ing clinical director of the National Institute of Child Health and Human Development, "the stage was set for disaster."

At the time of her death, Gillcrist was a participant in a sleep experiment designed to examine the effects of lithium, which is commonly given to manic-depressives, and alpha-methyl-para-tyrosine (AMPT), an experimental drug that blocks catecholamine synthesis. The study was being performed to test the hypothesis that the manic-depressive state is caused by catecholamine imbalances.

Gillcrist arrived at the sleep lab at about 9:30 p.m. on the night of 11 April.

Bernadette Gillcrist

She had been taking lithium for 9 days and on that day was given AMPT to take as well. At about 10:30, electrodes were connected to Gillcrist's head so that her sleep pattern could be monitored by an electroencephalograph (EEG). She fell asleep immediately. All was normal until about 5:15 a.m., when the EEG technician heard Gillcrist cough or moan. The technician went into Gillcrist's room, spoke her name, and heard what sounded like an acknowledgment.

When she returned to the EEG console, the technician noticed that Gillcrist's EEG tracing had gone flat, indicating either equipment failure or death. The technician spent the next 50 minutes trying to determine what was wrong. She entered Gillcrist's room several times and finally decided that the problem was with the attachment of the electrodes to Gillcrist's head. She did not try to arouse Gillcrist because she had been told that if the equipment failed

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Industrial Productivity and the "Soft Sciences"

In its report last March, the House of Representatives Budget Committee acknowledged that basic research and science are fundamental to increased industrial productivity and economic well-being. But it added that, in this respect, some kinds of research are of lower priority than other kinds and, in particular, that this might be true of the "soft sciences," referring presumably to fields such as sociology and psychology.

This judgment perhaps squares well enough with the conventional wisdom, but it is far off the mark if it is true, as some sociologists are now saying, that the remarkable success of the Japanese in increasing productivity is due partly to the adoption of techniques to motivate workers to work hard and help solve production problems.

A few weeks ago, the House Committee on Science and Technology held a seminar on the role of research in economic performance, and among the panelists was Robert E. Cole, a sociologist at the University of Michigan who has been studying Japanese business and industrial organizations for some 15 years. There were some leading people from industry present, notably William Baker of Bell Telephone Laboratories and Thomas Vanderslice of General Telephone and Electronics, but Cole clearly was the one who had come with a fresh new message.

"If we look at the United States," Cole said, "there is a very strong tendency among industrial engineers, economists, and management and government officials to underestimate the potential of harnessing worker cooperation to raise productivity and to improve quality. In so doing, I think we underestimate the contribution to be made by the social sciences."

Cole observed that to measure such variables as "human effort or commitment is notoriously difficult." Economists, he added, prefer to concentrate on "harder, more measurable variables," and government officials and politicians want to justify decisions with hard numbers. In Cole's view, moreover, American management is "so locked into an adversary mentality that for the most part they tend to write off mobilizing worker cooperation and increased motivation as a means of raising productivity and improving product quality."

Labor unions are locked into the adversary mentality, too, Cole said. "Management finds it easier to invest millions to make machines idiot proof, to use the quaint phrase that I sometimes hear engineers using, than to figure out how to get workers to take responsibility for quality."

Japanese managers, on the other hand, are encouraging workers to approach their jobs with ingenuity and commitment and are getting excellent results, Cole indicated. Every year, for instance, Toyota Motors is getting about nine suggestions for improvements per employee and is adopting more than 80 percent of them. By contrast, General Motors gets less than one suggestion per employee per year and adopts less than a fourth of those received. "Not only are [Japanese companies] getting a hell of a lot more suggestions, but they are getting better ones," Cole said.

How is this accomplished? One widely employed technique, Cole indicated, is use of "quality control circles." These circles, composed primarily of hourly employees from the same workshop, meet maybe once a week for about an hour to hear and discuss suggestions for reducing defects, lowering costs, increasing productivity, and the like. "Workers typically are provided training in various methods of problem-solving, especially statistical methods," Cole said.

According to Cole, development of quality control circles and other techniques to motivate workers reflects the fact that Japanese managers recognize social science and organizational research as relevant to their needs.

In applying the social sciences to problems of industrial management, the Japanese are drawing substantially on the work of scholars in the United States and other western countries, Cole indicated. Of the 1000 or so new books on management published each year in Japan, nearly a tenth of them are translations.

Cole sees signs that American industry is now at last catching on. He noted that some 100 companies, including General Motors, Ford, General Electric, and other major enter-

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prises, have experimental efforts under way in the use of quality control circles.

Reversals for Carter Energy Legislation

Fresh from what has probably been an irreversible setback for its Energy Mobilization Board (EMB) bill, the White House now seems likely to lose another important piece of energy legislation—the so-called "oil backout" bill to require, and to subsidize, the conversion of oil-fired utility boilers to coal.

