Whither US science now?

Colin Norman surveys the post-election scene from Washington

WHEN it became clear shortly before dawn last Wednesday that Jimmy Carter had the electoral votes needed to put him into the White House, many Americans switched off their television sets and went to bed knowing who their next President would be, but not what he will do. Substantive policy matters were almost submerged in a flood of trivia during the long, tedious election campaign as the candidates' many rhetorical blunders, racist remarks of Cabinet members and non-political matters such as abortion claimed the spotlight. Although the campaign lasted many months and cost millions of dollars, it seems to have left most voters puzzled about where the candidates stand on the major issues.

Nevertheless, it is evident that Carter has offered the American people a very different political philosophy from the one which prevailed during the Nixon and Ford Administrations. As the Carter Administration takes shape over the next few months, it is likely to chart new courses in areas such as health policy, taxation, nuclear power, environmental protection and government reorganisation.

Little part for science

Needless to say, scientific issues played little part in the election campaign. Science policy is scarcely a partisan matter, and it hasn't figured prominently in election rhetoric since the Kennedy campaign, which took place in the post-Sputnik panic of the late 1950s. But when Carter takes office next January, he will be confronted with a number of important decisions which will have direct impact on science and technology.

First, however, it should be noted that Carter will enter the White House with at least lukewarm support from the scientific community. Though few scientific groups campaigned actively in support of Carter—in previous elections, groups of scientists campaigned for Kennedy, Johnson and McGovern—opinion polls taken among American academics found that Carter was favoured by a margin of two to one. A poll taken for the *Chronicle of Higher Education*, for example, found that 54% of the scientists surveyed favoured Carter, compared with 22% for Ford.

Carter's first chance to strengthen (or, indeed, to disrupt) his links with the scientific community will probably be in his appointment of people to fill

top science posts in his new Administration. Nearly 3,000 government posts are filled by Presidential appointment, and thus a change of President is usually accompanied by a wholesale change of top-level bureaucrats.

It is worth noting that Richard Nixon amply demonstrated the potential for souring relations with the scientific community in such matters. Early in his Presidency, Nixon vetoed the selection of Franklin Long as Director of the National Science Foundation because of Long's opposition to the anti-ballistic missile programme. Though the veto was made before Long's selection was announced, word filtered out and a shrill outcry was raised against political screening for that normally apolitical post. And Nixon incurred the wrath of many scientists four years later when he sacked the head of the National Institutes of Health, allegedly for disagreeing with White House policy on biomedical research.

Thus, Carter will probably tread carefully. His chief selection will be somebody to fill the post of science adviser and director of the newly-created White House Office of Science and Technology Policy (OSTP). Since OSTP was established by legislation, Carter is bound to retain it—indeed, he has already said that his science adviser will "provide a permanent and high-level relationship between the White House and the scientific community". The present incumbent, Guyford Stever, said when he was appointed last August that he would not stay long after the election, no matter who won. A widely-tipped candidate for the post is Lewis Branscomb, former director of the National Bureau of Standards and now head of research at IBM. Branscomb coordinated a science policy task force which advised Carter during the campaign.

The other chief science posts that Carter must fill are Director of the National Science Foundation and Director of the National Cancer Institute. The NSF post was vacated by Stever when he joined the White House staff and the NCI job was vacated in September by Frank Rauscher, who took a more lucrative job at the American Cancer Society. Carter is also expected to replace Russell Train as head of the Environmental Protection Agency. Though Train is generally considered to have

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Ford: departure leaves vacancies

done a good job, the post is highly political and Carter made considerable mileage from attacking the Ford Administration's environmental record. On the other hand, Carter is expected to retain Donald Fredrickson as director of the National Institutes of Health. A skilled administrator, Fredrickson has earned a solid reputation and Carter is unlikely to risk provoking an outcry by replacing him for political reasons.

Carter will also inherit a top-level committee, chaired by Simon Ramo of TRW Inc, which was established by Congress to conduct a two-year investigation of federal science policy. The committee is scheduled to make its report and recommendations late in 1978, at which time Carter will have the option of retaining it as a senior White House advisory committee, or scrapping it.

Key policy decisions

As for the Carter Administration's likely policies for research and development, little is known with certainty, but many key policy decisions will have to be made in the

first few months after President Carter takes office. The following are some of the principal issues which Carter must decide.

● **Energy policy.** One area in which Carter has frequently attacked the Ford Administration's record is energy policy in general, and nuclear policy in particular. He has offered some specific plans for reorganising the federal energy bureaucracy, and for curbing nuclear proliferation.

Throughout the campaign, Carter made much of the fact that he was trained as a nuclear engineer, and therefore he claims to understand the problems associated with nuclear power. His attitude toward nuclear energy is decidedly cool, promising to minimise the United States' dependence on that source of power, but specifically stating that he does not support a nuclear moratorium. In particular, he has said that he will channel more energy research and development funds into alternative sources such as solar energy and geothermal heat. He has also promised to launch an aggressive energy conservation programme.

