Clinton's science policies and personnel have yet to emerge as he prepares for presidency

Washington. How high on the pecking order will research be in a Clinton administration? It was too soon to answer that question last week as US president-elect Bill Clinton began preparing to move into the White House.

Science was not an issue during the campaign, although both Clinton and President George Bush paid lip service to the importance of research. (Ross Perot hardly addressed the topic.) Interest in the subject was dwarfed by concern about reviving the US economy, reducing the federal budget deficit and creating a more comprehensive and less expensive health care system. As a result, anyone who pretends to know what Clinton thinks about science is putting on airs and, also, is quite likely to be wrong.

Nevertheless, there is already much speculation about the next four years. Many are optimistic about the prospects for science, although there is concern that research may have a hard time competing against other worthy demands on scarce federal dollars and, more specifically, against efforts to improve US manufacturing and repair the crumbling infrastructure. At the same time, the air is filled with anticipation about a successor to D. Allan Bromley as the president's science adviser and whether Walter Massey and Bernadine Healy will retain their jobs as directors of the National Science Foundation (NSF) and the National Institutes of Health (NIH) respectively.

Al Gore is ready to implement whatever science and technology policy a Clinton administration decides it wants.

Looming as a wild card is vice president-elect Al Gore. Referred to derisively as "Ozone" by the Bush campaign because of his interest in environmental matters during his 16 years in Congress, Gore is widely expected to be a one-man clearinghouse for the president on science and technology issues. But it is not clear how Gore will do that.

"The last thing we want is another layer of bureaucracy", says one campaign adviser. "Gore doesn't want to second-guess the science adviser, although he'll want to be in the room when the science adviser talks with the president."

One possible solution is that Gore might become head of what the Clinton campaign has called an Economic Security Council, a body similar to the National Security Council that would add a technological component to the traditional review of domestic issues. Such a position would give him an opportunity to apply his knowledge and the political clout to insist that agencies carry out what the president wants.

"We don't want to do what the Bush administration did with Dan Quayle and the [National] Space Council by setting up a structure separate from the White House and NASA", says the campaign aide. "They delayed policies; we want to find a way to carry out the president's program, not get in the way."

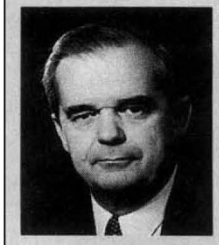
Although many names have been offered as Bromley's successor as science adviser and director of the Office of Science and Technology Policy, none has as yet caught the attention of the president-elect's transition team. Many are expecting a person from industry, in particular one experienced in manufacturing. Others believe that it is time for someone from the life sciences, perhaps biotechnology, to assume a job traditionally held by a physicist orientated towards national defence. Few expect Clinton's science adviser to be a career academic, as is Bromley.

As for the White House science office itself, Clinton's campaign rhetoric suggests that it will play an active role in coordinating technology initiatives. But reality says otherwise: the office is already too small to take on such responsibility, and Clinton has promised to reduce the federal work force by 100,000. "A bigger science office just isn't in the cards", says one aide.

What of Massey and Healy? Opinion is divided as to whether a decision to replace them would mean that Clinton has politicized the offices (Massey's term runs until 1997, and Healy serves at the pleasure of the president) or that he simply prefers fresh faces. In their favour, Healy's emphasis on the need for NIH to serve society, not sci-

Science loses two good friends

Washington. Science lost two of its staunchest advocates last week as US voters replaced more than a quarter of the 435 members of the lower house of Congress. The defeat of US Representatives Joe Early (Democrat, Massachusetts) and Bill Green (Republican, New York) seems likely to weaken congressional support for research at a vital point — within the subcommittees that set the annual budgets for the National Institutes of Health (NIH) and the National Science Foundation (NSF).



Joe Early, left, and Bill Green

"It's a major blow to the biomedical research community", says Roger Fuller of the American Federation for Clinical Research about Early's defeat after nine terms by Peter Blute, a Massachusetts state legislator. "Hundreds of millions of dollars have been put into NIH and other research accounts because of his advocacy of the intrinsic value of basic research." Philip Sharp, a cancer researcher at the Massachusetts Institute of Technology, was one of many scientists throughout Massachusetts who rallied behind him "not because he delivered the goods for Massachusetts but because he understood that research was good for the country".

Green, who has served for 15 years, played a role similar to Early's as the senior Republican within the subcommittee that determines NSF's budget. Green was defeated by Carolyn Maloney, a New York City councilwoman whose efforts to link Green to his party's failed economic policies proved successful in a liberal Democratic district.

