Academies say change brings expanding employment

Washington

RAPID technological change is not in itself a cause of unemployment, according to a report published last week by the US National Academies of Science and Engineering. On the contrary, says the panel under Richard Cyert, president of Carnegie-Mellon University, the displacement during recent years of up to a million skilled people a year from jobs in manufacturing industry may just as well be caused by the neglect of technology. But the panel argues for ways of softening the blow for displaced workers, some of which could be controversial.

The joint study, set up two years ago and supported financially by industrial companies and the chief federation of labour unions (AFLCIO), as well as from the academies' own funds, is likely to attract particular interest just now in the

tern". In any case, the effects of technological change on employment are more gradual than those of currency fluctuations, for example, while recent job losses in the United States are not caused by the rapid introduction of new technology, but by "increased US imports and sluggish exports".

The panel avoids full consideration of the changing pattern of international trade in relation to employment, citing its terms of reference, but notes that international technology transfer is no longer in one direction: "In many technologies, the United States no longer commands a significant lead over competitor nations".

While circumspect about international trade relations, the panel is unrestrained on US domestic policy. Among other things, it argues that the Job Training Partnership Act, which provides federal assistance for company schemes aimed at the retraining of workers, should be broadened and improved, at a cost that could exceed \$1,000 million a year at the present rate of job loss, and argues for "federal action" to ensure that workers displaced from their jobs are given at least 2-3 months' advance warning.

One member of the panel, economist Professor Anne O. Krueger (Duke University) dissents from mandatory warning

periods on the grounds that it would increase costs discourage companies from taking on workers and be tantamount to a tax on companies "already in difficulty". Much the same point is made by the Computer and Business Equipment Manufacturer's Association, one of the sponsors of the academies' study.

The panel takes a less gloomy view of the US educational system than many recent commentators, but complains that Black and Hispanic ethnic groups are neither participating nor succeeding as well as are whites and that, in any case, technological change probably requires more rapidly increasing attainment.

On the importance of research and development, the "sources of technological change", the panel says that federal defence research has become less important as a source of commercial innovation since the 1960s and that the point has probably now been reached when industrial companies' spending on civil research and development may be a more important source of military innovation than is defence research ("except in artificial intelligence and computer science") of commercial innovation.

Without implying cause and effect, the panel also points to the trough of research spending in the early 1970s, when the rate of growth of industrial spending was probably not great enough to make up for increased research costs and when federal research and development actually declined.

John Maddox

Research and development spending by US government and industry. In the 1970s government spending fell.

United States because of concern about the competitiveness of US industry and schemes for protecting US jobs by means of trade restrictions.

The essence of the panel's case is economic. According to Cyert, technological change means that less labour can create "higher quality products at less cost". While new technology may mean that some workers lose their jobs the "larger effect" is to reduce prices, to increase demand and to create jobs "in completely new areas".

Historically, the panel says, technological change has gone together with "expanding rather than contracting" employment and with increased earnings; the "future will see little change in this pat-

Australian scientists struggling to join the superconductor race

Sydney

THE wave of excitement generated in the world's physics community by the discovery of high-temperature superconductivity is sweeping through Australia too. It has not only affected physicists but has also put a gleam in the eyes of those who anticipate a rise in the value of Australia's abundant deposits of the rare earths from which the new superconductors are made.

Several groups have succeeded in producing superconductivity at 95 K, notably those at the Australian National University (ANU), University of New South Wales (UNSW), University of Western Australia, and the Applied Physics and Materials Science Divisions of the Commonwealth Scientific and Industrial Research Organisation.

The UNSW group was first off the mark and is the only one to have received any extra money for superconductor research — a grant of A\$500,000 from a fund administered by the Department of Industry, Trade and Commerce for research involving rare earths and ceramics. It is to be used by the UNSW team to develop

electronic devices in collaboration with Amalgamated Wireless of Australia. Applications are also being sought at ANU. Under development is a high-temperature superconducting infrared detector mimicking the superconducting edge bolometers at present used at liquid helium temperatures.

Most researchers are relying on whatever funds they were allocated before the breakthrough. Government grants are normally applied for 18 months in advance and speedy action seems unlikely. But the first steps are being taken to develop a strategy to bring together researchers, government and industry. Two hundred delegates from around Australia met at a symposium on the new materials and decided to establish a working group to guide research. Half of its 40 members will be researchers and half representatives of government and industry. Its first meeting will not take place until 16 July, which is late considering the frantic pace of research, but deliberately so in case the rules of the game change after the federal election on 11 July.

Charles Morgan