In each case, the legislative reverses have occurred in spite of, and in part because of, President Carter's efforts to satisfy proponents of rapid synfuels development and an expanded market for coal. Carter has made concessions that virtually ensured bitter opposition to the legislation by environmental groups and by some members of Congress from those states where there is a fear of environmental degradation and, in the case of the EMB legislation, a loss of state prerogatives.

On 27 June, the House of Representatives voted 232 to 131 to recommit the EMB bill to the House-Senate conference whence it earlier had emerged, after long, tortuous negotiations, with the support of only a bare majority of the conferees. Most observers on Capitol Hill now think the bill is dead, although White House lobbyists hope to see it revived.

The bill's undoing has been its intensely controversial "substantive waiver" provision that would allow the EMB to go beyond its primary role of expediting regulatory procedures for priority energy projects. Under this provision, the board itself could not waive regulations which it deemed to be impediments to priority projects, but it could recommend that the President ask Congress to concur in such waivers. Although the legislation is vague with respect to whether state laws might be subject to waiver, at least some "derivative" laws and regulations—such as state air pollution control laws passed as part of the national clean air program—might be so subject.

All substantive waiver provisions were deliberately excluded from the EMB bill that the White House sent to Congress, but, against the advice of his environmental advisers, the President decided to go along with the one that was finally agreed to by the House-Senate conferees. Although much weaker than some of the waiver provisions considered earlier, it is nevertheless perceived by environmental groups as a dangerous precedent and as a kind of "hunting license" for development interests eager to skirt environmental regulations.

In addition, the provision is a red flag both for some states' rights-minded governors and members of Congress and for some conservatives who view the board as just "more bureaucracy." Also, the Reagan campaign organization appears eager to help kill the bill and embarrass President Carter.

The oil backout legislation was passed by the Senate 24 June by 86 to 7, but this seemingly massive demonstration of support belies the fact that this bill, too, is in bad trouble. An amendment put forward by Senator Paul Tsongas (D-Mass.) and some other eastern senators to prohibit any overall increase in sulfur and nitrogen emissions was rejected by the Senate by a vote of 63 to 31. But in the House Commerce Subcommittee on Energy and Power, where the bill is now under review, support for such an amendment is said to be strong. Members such as Representative Toby Moffett (D-Conn.) and Representative Edward J. Markey (D-Maine) are afraid that greater sulfur emissions could aggravate an already serious problem of acid rain in New England and other eastern states.

Yet if Congress places a "cap" on emissions, some utilities will have to invest in expensive scrubbers or emission "offset" arrangements, such as having other plants in the region burn lower sulfur fuel. The coal industry and the electric utilities have opposed any move to impose such a cap, and, early this year, these interests prevailed upon the White House not to include such a provision in the bill which it submitted to Congress.

If an emissions cap is added in the House committee, as now seems likely, this will create a difficult issue for House-Senate conferees to resolve at the tail end of an election year session when the clock will be running out.

The legislation is caught up in other troublesome problems, too, such as the one posed by a Senate amendment repealing an existing law to forbid the burning of natural gas in utility boilers after 1990. This amendment is strongly opposed by the coal industry, which says that, with it, the oil backout bill would actually reduce coal demand. Another controversial feature of the bill is its subsidy provisions, under which utilities would receive some $3.6 billion to help them convert their boilers from oil to coal. These have made the bill a target to be shot at by some conservatives.

Harvard Nuclear Engineer to Chair the NRC

Albert Carnesale, a 44-year-old nuclear engineer and professor of public policy at Harvard's John F. Kennedy School, has been nominated by President Carter to be chairman of the Nuclear Regulatory Commission.

Carnesale, whose nomination is subject to Senate confirmation, fills the vacancy on the commission created by the departure of Richard T. Kennedy, whose 5-year term has expired, but as chairman he replaces John F. Ahearne. Late last year, Carter asked Ahearne to head the NRC on an interim basis pending the nomination of an outsider to head the commission and oversee implementation of reforms recommended by the Kemeny Commission and the White House itself in the wake of the Three Mile Island accident.

Carnesale was a coauthor of the 1977 Ford Foundation energy report which, while supportive of nuclear power, concluded that there was no early need for fuel reprocessing and that use of this controversial technology should be deferred. The Carter Administration, worried about reprocessing abroad as a possible source of plutonium for nuclear weapons, has in fact deferred reprocessing.

But this policy has been under review since the conclusion of the International Nuclear Fuel Cycle Evaluation (INFCE), which recommended development of reprocessing and fast breeder reactors. Carnesale was a U.S. member of the INFCE technical coordinating committee.

Luther J. Carter