6 December an unsuccessful attempt was made at Cape Canaveral. Another test on 27 January had to be called off within 14 seconds of time zero because of trouble with the second stage.

The three-stage Vanguard rocket is 72 feet in over-all length, with a maximum diameter of 45 inches. It has an initial thrust of 27,000 pounds and its payload is a globular, 21-pound satellite. Von Braun said in a public statement recently that the Vanguard is superior to Jupiter-C, and that the Vanguard satellite will be pushed by a rocket needing only one-third of the thrust and take-off weight of the more cumbersome Jupiter-C. He commented that Vanguard is at a disadvantage because it is such an advanced rocket:

"It is so sophisticated that it is a little difficult to get it off. Ours is based on older and more proven components. . . . Ours is a little more obsolete."

Not long ago von Braun told the Senate Preparedness Subcommittee that it would take this country 5 years to catch up with the Russians in rocketry.

Bill to Establish AEC Outer Space Division

Proposals to give to the Atomic Energy Commission the job of building nuclear powered space vehicles are incorporated in a bill introduced in the Senate on 23 January by Sen. Clinton P. Anderson (D, N.M.). The bill would amend the Atomic Energy Act to permit the AEC to add to its current responsibilities responsibilities for the necessary research, construction, and operating facilities with which to achieve peaceful control of outer space and interplanetary travel. Anderson, who is vice chairman of the Joint Committee on Atomic Energy and chairman of its Subcommittee on Outer Space Propulsion, points out that by placing the project within the framework of the AEC, the principle of civilian control would be retained and emphasis on peaceful application of knowledge assured.

The bill would create a Special Outer Space Advisory Committee of seven members to be appointed from civilian life by the President, with the advice and consent of the Senate. The bill proposes to establish within the AEC a Division of Outer Space Development which would administer the AEC's activities in this field. The Commission would be required to use to the fullest practicable extent existing Government atomic laboratories and to retain full authority for the "planning, direction and overall budget control" for the program and its projects. To get underway, the bill would authorize the appropriation of $50 million "to finance initial operations and construction" to carry out provisions of the amendment. The bill would "authorize and direct" the AEC to accelerate research and development on outer space propulsion and to negotiate and execute with general policy guidance of the State Department, an agreement with cooperating nations for the establishment of and participation in an International Laboratory for Outer Space Propulsion.

Antarctic Ice Drilling

The deep drilling project at the IGY Byrd Station in Antarctica passed the 1000-foot mark on 26 January, according to a report by the IGY Committee of the National Academy of Sciences. Ice cores taken from this drill hole preserve in their annual layers clues to antarctic climate reaching back many centuries.

The deep drilling program is being conducted for the IGY by personnel from the Army Snow, Ice and Permafrost Research Establishment of the Corps of Engineers. Development of techniques and equipment for deep drilling to obtain undisturbed cores was inaugurated on the Greenland Icecap in 1956 and was continued and improved in 1957. Deep drilling at the Byrd Station was begun last December.

A modified Failing "1500" drill rig and specially-designed core barrels and bits are being used. Ice cuttings are removed from the drill hole by compressed air that has been specially cooled to the required temperature so that the core sample will not be melted. Extreme care must be taken to avoid shattering of the ice cores when they are removed from the great pressure which exists at depths over several hundred feet.

Equipment for the Byrd Station project was brought in by over-land traverse from Little America, 647 miles away. Some equipment was dropped by parachute.

Because of the relatively small annual accumulation of snow in Antarctica, ice at 1000 feet below the surface at Byrd Station is roughly equal in age to ice at the 2000-foot level in Greenland. However, the antarctic cores are more difficult to date. In Greenland, the annual layers of snow are generally marked by a thin crust of refrozen summer melt. The age of a core can then be read as one reads the age of a tree by its annual rings. In the Antarctic, the annual layers are thinner and more closely packed, and there is often little or no summer melt. Careful chemical analysis may be needed to date the deep-lying cores.

