience of 40 million in Europe, contributes 5 per cent (about £25 million) of the annual income of the Luxembourg government. Commercial broadcasting has been a major source of revenue for the 50 years since Luxembourg, accustomed to living on its wits, recognized that its central location, plus national sovereignty over its broadcasting policy, permitted it to send radio advertisements and popular music into countries whose governments prohibited one or both by their own broadcasting organizations. It was in 1932 that Radio Luxembourg began spoiling the determination of Lord Reith, the BBC's first director-general, that the British people should have no light radio entertainment on Sunday.

Now, however, with commercial radio and television sprouting all over Europe and eroding its audience, RTL must find a new service to sell or see its profits and contribution to the national purse atrophy. But even if its satellite succeeds in pulling in audiences and advertising revenue, the heavy costs of depreciation of the start-up years is going to hurt Luxembourg's economy, already in trouble with its first unemployment since the Second World War.

RTL cannot proceed, however, until it decides upon a new financial structure to

## Monsanto hands out \$23.5 million

St Louis

The Monsanto Company has awarded \$23.5 million to the medical school at Washington University in St Louis, Missouri, for five years of research into how proteins and peptides affect cell regulation. The grant, announced on 3 June, approximately doubles the research funds from non-federal sources at the medical school for that period, and is one of the largest from a single company to a university.

Monsanto's award is an obvious boon to the university's research programme: two-thirds of the money will go to applied research and one-third to basic research. Work will be selected by an eight-member committee — four university faculty members and four people from Monsanto — headed by Dr David M. Kipnis, head of the department of internal medicine at the university medical school. University researchers will be at liberty to publish the results of work funded under the grant, but if the material contains potentially patentable technical developments Monsanto can review it, and request a short delay before submission for publication. Monsanto will have exclusive rights to any licences

arising from patents on the work, but patents will be the exclusive property of the university, which will be able to receive royalties from Monsanto licences. Royalties will go to the university's research and education programmes — not to individual researchers.

Meanwhile, as many as "a couple of dozen" Monsanto scientists may work at the university and some may spend several years there. Monsanto's move clearly shows an interest in medical products, and Dr Howard A. Schneiderman, Monsanto's senior vice-president for research and development, says that while the company does not now market health-care products, it hopes to do so in future.

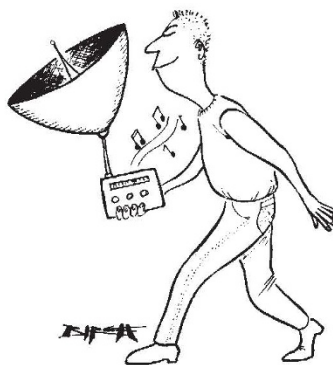
Monsanto launched a \$1.8 million project with Washington University earlier this year for research using monoclonal antibodies for diagnostic work. The company is also working with Dr Mary-Dell Chilton, of the university biology department, on genetic engineering in plants. Schneiderman did not, however, confirm rumours that a major new grant from Monsanto was imminent to support Chilton's research.

Karen Freeman

accommodate the necessary infusion of new capital. Although the company is registered in Luxembourg and has, by law, a majority of Luxembourg nationals on its board, its largest shareholder is predominantly Belgian. Also, French investors, notably in the form of Havas-IP, Compteurs Schlumberger and Paribas, are in a strong if not controlling position. RTL's problem now is how to introduce a

Once the go-ahead is given, RTL will invite tenders for the system (two satellites plus a spare). It will also decide whether to devote one of the three television channels to broadcasting in English. Any deregulatory move by the Hunt committee now inquiring into the expansion of cable television in Britain would undoubtedly sway the decision. Elsewhere, RTL insists, a vast expansion of cable television in Europe is not necessary to the success of its plan. It expects half of its audience to buy a rooftop dish to receive its programmes.

Brenda Maddox



big new outside investor — as a group of West German publishers (which does not include the giants) has offered about £50 million — without disrupting the delicate Franco-Belgian balance of power. The French hope to avoid excessive dilution of their own influence. But they, and the whole board, know that the matter will have to be sorted out next month if further delay is not to occur.

## Jobs and automation

### US faces facts

Washington

The effect that new electronic technology is having on jobs, which has been an issue of intense debate in Europe, is now a cause for concern in the United States.

A new study by the government's General Accounting Office (GAO) suggests that the recent revolution in electronics will be felt not just in manufacturing — the sector most affected so far by automation — but also in office and service jobs. And even within manufacturing, the spectrum of fixed automation introduced in the 1950s, and the initial applications of robots lately have tended to be in tasks that were considered menial, or monotonous or unsafe, for human workers. Spray painting



of automobile bodies is an example. Now, with microprocessors that can be incorporated into virtually every machine, even skilled and previously immune occupations such as tool-and-die making may be affected.

The critical question is the validity of what has been a traditional assumption: that technological progress brings with it more jobs. Several witnesses scheduled to testify next week before a House subcommittee investigating the issue doubt that assumption still holds. "We can't count on expansions in the white-collar or service areas, which is what saved us in the fifties and sixties", says William Bittle of the International Association of Machinists and Aerospace Workers.