Carter has also offered a proposal to consolidate most of the departments and agencies now responsible for energy programmes into a single department. Included would be the Energy Research and Development Administration (ERDA)—which Carter has attacked as being overwhelmingly pro-nuclear—the Federal Energy Agency and the Energy Resources Council. The proposal is likely to meet stiff opposition in Congress, however, since many Congressional committees which now have jurisdiction over individual agencies would be wary of losing some of their authority. A prolonged battle should be anticipated.

On nuclear proliferation, Carter has repeatedly called for a worldwide moratorium on the sale of reprocessing and uranium enrichment plants, and for stringent controls on the export of other nuclear technologies. He has also proposed that an international conference be held to discuss alternative energy sources.

Perhaps the most important nuclear policy question confronting Carter, however, will be whether to permit spent nuclear fuel from commercial power plants to be reprocessed, and the plutonium extracted from it to be recycled as reactor fuel. Just five days before the election, Mr Ford announced that his Administration would defer a decision on reprocessing and recycling plutonium at least until the matter has been given more study. Many nuclear critics, including Carter, called the announcement "too little and too late", but Carter's own policies for

recycling have yet to be specifically stated.

Finally, Carter has promised to scale down the effort to develop a liquid metal fast breeder reactor (LMFBR), now the largest single federal energy programme. He has stated that he will reduce the effort to a relatively minor level and, perhaps, seek international participation in it. If Carter decides to

reject plutonium recycling and to scale down the LMFBR programme, those actions would constitute major defeats for the long-term plans of the nuclear industry.

● **Biomedical research.** Virtually nothing has been said during the campaign about the federal government's

Six-state nuclear battle: results

ALTHOUGH the nuclear industry in the United States is not too happy about the fact that last week's election will put into the White House a man who is decidedly cool toward nuclear power, it can at least take considerable comfort from balloting in six states. Voters in Arizona, Colorado, Montana, Ohio, Oregon and Washington soundly rejected propositions which would have placed crippling restrictions on nuclear plants in those states. A similar proposition was defeated in a seventh state, California, last June.

The propositions were rejected so decisively—by margins ranging from 58–42% in Oregon to 71–29% in Colorado—that the results constitute a stunning setback for the anti-nuclear movement in the United States. Spokesmen for the nuclear industry in fact wasted no time in claiming the outcome as a popular endorsement of nuclear energy. Carl Walske, president of the Atomic Industrial Forum, said last week, for example, that nuclear power "has been taken to the Village Square, as Einstein predicted, and has been approved by the American voter".

The defeats were particularly striking since opinion polls conducted only a month before the election indicated that the propositions stood a good chance of being approved in most of the states. In Colorado and Oregon, they were even leading by a margin of two to one. Anti-nuclear groups blame their defeat on the lavish funding poured into the campaigns during the closing stages by industry and labour groups anxious to swing voter sympathies against the propositions. Pro-nuclear forces are reckoned to have outspent their opponents by about 8 to 1, and it is noteworthy that in Montana industry groups put up more than \$80,000 to defeat an anti-nuclear proposition, even though Montana has no nuclear plants and no plans to build any.

The propositions would have forced new nuclear plants to meet three tough requirements before being put into operation. First, there

must be no limit to the damages which could be claimed by victims of a nuclear accident — at present Federal law limits the total liability per accident to \$560 million. Second, there must be an acceptable, proven technology for getting rid of nuclear wastes. And third, key power plant safety systems must be found to work satisfactorily. The last two conditions would have to be met to the satisfaction of at least two-thirds of the members of state legislatures. Those requirements are so tough that if they were passed in any state they would have virtually halted nuclear expansion in that state. Consequently, the industry fought them on the grounds that they would increase energy prices, discourage industrial expansion and increase unemployment.

The crushing defeat of the propositions in all seven states could have important national implications. For one thing it is likely to take the steam out of attempts in Congress to curb the growth of nuclear power. In the past few years, several bills aimed at halting nuclear expansion at least until a variety of conditions are met have been introduced. Though they have never enjoyed much Congressional support, if voters had demonstrated their enthusiasm for such measures by passing some of the propositions, anti-nuclear forces in Congress would have been given considerable impetus.

The outcome of the referenda is also likely to discourage similar attempts to limit nuclear power through direct ballot in the future. In fact, some nuclear spokesmen are already claiming that the crushing defeat of the propositions will lead to a sharp decline in anti-nuclear sentiment in the United States.

Although such claims will almost certainly prove to be exaggerated, the outcome of the referenda has clearly provided the nuclear industry with considerable ammunition to combat President-elect Carter's reservations about expanding the use of nuclear power in the United States.

\$2,000 million biomedical research programme, but again, Carter will be faced with some controversial decisions.

