from an underground blast can be reduced by a factor of as much as 200 or more if the nuclear device is suspended in the center of a sufficiently large cavity.

In Project Sterling, a small nuclear device, equivalent in explosive power to 350 tons of TNT, was exploded in a cavity of 110-foot diameter at a depth of 2700 feet. Detection stations less than 150 miles from the explosion did not record the event. Sponsored by the Advanced Research Projects Agency (ARPA), Sterling was conducted by the Atomic Energy Commission in the Tatum Salt Dome near Hattiesburg, Mississippi, on 3 December.

The problems associated with forming and using the cavity required for decoupling are difficult—so difficult, in fact, that it remains very much a matter of dispute whether decoupling is a practical possibility for a nation wishing to cheat on a test-ban commitment. The 5-kiloton nuclear explosion by which the Sterling cavity was formed in October 1964 was detectible at distances of thousands of miles. Morever, so much heat was left by the explosion that the Sterling experiment was delayed by more than 2 years. Even with the delay, the temperature in the cavity was 200°F when Sterling was conducted.

Despite the heat problem, there is at least a small chance that a hostile nation might resort to nuclear blasts to form and "stockpile" some cavities before agreeing to a comprehensive test ban treaty. However, none of the Soviet Union's underground tests are believed to have been conducted in areas where salt domes occur. Salt domes are large solid masses of salt, regarded as an especially favorable medium for the formation of cavities.

Although nuclear blasting is but one of several ways by which cavities might be formed, the alternative methods involve major problems, too. The Advanced Research Projects Agency has asked AEC to study the feasibility of forming a cavity by mining, or by leaching with large quantities of hot water. The cavity would be 290 feet in diameter; this, ARPA believes, is large enough for decoupling a 5-kiloton explosion. While there is little doubt that a cavity of this size can be mined or leached, ARPA does not know whether it will stand. The wall of a cavity for decoupling cannot be shored up, for the shoring material would transmit shock waves.

Some if not most of the scientists interested in weapons development and

NEWS IN BRIEF

● **NEW SYSTEM LINKS NEW YORK LIBRARIES**: A system designed to make available to researchers material in the main research libraries in New York State is being set up on an experimental basis by the New York State Library. The network will enable the libraries to transmit facsimiles of material throughout the state. Twelve libraries covering most of the state will be linked up by 15 February, and the system eventually will be extended to about 25 research libraries, according to Lynn R. Hard, a consultant for the Academic and Research Library of the New York State Library. Under the system, requests submitted to local libraries will be transmitted to one of the larger research libraries. Once the material has been located, it will be transmitted to the local library. The service would take some 24 hours, compared with the 10 days that are usually required to carry out an interlibrary loan.

● **DOCTORAL STATISTICS**: The physical sciences and education have been the most attractive fields for doctoral candidates in the past 10 years, according to Office of Education surveys. Engineering is expected to be the most popular by 1976. The number of doctorates awarded per academic year in the U.S. has nearly doubled in the past decade and is expected to more than double—to 36,900—in the next 10 years. In 1964–65, the schools granting the most doctorates were: University of California, Columbia University, University of Wisconsin, University of Illinois, Harvard-Radcliffe. All statistics appear in the surveys "Earned Degrees Conferred" and "Doctor's Degrees Conferred by U.S. Institutions" or will appear in the 1966 edition of "Projection of Educational Statistics," published by the U.S. Office of Education. Single copies available from Publications Distribution Section, U.S. Office of Education, Washington, D.C. 20202.

● **SCIENTISTS' SALARIES**: A National Science Foundation survey of 243,000 scientists finds that self-employed scientists earned the highest median salaries ($17,000) in 1966. Next highest earners were scientists employed by business and industry ($13,000), followed by those employed by the Federal government ($12,100), and finally those employed for the calendar year at educational institutions ($12,000). Among the self-employed, mathematicians earn the highest median salary ($20,500); in business, economists are on top ($15,300); and in industry, psychologists and sociologists (around $15,000) have the highest median. The median for all scientists responding to the survey was $12,000, an increase of $1,000 since 1964. Further details of the survey are reported in "Reviews of Data on Science Resources, No. 11 —Salaries and Selected Characteristics of American Scientists, 1966" available from the U.S. Government Printing Office, Washington, D.C.

● **PHS POLLUTION LABORATORY**: The first field laboratory for general research on solid-waste pollution abatement will be established by the U.S. Public Health Service under a 5-year land-use permit of PHS and the University of Cincinnati. The facility will be designed for research on methods for improving the management of municipal, industrial, and agricultural solid wastes under conditions reflecting common U.S. disposal practices. The laboratory will be built on a 15-acre tract in the northwestern part of Cincinnati which is owned by the University. Activities of the laboratory will become part of a national Public Health Service program for solid waste pollution abatement authorized by Congress in the Solid Waste Disposal Act.

● **HOPKINS-NIH GRADUATE PLAN**: Students in biochemistry at Johns Hopkins University may soon have an opportunity to conduct their doctoral research at the National Institutes of Health, Bethesda, Maryland. Under a recently developed cooperative arrangement, about ten Hopkins students will take initial courses at the university, then move to NIH for further courses, research, and work on their dissertations. The program is scheduled to get underway next year for a 3-year trial period, pending a final go-ahead from the Department of Health, Education, and Welfare. Students will be chosen by a joint Hopkins-NIH admissions committee and will work under NIH scientists appointed to the university's faculty. The Foundation for the Advanced Education of the Sciences, a private organization set up by NIH scientists, will oversee the operation.