NEWS IN BRIEF

• **ARMS CONTROL OF THE SEABEDS**: The U.S. government recently indicated a willingness to compromise on an international seabeds arms control treaty now under discussion at the International Disarmament Conference in Geneva. Arms Control and Disarmament (ACDA) officials say the U.S. will probably agree to a Soviet proposal for a 12-mile offshore limit beyond which the seabeds arms control treaty would not be effective, rather than the 3-mile limit which the U.S. had originally proposed. The U.S. proposal is regarded as a response to a Soviet offer last month to modify its earlier demands for a complete demilitarization of the seabeds, a position which U.S. officials said was "much too sweeping." The U.S. had proposed that the treaty ban only nuclear weapons and other weapons of mass destruction, implying chemical and biological weapons. This plan would allow the U.S. Navy to maintain antisubmarine sensor tracking devices.

• **NSF AUTHORIZATION**: The National Science Foundation (NSF), which saw its proposed budget cut $80 million by the House appropriations committee, may have glimpsed a ray of hope when the Senate passed, on 18 September, a bill authorizing a total of $500,150,000 for NSF in fiscal 1970. The rescue operation was conducted by Sen. Edward Kennedy's (D–Mass.) special NSF subcommittee, but the NSF budget still faces the Senate Appropriations Committee and a joint conference.

• **IBP GRASSLANDS STUDY FUNDED**: The National Science Foundation (NSF) has given the finance-troubled International Biological Program (IBP) a boost by awarding a $1.8 million grant—the largest to date—for an American grasslands ecological study. IBP officials estimate that 18 universities and about 100 scientific researchers will be involved in the grasslands project. George Van Dyne, professor of ecology at Colorado State University, has been named principal investigator. The IBP, which has suffered a series of setbacks and financial worries since its inception in 1964 (*Science*, 22 March and 24 May 1968), was organized to study ecological systems on a worldwide scale. The U.S. effort, overseen by a committee of the National Academy of Sciences, has relied principally on NSF for funding.

Besides cutbacks in research grants, which have an indirect effect, there has been a dropping off in direct government support of computer centers. Since 1957, NSF has made direct institutional grants to ease the heavy expense of installing new computing facilities. This program has dropped from $11.3 million in fiscal 1967 to $6 million in fiscal 1969. The Senate has not yet approved the NSF appropriation for fiscal 1970, but if it follows the House's lead in holding the line on the agency's spending, NSF officials see little hope that their program for aid to computer centers will even approach the 1967 level during the present 1970 fiscal year. So far, this cut in direct aid is probably larger than the indirect revenue loss from research-grant cutbacks. However, the effect on any one university is hard to assess, since most requests for direct assistance are screened out even during a peak spending year.

Despite a shortage of funds, several universities have recently made major improvements in their computer plants, but the overall result of the budget cuts made to date has apparently been a slowdown in the growth of university computer operations.

Another financial problem facing some computer centers arises from government accounting procedures. The Bureau of the Budget requires that all users of a computer that handles government-sponsored projects be charged the same rate for the same service. That is, rates should be "nondiscriminatory"—a requirement designed to prevent government research from subsidizing student and other nongovernmental programming. Thus, at universities with federal research grants, the Bureau of the Budget guidelines determine the computer accounting system. The nondiscriminatory regulation is the cornerstone of the accounting policy, with details negotiated between the university and a single federal agency representing the government. At most institutions, programmers are charged directly for machine use, and the basic rate for a unit of machine time is computed by dividing the total cost for a fiscal year's operations by the total use.

Determining expenses over a 1-year period raises problems, especially with third-generation machines, said George S. Walker, business manager of Yale University's Computer Center. With the fourth generation of computers still several years away, many computer centers expect the present third generation to become obsolete later than had been originally expected. Thus in some cases it appears more profitable to purchase machines than to rent them, as has often been done in the past. One director of a large university computer center estimated that he would save an average of $100,000 a year by purchasing machines rather than renting them. However, third-generation computers can be expensive. Where a second-generation machine cost $2 million to buy, a third-generation machine might cost $6 million, Walker said, and the initial expense of installing the machine would make average costs for the first year or two very high, especially since few students and faculty members would have enough confidence to use the machine extensively. High costs and limited use mean that average rates for the first year might be high enough to scare away researchers with a fixed budget. At the end of the computer's lifetime, use would be heavy and costs for simple maintenance and operation would be low. Thus rates would drop sharply. If the university could spread the initial expenses over the lifetime of a machine—roughly 4 to 6 years—rather than over a 1-year period, the rates would not "rise and fall absurdly" Walker said.

The Bureau of the Budget's requirement that rates be nondiscriminatory leaves some computer centers with machine time that goes unused because the university is unable to pay for the time or grant student and faculty users free use. At Harvard, for example, each machine sat idle for an average of 7 hours out of each 22-hour work day last year, said Zachary. Each machine was needed at peak periods of operation, but the center was sparingly used at night and on weekends. Some universities sell excess computer time to business firms, but they then lose part of the educational discount granted to universities by computer manufacturers. Sales to commercial firms would also violate the nonprofit status of many universities.

Zachary has proposed a basic revision of the rate-charging system to make more time available for educational use. He would charge all users, both educational and research, the same rate for those variable costs that are dependent on the number of hours of use. This would include items such as the cost of paper for printing. Educational users, however, would not be charged for the major fixed costs of computer operation, such as machine rental. This plan would encourage class-