First, however, it should be noted that Carter's election may help reduce one of the chief problems which has plagued the federal biomedical research effort for the past few years. Major tussles between Congress and the Ford and Nixon Administrations over the size of the budget for the Department of Health Education and Welfare, of which NIH is a part, have frequently delayed the release of funds for NIH and thrown planning into confusion. The Carter Administration is likely to work more closely with Congress on such matters, and thus NIH's planning should be made easier.

Among the more touchy issues which Carter must sort out are whether to continue to support the training of biomedical researchers—Nixon and, to a lesser extent, Ford tried to phase out the NIH training programmes over noisy opposition from the scientific community. He will also have to adjudicate the growing controversy over whether the National Cancer Institute should continue to enjoy a privileged

position in NIH. In that regard, it may be recalled that Ford took a tentative step by suggesting that the cancer budget should be held constant this year while support for research on other diseases should be allowed to grow, but Congress increased the cancer budget anyway.

● **Arms control.** Though many of Carter's foreign policy statements have a distinctly hawkish ring about them, he has also criticised some arms control treaties as being inadequate. In particular, he has called for a complete cessation of nuclear testing, and he has labelled the proposed Threshold Test Ban Treaty as "totally inadequate". That treaty is now pending before the Senate for ratification, and it is likely that Carter will try to negotiate something more substantial instead of trying to get the measure through the Senate.

● **Congress.** Several key Senators and Congressmen who have been influential in science policy affairs have either retired or were defeated in the polls last week. The chief casualty was Senator Frank Moss, chairman of the Senate

Committee on Aeronautical and Space Sciences. But perhaps the most important changes are likely to come in the powerful Joint Committee on Atomic Energy, where the chairman, John Pastore, and Stuart Symington have both retired, and Senators Joseph Montoya and John Tunney were both defeated. On the House side, James Symington, the chairman of the subcommittee which oversees the work of the National Science Foundation, relinquished his House seat to seek election to the Senate. He has been an important defender of NSF during the past couple of years, but at least his loss will be partially balanced by the fact that John Conlan, NSF's chief critic, also relinquished his House seat to run unsuccessfully for the Senate.

Though many important science policy issues have been virtually ignored during the election campaign, Carter's handling of them in the next few months will be closely watched. Leaders of the scientific community are not usually reticent in giving policy advice to the government, and they can be expected to make themselves heard in the coming weeks. □

AUSTRIA

Nuclear consultation

Engelbert Broda writes from Vienna on Austria's nuclear energy information campaign.

UNPRECEDENTED action has been taken by the government of the Republic of Austria. In view of the wide divergence of opinions on the desirability or otherwise of nuclear energy and the emotions aroused, it has decided to consult the population on the matter directly. Although decisions will eventually have to be taken by Parliament, the government is making sure that the views of the people can serve as a basis. A nation-wide information and discussion campaign has been organised, financed by the office of the Prime Minister, Bruno Kreisky, in collaboration with the "Energy Section" of the Federal Ministry of Trade and Industry. The section is headed by Wilhelm Frank, a man with wide scientific interests who is not only a professional mechanical engineer but also a renowned theoretical mathematician and a philosopher.

Austria's energy position is relatively favourable. While for many years power consumption increased by about 7% per year, the rate of increase has, as elsewhere, gone down more recently. Hydroelectricity still accounts for more

than 70% of total electric power, and there are still unused reserves of hydro-power, mainly along the Danube. (It is interesting, though, that a popular movement for the protection of the Wachau, the part of the Danube valley with the most beautiful scenery, has induced the government to shelve and reconsider plans for the exploitation of that stretch.)

The production of brown coal, mainly in Styria, is considerable and goes mostly to power plants near the pits. While normally some electric power is exported, in emergencies power can also be imported by high voltage transmission lines from west and east. About one-fifth of the oil and gas used in the country comes from wells in Austria. The necessary imports are widely spread geographically: sources include the Middle East and Russia. One nuclear plant, a 700 MW boiling water reactor on the Danube about 40 km north-west of Vienna, is in an advanced stage of construction.

That the first nuclear power station will be taken into exploitation is hardy in doubt. But although detailed projects exist for further stations, no decisions have been taken as yet. At a press conference held soon after the elections in Sweden that were so influenced by the nuclear issue, Austria's

Austria's Chancellor, Bruno Kreisky

Federal Chancellor cheerfully said that he was doubtful about the wisdom of more nuclear power, while the Minister of Trade, Herr Staribacher, expressed himself in favour of additional stations. In such circumstances the voice of ordinary people will clearly have a lot of weight.

The Federal Press Service has issued a little book containing basic information, as objective as possible, on nuclear power. There will be 10 public meetings in various towns where the members of the public may ask questions and offer comment for up to 90 seconds each. Each meeting deals with a different aspect of nuclear energy—