in mid-November, and Burnell went out to the telescope at the time of day the source was passing through the beam. But for several weeks nothing happened. The signal, at all times variable, failed to show at all. "Hewish was thinking at that stage that it was a flare star and that we had missed it," says Burnell. "Finally one day I managed to catch it, and I got a series of pulses coming out of the recorder. They were almost exactly 1⅓ seconds apart. That is a very sort of man-made period. Tony Hewish had left the recording to me. I phoned him up to tell him about the pulses and he said, 'Oh that settles it, it must be man-made.' "

Briefing

Land Use Legislation Defeated in Committee

Two major environmental items on the congressional agenda this year have been the strip mining and land use bills. The strip mining bill was lost in June when the House of Representatives failed to override a presidential veto. Now the land use bill has been lost as the result of a vote taken in the House Interior Committee on 15 July.

The committee voted 23 to 19 not to report the bill to the full house, thus probably wiping it from the agenda for this Congress. The bill's sponsor, Representative Morris Udall (D-Ariz.), was bitter in his comment on the committee action: "It was the predictable result of the erosion of support which began last year when then-President Nixon suddenly withdrew Administration backing of the bill, giving credence to a well-orchestrated campaign of distortion led by the U.S. Chamber of Commerce."

The product of many compromises, the land use bill would have authorized $500 million in grants over the next 6 years to encourage the states to set up mechanisms for controlling land use in "critical" areas, such as floodplains or ecologically sensitive swamplands, and for regulating critical uses, such as large-scale industrial or residential development. Despite its emphasis on state and local responsibility for land use regulation, the bill seems to have become a detested symbol of governmental intervention for conservative groups such as the Chamber of Commerce, the Farm Bureau, and the Liberty Lobby.

The bill would not have been defeated in committee had several members who voted with Udall on a critical procedural motion in May not voted against the bill in this latest test. One of them was Representative Roy Taylor (D-N.C.), who frankly attributed his negative vote not to a new perception of the bill's merits but to exceptionally strong "grass roots opposition" within his district. Another who voted to keep the bill alive in May but to kill it in July was Representative Allan T. Howe (D-Utah). According to one of his aides, Howe had come to question the merits of the bill and even to doubt assurances that the program to be established would always be all carrot and no stick.

But, again, a possibly compelling consideration was the fierce opposition to the bill among Howe's constituents. "It has been an issue on which we have received more mail than on Vietnam, Richard Nixon, or amnesty [for draft-evaders]," the aide said. "It ranks with gun control and gas rationing as a matter of controversy in our district."

Udall predicts that "the victory of land use planning opponents will be short-lived" because of the public concern that will be aroused by a continuing degradation of land resources by uncontrolled development. But, if land use measures are indeed taking on the symbolic overtones associated with such perennial losers as gun control bills, things may really have to get bad before Congress brings itself to act. For the next few years, at any rate, the states that have been showing a growing interest in land use control will remain largely on their own.—L.J.C.

ACDA Scotches Rumors of Argentine Nuclear Theft

Has Argentina purloined some of its own plutonium? Rumors that the Argentine government attempted to evade international safeguard controls to divert as much as 50 kilograms of plutonium from its new power reactor at Atucha, near Buenos Aires, have circulated through Washington for several weeks, prompting an unusual denial in late July by the State Department's Arms Control and Disarmament Agency. According to an ACDA spokesman, "The U.S. government has no reason to believe that Argentina has sought to divert nuclear materials in violation of International Atomic Energy Agency [IAEA] safeguards."

The rumor, based on an intelligence report of uncertain origin, caused a considerable stir in official Washington, coming as it did at the height of concern over West Germany's agreement to sell nuclear fuel technology to Brazil, Argentina's chief political competitor.

The rumor was, moreover, at least marginally plausible. Some State Department officials are convinced that both the Brazilian and Argentine governments have opted to develop nuclear explosives as the necessary nuclear fuel technology becomes available. Eighteen months ago Argentina became the first Latin American nation to operate a nuclear power reactor, a 320-megawatt German model fueled with natural uranium—a design that permits unloading of irradiated fuel containing plutonium without shutting the reactor down. Argentina also possesses a small fuel reprocessing plant for extracting the plutonium.

Thus the putative report of a diversion found fertile ground in Washington. Sources say, however, that investigation by the IAEA found it to be "substantially in error" and that Argentina's small stockpile of plutonium—ostensibly accumulated for fast-neutron reactor research—was all present and accounted for. What's more, the diversion of 50 kilograms of plutonium (enough for at least five explosives) would have required reprocessing some 40 to 50 tons of spent fuel, far exceeding the reported 200-kilogram annual capacity of Argentina's plant. The plant, at last report, was in a dismantled state awaiting expansion.—R.G.

United States Neglects Civilian R & D

The United States puts too many research dollars into defense and space and too few into the civilian R & D that undergirds its commercial prosperity. If a halt is to be put to the relative industrial decline of the United States compared with Europe and Japan, government support for research must be shifted away from the pattern dictated

Hewish came out to the observatory the next day to watch Burnell make another fast recording. The signal was quite strong that day and she was able to produce a nice train of pulses for her supervisor's satisfaction. Hewish then went through the records and confirmed that the source was keeping sidereal time.

