

United States industrial corporations are negotiating with the U. S. Government for the industrial utilization of atomic power, Menne maintained that West Germany must delay no longer in applying the results of nuclear research to industry if it wishes to remain a first-class industrial power.

A new geophysical laboratory has been established near Villepreux, about 30 kilometers southwest of Paris, to carry out a program of observations on atmospheric radioactivity, brightness of the night sky, atmospheric ozone and cloud structure. Studies of rain and clouds with 3 cm radar are contemplated.

Interplanetary densities of electrons and dust particles have been measured by German scientists H. Siedentopf and A. Behr at the Jungfrauoch High Altitude Observatory in Switzerland by observations of the zodiacal light, a faint glow observed in the sky in the vicinity of the ecliptic. Assuming that the polarized part of the zodiacal light is produced only by electrons while the unpolarized part results from scattering by electrons and dust particles, values for electron and dust densities along the ecliptic were obtained. In the vicinity of the earth's orbit the rough figures of 600 electrons per cc and 10^{-16} dust particles per cc were found.

Joint investigation by the United States and Canada as to the probable source of Arctic ice islands such as T-3, or Fletcher's Island, near the North Pole, has been announced by the Air Research and Development Command of the U. S. Air Force, the U. S. sponsor of the project. The Canadian scientists, Geoffrey Hattersley-Smith and Robert A. Blackadar, with an Eskimo sled driver and ten dogs, have just started a preliminary reconnaissance of the Ellesmere Ice Shelf in preparation for a full-scale expedition to the region next year. The ice islands are believed to have originated from Ellesmere, and the survey is expected to result in definite information on this hypothesis.

Gadgets and Materials

A new low-power nuclear reactor, measuring five feet on each side, has been constructed for research purposes at the Knolls Atomic Power Laboratory operated for the AEC by the General Electric Company at Schenectady. Using a graphite moderator and an enriched uranium fuel, the reactor is expected to be used primarily to detect trace amounts of elements from their effect on its operation when inserted inside the reactor.

An ultrafast camera capable of taking pictures at the rate of 3,500,000 per second has been constructed at the Los Alamos Scientific Laboratory for photographing "high explosive phenomena". Designed by Berlyn Brixner of Los Alamos, the camera can take 170 photographs in 1/20,000 of a second by means of a mirror which rotates at 10,000 revolutions per second, the film being slightly larger than ordinary 16mm motion picture film.

Silicon, an element currently under study for possible utilization in rectifiers and transistors, is now in production at the Newport, Delaware plant of E. I. DuPont de Nemours and Company. Among the desirable characteristics of silicon for electronics uses are its stability up to at least 400° F and its power capacity, which is several times that of germanium. Although silicon is one of the most abundant elements in the earth's crust, the cost of it in pure form is at present \$430 per pound by the new process.

"Umohoite" is the name given to a newly discovered mineral because of its composition (uranium, molybdenum, hydrogen, and oxygen). The mineral, which is 48 percent uranium, was discovered by Paul F. Kerr, professor of mineralogy at Columbia University, and G. P. Brophy, a graduate student, while testing samples taken from a uranium mine at Marysvale, Utah. It compares favorably with other minerals rich in uranium, although its uranium content is somewhat lower than that of pitchblende, the principal source.

Journal Notes

The sensitivity of photographic emulsions to x-rays can be increased by an estimated factor of about one hundred through the use of an ingenious method devised by K. S. Lion of MIT. As reported in the March issue of the *Journal of Applied Physics*, this technique involves fastening a sheet of photosensitive material to one of the plates of a parallel plate spark counter. Such a counter operates like an ordinary Geiger-Muller counter, with an electrical discharge occurring between its electrode plates, across which an appropriate potential is placed, upon the passage of ionizing radiation through it. In a parallel plate counter this discharge is localized at the point where the radiation is incident, and does not spread laterally. Hence an x-ray beam striking a counter with an emulsion on one of its plates not only produces an image by its direct photographic action but the spark discharge that accompanies it also contributes to the image. According to Lion, control experiments indicated that the effect was not caused by secondary radiation from the electrodes or by the effects of electric currents in the emulsion.

The adsorption of radioactive substances by glass, stainless steel, and other common laboratory materials presents an annoying contamination problem that can be overcome, according to a report in *Nature* (March 7, 1953), by using films of ion-exchange resins. However, the experimental results of this technique are still inferior to those obtained with coatings of organic materials like polythene which are especially resistant to contamination by aqueous solutions of radioisotopes.