The Byrd Station cores will be broken into 3-inch units for density measurements, visual examination, and determination of yearly accumulation whenever possible. Microscopic examination and photography of thin sections of ice at different depths will permit studies of crystal structure and more accurate relation of age to depth. Selected portions of the cores are to be melted and filtered for study of the minute particles and primitive organisms that may have been trapped in the ice for hundreds of years.

Volcanic ash from the eruption of Katmai in 1912 has been found in cores taken from the Greenland ice, and it is expected that similar ash and other matter, perhaps from much earlier periods, will be found in the Byrd Station cores. A similar drilling project is planned for the Ross Ice Shelf in the latter part of this year.

Science Talent Search

Forty high school seniors were recently named winners in the 17th annual Science Talent Search, which this year attracted a total of 25,039 applicants, the largest number in the history of the competition. Each of the winners, 8 girls and 32 boys, has been awarded an all-expense trip to Washington, where they will compete for $34,250 in scholarships and awards during a 5-day Science Talent Institute beginning 27 February.

In this year's search, New York continued to lead all states in the number of winners produced—eight boys and one girl. Six of the nine come from New York City and vicinity. Illinois and California tied for second place with four each. Massachusetts placed third with three.

Begun in 1942, the Science Talent Search is conducted by Science Clubs of America through Science Service. The Westinghouse Educational Foundation, supported by the Westinghouse Electric Corporation, provides the awards and makes the Science Talent Search financially possible. Because of an expanded grant from the Westinghouse Educational Foundation, the total value of the scholarships and awards presented this year will amount to more than triple the $11,000 distributed each year in the past.

Underground Nuclear Test

The Atomic Energy Commission has reported that the yield of the deep underground nuclear test conducted at the AEC Nevada Test Site in September 1957 was 1.7 kilotons [*Science* **126**, 200 (2 Aug. 1957); **126**, 554 (20 Sept. 1957)]. Heretofore, data on such tests have been highly classified. Now the AEC has released full details for the benefit of seismologists, geophysicists, and geologists.

The shot was detonated at 09 hours,

59 minutes, 59.45 seconds Pacific Daylight Time (16:59:45 GCT) on 19 September at the end of a tunnel about 2000 feet long dug horizontally into the side of a mesa at the northern edge of the Yucca Basin. The explosion took place in a layer of volcanic tuff. The coordinates of the detonation point were: latitude 37° 11′ 44.8″ N., longitude 116° 12′ 11.3″ W., elevation 6615 feet above mean sea level. The vertical distance from the detonation point to the mesa surface was 899 feet, and the slant distance to the side of the mesa was approximately 800 feet.

Grants, Fellowships, and Awards

Jet Propulsion. The Daniel and Florence Guggenheim Foundation has announced that from 18 to 20 Daniel and Florence Guggenheim fellowships will be awarded in 1958 to outstanding graduate students residing in the United States and Canada for study at the Daniel and Florence Guggenheim Jet Propulsion Centers at Princeton University and California Institute of Technology, and at the Institute of Flight Structures at Columbia University. The awards carry stipends of $1500 to $2000 each, plus tuition. Application forms are available at each of the institutions named and at the Daniel and Florence Guggenheim Foundation, 120 Broadway, New York, N.Y.

Radiation. A David Anderson–Berry Medal, together with a sum of money amounting to not less than £100, will be awarded in 1958 by the Council of the Royal Society of Edinburgh for recent work on the effects of x-rays and other forms of radiation on living tissues. Published work will be taken into consideration if it is submitted to the society with the application. In addition to direct application for the prize, proposals may be made on behalf of others. Applications and proposals must be received before 31 March by the General Secretary, Royal Society of Edinburgh, 22,24 George St., Edinburgh 2, Scotland.

Lilly Converts to Metric System

In January 1957 Eli Lilly and Company, pharmaceutical firm in Indianapolis, Ind., discontinued the avoirdupois system of weights and measures and converted all operations to the metric system. The United States and Great Britain are the only civilized countries in the world which still have not adopted the metric system for commercial use, despite the simplicity of calculation it provides.