"We had terrible trouble trying to sort out that conundrum," Burnell recalls. The problem was that the fastest variable star then known had a period of one third of a day, and no one could conceive of a star with a period of 1⅓ seconds. But the source couldn't be man-made either be-

Briefing

by the Cold War and toward the emerging civilian priorities of economic growth, export competitiveness, and social welfare.

This is the argument of a report* prepared for the Joint Economic Committee by Robert Gilpin, professor of public and international affairs at Princeton. Gilpin, who is a political scientist, not an economist, by background, wrote the report at the request of committee chairman Senator Lloyd M. Bentsen (D-Tex.). His message is not wholly new but, in the continuing absence of a national science policy, bears repetition.

The major capital stock of an industrially advanced nation, according to economist Simon Kuznets, "is not its physical equipment; it is the body of knowledge amassed from the tested findings of empirical science and the capacity and training of its population to use this knowledge effectively." According to Gilpin, the United States has invested an "inordinate proportion" of this stock in a few areas of big science and technology, and a "much higher level of performance" is required in civilian-industrial R & D if the country is to meet intensified international competition and resolve its domestic problems.

Gilpin does not say how much higher the performance level should be and, pleading the ignorance of economists on this point, offers only the most general of ideas on how the government should go about encouraging industrial innovation. He believes that with large scale projects the government should support general basic research which reduces the risk for commercial developers; but the government should not attempt to usurp the entrepreneur's role by trying to bring a product to market—as the Energy Research and Development Administration is doing with the breeder reactor.

The best way to encourage innovation is by "demand-pull," not "technology-push": in other words by creating the market conditions that stimulate innovation rather than by creating new technology and hoping that a market will materialize for it. Most of the technology incentive programs run by the National Science Foundation and other agencies have in fact followed the technology-push strategy, which may be why they have not yet fulfilled the expectations of their creators.

The Japanese have been highly successful in linking technology with economic policy whereas the British "have on the whole made very poor use of their rich scientific and technological resources." In Gilpin's view, American policies have been closer to the British than to the Japanese model. The British government, like the American, has overinvested in a few narrow sectors of high technology and has assumed an entrepreneurial role for which governments are poorly suited.

Japanese methods, which include denial of credit to backward industries, are too high handed to be acceptable in the United States. Nevertheless, Gilpin advocates firm action in establishing priorities among the various scientific fields. Though his analysis is blunted by its lack of specific remedies, it has the unusual advantage of admitting to ignorance where admission is due.

—N.W.

*Technology, Economic Growth, and International Competitiveness. 88 pp. Obtainable from the Government Printing Office, Washington, D.C. 20402, $1.10.

CEQ Relaxes Stand on Predator Poisoning—Biter Beware

The Council on Environmental Quality (CEQ) has announced that the government will permit a new experimental use of sodium cyanide to kill coyotes that attack sheep. The latest decision is a modification of a 1972 executive order that bans predator poisoning on public lands except under emergency conditions.

Coyotes are responsible for the death of 3 to 5 percent of sheep herds in the West (25 percent in some areas), said CEQ head Russell Peterson. Sheepherds find the losses hard to bear, since the sheep industry has been steadily declining since the 1940's.

The simplicity and restraint that characterizes the new idea perhaps explains why it wasn't thought of before. Most coyotes don't like eating sheep (rabbits are their staple), but a few love them, and will attack again and again. They prefer lambs, preferably tethered, and they attack by lunging at the neck. So a poisonous collar—a necklace of sodium cyanide capsules—has been devised. A few lambs will be tethered at the edge of their herd and fitted with the collar. A passing coyote with an eye for sheep will leap at the animal's neck, his teeth will puncture a cyanide pellet, the poison will squirt in his mouth, and voilà! he will drop dead. Peterson says tests in large pens show that this works, and furthermore the lamb generally escapes unharmed. The project has virtues ecologically not only because of its selectivity but because carrion eaters happening upon the dead coyote will not be poisoned by eating the flesh.

Peterson, in answer to a question, said it was possible the technique could have an aversive conditioning effect on whole populations of coyotes—one day, perhaps, breeding an antisheep attitude into the subconscious of the race, as it were.

Peterson said if the $3-million, 1-year project works as hoped, other coyote-killing methods might be outlawed. These include shooting them from helicopters and planting pieces of meat attached to M-44 sodium cyanide guns in coyote territory. The latter method has resulted in deaths among several species of animals and does not have any special appeal for sheep-loving coyotes.

Defenders of Wildlife, a Washington group that fought for the 1972 poison ban, has criticized the recent action on the grounds that it opens loopholes for indiscriminate poisoning programs to resume. The government argues that relaxing the order to allow experimental programs will permit development of more effective and environmentally sound means of predator damage control.—C.H.