The production of neutral V particles in the University of Chicago's 450 Mev cyclotron was studied by R. L. Garwin, according to a report in the April 15, 1953 *Physical Review*, with a negative result. At this energy there is estimated to be 100 Mev available for the conversion of a neutron into a V^0 , and the fact that

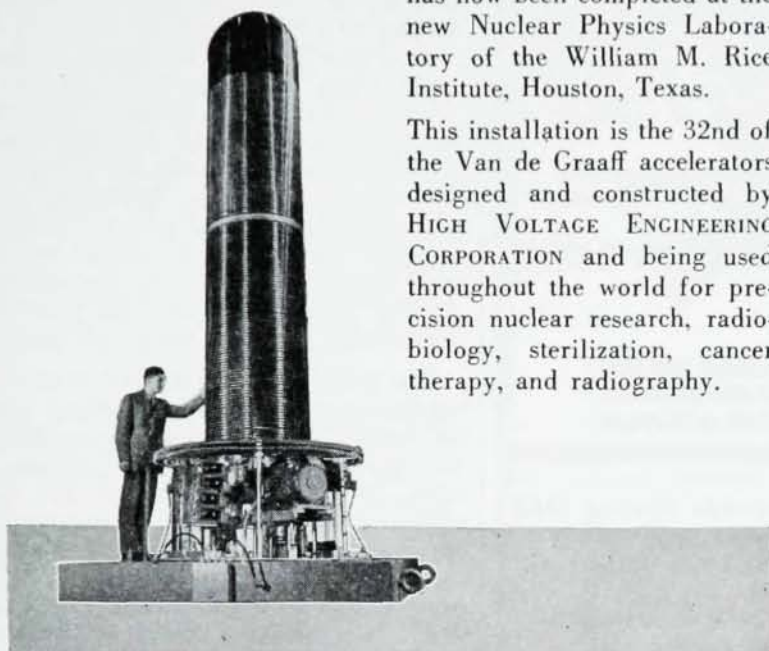
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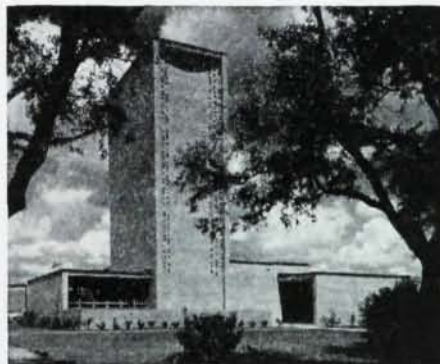


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none was detected in this experiment is interpreted as an indication of the existence of a state intermediate between the reacting neutron and the V^0 itself.

Grants and Fellowships

Fulbright awards for university lecturing and advanced research for the academic year 1954-55 in Europe, the Near East, Japan, and Pakistan will be made this autumn. Applications must be postmarked no later than October 15, 1953. This competition is specifically for university lecturing and postdoctoral-level research. Graduate students desiring to enroll for courses abroad or to pursue a directed program of studies at the predoctoral level should apply to their local Fulbright advisor or directly to the Institute of International Education, 1 East 67th Street, New York City. Application forms and additional information are obtainable from the Conference Board of Associated Research Councils, Committee on International Exchange of Persons, 2101 Constitution Avenue, Washington 25, D. C. Countries participating in the program include the United Kingdom and its colonial dependencies, Norway, Sweden, Finland, Denmark, the Netherlands, Germany, Austria, France, Belgium and Luxembourg, Italy, Greece, Iraq, Pakistan, Egypt, and Japan.

The research and fellowship program of the Shell Oil Company for 1953-54 will include fourteen grants for fundamental research and forty-eight graduate fellowships in chemistry, physics, geology, and related fields. The fellowships carry stipends of \$1500 plus tuition and a \$400 allowance for research expenses, with the recipients to be chosen by their colleges or universities. Schools receiving 1953-54 grants are Caltech, Carnegie Tech, Harvard, Princeton, Yale, Stanford, MIT, and the Universities of Chicago and Rochester.

Summer Study

The Special Training Division of the Oak Ridge Institute of Nuclear Studies will present an advanced course on the clinical applications of radioisotopes from September 14 to 25, 1953. The course is designed especially for physicians with radioisotope experience and will consist of lectures, clinics, and equipment exhibits. Information and application blanks may be obtained from the Special Training Division of the Institute, P.O. Box 117, Oak Ridge, Tennessee.

An Infrared Spectroscopy Institute will be held at Fisk University, Nashville, Tennessee, during the week August 31-September 4, 1953. The Institute is designed to provide an introduction to infrared spectroscopy for scientists, in particular chemists and biochemists, who may find the subject useful in their teaching and research. Mornings are to be spent in lectures and discussions, and laboratory work will be done during the afternoons. The tuition fee is \$25 (\$12.50 for students) and inexpensive housing and meals are available at the University. Complete information may be obtained from Dr. Nelson Fuson of Fisk University.