Thomas Jefferson recognized the advantages of the metric system as long ago as 1790 and recommended that Congress introduce the system in this country; Congress failed to act. John Quincy Adams made a similar unsuccessful proposal to Congress in 1821, and it was not until 1866 that legislation was passed that made the metric system legal.

In the October 1957 issue of the *Hoosier Purchasor,* Lilly spokesmen describe the company's conversion to the metric system as follows:

"We found the 90-year-old roots of the avoirdupois system quite difficult to sever. . . . [However,] there was enough agitation among our scientific personnel to cause management to decide that it might be advantageous if the entire plant operated on only one weights and measures system instead of the five systems in existence—metric, avoirdupois, apothecary, avoirdupois and apothecary combined, and decimal avoirdupois.

"This led to the establishment of a committee with all groups concerned represented. The committee was under no pressure . . . allowing ample time to study all phases of the program thoroughly over a period of several years.

"One of the first actions of the committee was to request that a half dozen formulas in each product group, that is ampoules, tablets, liquids, capsules, etc., be revised to show both avoirdupois and metric on the manufacturing formula used in dispensing and production. . . . When our men in the dispensing group saw that instead of measuring out 1 gallon, 2 pints, 3 fluid ounces, 2 fluid drams, and 50 minims of a liquid they would merely have to measure 4920 cc. in the metric system, they were sold at once. . . .

"One problem the committee had to face was how to accomplish such a conversion program economically. We had about 2500 manufacturing formulas . . . which required revision. . . . The approximate cost of a revision . . . is about $50. Therefore, to revise all formulas to metric, specifically for that purpose alone, the cost would have been nearly $125,000. . . . Finally it was decided that all manufacturing formulas would be rewritten to show both the avoirdupois and the metric systems. Under this setup the use of the avoirdupois system would be dropped at the time of conversion to metric, but the avoirdupois figures would still show on our formulas. However, the rewriting was only to be done when the formula came up for a routine revision, such as a change in lot size, an alteration of the manufacturing process, [or] a change in assay standards. . . . This was, therefore, a very long-range program to convert our formulas to express both systems; but we could also assume that it would not cost $125,000. We established a target date of December, 1956, for the completion of this formula revision phase and were able to meet this date. . . .

"As for the purchasing department, we found it was very interesting to attempt to develop sources which would supply us in metric. . . . With only minor exceptions, our suppliers rallied to the challenge and began shipping packages in even metric packages or in standard avoirdupois packages with the metric conversion stenciled on each container. They also complied with our request to invoice in metric. We found that we were not able only to receive fine chemicals in metric, but also carloads of heavy chemicals and tank trucks of solvents, corn syrup, and acids. . . . We now estimate that greater than 90% of our chemical raw materials are coming to us in metric. . . .

"In addition to soliciting cooperation verbally through sales representatives, we prepared an "Important Progress Announcement" which was attached to each purchase order. . . . As an aid to suppliers, we prepared conversion charts for their use. We sent over 100 of these to one company alone. . . .

"Based on our successful venture, we can see no reason why other industries should not take a serious look at the many advantages of the metric system. We will be happy to help anyone toward this goal in any way that we can."

Foreign Technical Information Center

A Foreign Technical Information Center is being established within the Department of Commerce to collect, evaluate, and distribute valuable foreign scientific and technical literature for the use of American scientists and engineers. To finance prompt action on the new project, the department is requesting a special Congressional appropriation of $300,000. (In addition, the President's budget for 1959 includes $1.25 million for the department's Foreign Technical Information program.)

The new program will set up a central clearinghouse in the Office of Technical Services, headed by John C. Green. In announcing the plan, Secretary of Commerce Sinclair Weeks said:

"In recent years, government agencies and private institutions and industries have steadily increased their translation of Soviet magazines, monographs and books. At the present time, however, there is no central agency in the Government responsible for acting as a clearinghouse on all such foreign, technological, scientific and engineering information for the purpose of making it generally available to American scien-