An annual employment forecast issued by the Bureau of Labor Statistics (BLS)\* confirms that employment in at least some office and service occupations is being hit by electronic technology. "We do see some jobs disappearing", says Ronald Kutscher, assistant commissioner of BLS for economic growth and employment projections. Key-punch operators, telephone operators and virtually all the printing trades will be hard-hit, for example.

The other open question, though, is how many jobs will be created by the new technologies directly. Workers will be needed to build, install, adjust, and repair automated equipment. The GAO study found virtually no evidence that could answer this question, however.

The trade unions have apparently accepted that jobs will be displaced by automation. But the critical issue to them is whether enough time will be allowed for workers to find new positions. In Norway, unions have negotiated contracts that set a gradual rate for the introduction of new technologies. The possibilities of such contracts being agreed to in the United States seem much smaller. A common complaint by American trade unions is the tendency towards secrecy on the part of management and the absence of the sort of cooperation and consultation practised in Europe and Japan.

The House subcommittee hearings may be a small step towards some government action on the problem. Representative George Miller, who is holding the hearings, has introduced a bill (HR 5820) that would provide for vocational retraining of displaced workers in new occupations created by automation. The unions, however, tend to dismiss government-supported training as a subsidy for industry and an inefficient substitute for on-the-job training. More to the point may be another concern of Miller's: he points out that the government spends nearly \$2,000 million a year on labour-saving devices. **Stephen Budiansky**

## GM cancer prizes

# Rules to be bent

Although this year's General Motors Cancer Research Prizes have been duly awarded (see below), leaving Dr Howard Skipper, Dr Denis Burkitt and Dr Stanley Cohen each \$100,000 better off, the awards committees are clearly running into difficulties in selecting an annual trio of winners while sticking to the rules. Only four years after the awards started, the biggest worry is that of finding each year someone worthy of the prize "for the most outstanding recent contribution to the prevention of cancer, including environmental factors".

The rules of the prizes were set in 1978 when General Motors, disturbed by the number of its directors who had become victims of cancer, put \$2 million (just doubled) into a General Motors Cancer Research Foundation. The prizes are large enough to invite comparison with the Nobel awards; the rules, however, differ in interesting ways.

One rule, intended to eliminate fortuitousness, is that a prize winner should have made more than one major discovery. Their discoveries must have been made within the previous fifteen years unless their importance has been recognized only more recently.

One prize (Kettering) is for diagnosis and treatment of cancer, another (Mott) for prevention and the third (Sloan) for a contribution to basic science. Winners are chosen by a process that resembles that used for the Nobel prizes. From a list of 25,000 prominent scientists, about 6,000 each year are asked to nominate candidates. Three subcommittees, one for each prize, first pare the nominations to twelve. Last year, they had to sift through 114, 40 and 91 nominations respectively. By the second meeting, each committee member has to report on the merits of two of the twelve candidates, eight of whom are then eliminated. At a final meeting the committees rank two of the four remaining candidates in order of preference. Finally the awards assembly has to decide whether to follow the committee's advice.

This year the assembly argued whether it

should award the Mott prize for prevention. Nobody seems to have doubted the importance of Dr Burkitt's discovery of the childhood cancer that now bears his name (Burkitt's lymphoma) and his perceptive suggestion that it is transmissible (it later became clear that a virus is involved). Nor is it in doubt that he pioneered the chemotherapy of "his" lymphoma. But that was all more than fifteen years ago and in any case cannot strictly be considered a contribution to the prevention of cancer.

Turning a blind eye to those problems, the relevant committee and the assembly also had to grapple with the question whether Dr Burkitt's advocacy of the importance of dietary fibre in the prevention of cancer, the topic that has most occupied him in the past fifteen years, is more than a provocative hypothesis. In the end, it was not taken into account.

The choice of Dr Howard Skipper for the Kettering prize for diagnosis and treatment ran into much less opposition, although again the rules have obviously been stretched. Skipper is widely acknowledged as a pioneer of cancer chemotherapy. For 35 years he has influenced clinical chemotherapy by extensive studies on animal and cell models. His discoveries have influenced which drugs are used, in what combinations and their dosage and timing. It is, however, not easy to point to two major discoveries of Skipper's within the past fifteen years. His most recent work bears on the understanding of drug resistance in tumours.

Even for the least disputed of this year's prizes — that to Dr Stanley Cohen — an elastic interpretation of the rules is evident. There is no doubt that he put epidermal growth factor on the map and that it is relevant to cancer research. Cohen's earlier and very important work on nerve growth factor is not a contribution to cancer, and so the characterization and the biological effects of epidermal growth factor have had to be considered separate discoveries.

Perhaps prize rules are made to be stretched. Certainly as Robert Burton once said: "No rule is so general, which admits not some exception". But when the exception is the rule it may be time to change them. **Peter Newmark**



**General Motors Cancer Research Prizes 1982:** From left to right: Professor Stanley Cohen of the department of biochemistry at Vanderbilt University School of Medicine; Dr Howard E. Skipper, recently retired president of Southern Research Institute, Birmingham, Alabama; and Dr Denis Burkitt, honorary senior research fellow, St Thomas's Hospital, London.

\**Advances in Automation Prompt Concern Over Increased U.S. Unemployment* (General Accounting Office, May 25, 1982). *Occupational Outlook Handbook* (U.S. Department of Labor Bureau of Labor Statistics, April 1982).