Both subcommittees will undergo wholesale changes when the new Congress convenes in January. NSF's will have a new chairman, probably US Representative Louis Stokes (Democrat, Ohio) and five of its nine members will be new. **J.M.**

ence, is expected to be welcomed by the Clinton administration, as is NSF's current review of its mission and Massey's determination that the foundation should serve industry as well as academics.

At the same time, the two directors have very different personal styles. Healy's brashness has alienated many Democratic legislators, and there are few who would defend her if the Clinton administration decided that she is a political liability. In contrast, Massey has such a nonconfrontational style that he is unlikely to cause any problems for a president with more pressing issues on his agenda.

The future of funding for basic research is no easier to predict. Last year, in a break with tradition, Congress did not even match the president's request for NIH, and there are those who blame Healy for not fighting harder. As for NSF, the president's annual request for a double-digit increase once again was virtually ignored by a Congress that needed more money for veterans' health care, housing, the space station and other programmes that come out of the same appropriations bill.

President Bush is roundly criticized by researchers for proposing large increases for science but being indifferent to their fate. However, Republicans could always place the blame on a Congress controlled by the Democrats. Clinton will not have that option, of course, and it is expected that he will propose smaller increases but fight harder to achieve them. **Jeffrey Mervis**

Fraunhofer institutes told to get more from industry

Munich. The Fraunhofer Society, which runs 47 applied research institutes in Germany, has been warned that it must look more to industry for its financing. The German Ministry of Research and Technology said last week that it will reduce its contribution to the society and suggested that the society should consolidate rather than continue to expand.

The Fraunhofer Society was founded in 1949 by industry and government as a nonprofit-making body to bridge the gap between academic institutions and industry. Its success in 'technology transfer' has been the envy of many governments, particularly Britain's, which is investigating the possibility of setting up similar systems (see *Nature* **355**, 757; 1992). The number of institutes it runs has nearly doubled in the past 20 years.

The society receives its basic support from public funds, and additional money from various companies. Research minister Heinz Riesenhuber says that the society should increase the fraction of its income from contract research from 35 per cent to at least 40 per cent. Although the federal government will be making fewer grants, it will retain the 90:10 split between federal and local governments.

State funding of the institutes reached a peak this year of DM343 million (US$220 million), including the establishment of eight institutes in the former East Germany. The government's Ministry of Research and Technology, whose own budget has been reduced, says that Fraunhofer institutes will bear a larger proportion of the cuts than other institutes conducting basic research but that plans for development of the eight new institutes will go forward.

Germany's economy is driven by small and medium-size companies that find it cost-effective to contract out their research. But the Fraunhofer Society believes that the recession will make it harder for its institutes to make up the shortfall created by government, and that some of its 7,600 employees may have to be laid off. Those companies can also look to research being done in the United States or Japan, warns the society's president, Max Syrbe, if the German government does not maintain the excellence of its applied institutes.

Alison Abbott

Pulsars to star in forthcoming UK music festival

London. The Lovell radiotelescope at Britain's Nuffield Radio Astronomy Laboratories at Jodrell Bank will share top billing in a concert this month. The occasion is a performance of "Le Noir de l'Etoile" (The Dark Side of the Star) by the French composer Gerard Grisey at the Huddersfield Contemporary Music Festival.

The multimedia work incorporates text by French astronomer Jean-Pierre Luminet, an intricate light show projected onto an acoustic canopy that envelops performers and audience, music played by the six members of Les Percussions de Strasbourg and the sounds of two pulsars. One pulsar, in the Vela nebula in the southern skies, is prerecorded while the second, designated PSR0329-54, will be relayed by Jodrell Bank direct to the Huddersfield Sports Centre. The concert will take place on 22 November.

At two points in the performance the six musicians will fall silent, leaving the way clear for the pulsar sounds to be conveyed over a battery of loudspeakers. Elsewhere, the radio pulsations are heard only by the musicians and provide the basic tempo for the work.

The Vela nebula: a source of sound

Grisey was introduced to pulsar sounds in 1985 by cosmologist Joseph Silk while teaching composition at the University of California at Berkeley. He likens the sound to African drums and says he was inspired by the varying tone colour of the pulses (from the stochastic processes that generate the radio signals) and the regularity of the rhythm.

The work has been performed at Brussels and Strasbourg using live sounds transmitted by the radiotelescope at Nancy. But the superior sensitivity of the Lovell telescope and the technical lessons learnt from those performances is expected to make for a truer rendition of the artist's intentions.

The cultural excursion will not interfere with the telescope's scientific programme, according to Andrew Lyne of Jodrell Bank. Radioastronomers routinely turn the telescope dish towards various pulsars to check their timing and to look for changes in the interstellar medium traversed by the radio signals; the concert is simply a matter of squaring this particular pointing with the performance.

Roland Pease