

Miscellany

"Nobelium"

Element 102, the most recent addition to the periodic table, was discovered in March of this year by a joint international research team in the course of experiments conducted at the Nobel Institute for Physics in Stockholm, Sweden. Announcement of the event was made simultaneously on July 9th in Sweden, Great Britain, and the United States. The group responsible for the success of the experiment included physicists and chemists from the Argonne National Laboratory, the Atomic Energy Research Establishment at Harwell, and the Nobel Institute.

The new element was produced by bombarding curium with carbon-13 ions accelerated in the cyclotron at the Nobel Institute. Argonne provided the needed amount of curium, which was shipped to Harwell where the targets were prepared; Harwell provided the rare carbon isotope used as the bombarding particle; and the Nobel Institute provided the cyclotron, some special equipment, and a staff of physicists, chemists, and technicians.

The target material was prepared in the form of a thin film of curium on an aluminum foil, placed in a specially fabricated probe in order that the recoils from the nuclear reactions could be caught on clean foils and identified rapidly. For the best results, thin organic foils were used as catchers for the recoil atoms. These foils were dissolved in a drop of acetone on a platinum plate, which was flamed to give a thin source for pulse analysis. The platinum plate was treated with hydrochloric acid to put the activity in solution which was then passed through a standardized ion exchange column. Alpha-hydroxyisobutyric acid was used to extract the new element from the column.

The following scientists took part in the experiment: (from Argonne) Paul R. Fields, a group leader in the Chemistry Division, and Arnold M. Friedman, who is working at Harwell for one year under an exchange of US and British nuclear scientists; (from Harwell) John Milsted, a chemist who last year did research work at Argonne under the US-UK exchange program and helped separate the curium used in the bombardments, and Alan Beadle, who is also a chemist; (from the Nobel Institute) Hugo Atterling and Bjorne Astrom, physicists, and Wilhelm Forsling and Lennart Holm, chemists.

The name "Nobelium", in honor of the Nobel Institute for Physics, was proposed for element 102 at the suggestion of the American and British scientists. The

isotope synthesized in the experiment is thought to have an atomic mass number of 253. An emitter of alpha particles, it is described as having a half life of about 10 to 12 minutes.

Education

Physics majors enrolled full time as third- and fourth-year students in American colleges and universities totalled 7720 during the 1956-57 academic year according to the most recent results of the American Institute of Physics Register of Physicists, a continuing survey of the nation's physicist population conducted by the AIP for the National Science Foundation. An additional 1329 part-time physics majors were listed in the survey. 1956-57 graduate students in physics numbered 5775. The following results were reported for bachelor's, master's, and doctor's degrees granted in physics since 1952:

	BS	MS	PhD
1952-53	2295	751	459
1953-54	2240	759	512
1954-55	2207	742	501
1955-56	2623	747	496

Estimates for 1956-57 suggest that while the numbers of master's and doctor's degrees granted in physics seem likely to remain constant, the number of bachelor's degrees will show an increase of fifteen percent or so over the preceding year.

The AIP has also compiled revised lists of colleges and universities in the United States offering graduate instruction in physics and of institutions offering the undergraduate physics major. Of a total of 539 schools which list physics as a major subject, 182 offer graduate training leading at least to the master's degree, and of these, 90 offer graduate instruction leading to the doctorate in physics. The lists are available without charge to those interested and can be obtained by writing to the American Institute of Physics, 335 East 45th Street, New York 17, N. Y.

Western Electric Co., the manufacturing and supply unit of the Bell System, has inaugurated a program of graduate education for its engineers which is estimated by the company to be "equivalent in cost and administrative effort to establishment of a new engineering school of 1000 full-time students." The program is to be conducted in three specially equipped centers in New York City, Chicago, and Winston-Salem and on several college campuses as well. At present, six universities are cooperating with Western Electric in the education program: New York University, Northwestern, Cornell, Duke, North Carolina State, and the Illinois Institute of Technology. It is anticipated, according to Timothy E. Shea, the firm's vice president for engineering, that the list of cooperating institutions will be extended as the program develops. The first of the three training centers opened on June 17th in New York, where an entire floor of the newly constructed

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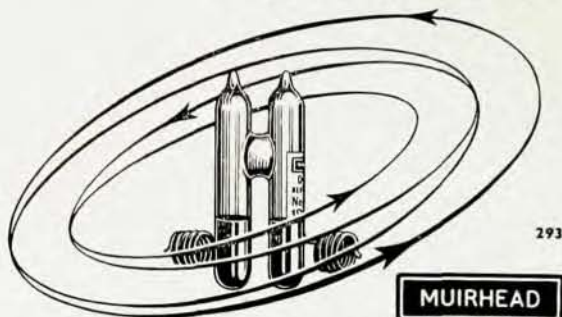
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Interested chemists and physicists are invited to correspond with:

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Coliseum Towers (26 000 square feet) has been leased. Instruction for the initial class of students was arranged through NYU's Office of Special Services to Business and Industry. Classes also reported for study in June on the campuses of Northwestern and Duke Universities. Similar groups are scheduled for Cornell, Illinois Tech, and North Carolina State during the summer. Construction of the Chicago and Winston-Salem training centers is in progress. Each of the special centers will include laboratories, libraries, study halls, classrooms, and related facilities. When in full operation, the program will involve a staff of some 65 full-time Western Electric instructors and administrative people, and about an equal number of instructors recruited on a part-time basis from cooperating universities. About 2000 of the company's employees per year will engage for periods of time in full-time off-the-job study.

An undergraduate course in nuclear engineering has been established at Lowell Technological Institute, Lowell, Mass., by a vote of the board of trustees. The four-year course, leading to the BS degree, is intended to "provide the trained men necessary to the development of atomic power, radioactive tracers for research work, radiation for medical purposes, and many other uses as yet unrealized".

Varian Associates, Palo Alto, Calif., has announced the establishment of an advanced training program designed to increase the competence of outstanding scientific and management personnel of the company through a planned course of full-time study away from the job. Robert L. Jepsen, director of the firm's tube research for the past six years, will be the first candidate under the new program. Dr. Jepsen will spend the next year as a research fellow at Harvard University, where he will do work on the microwave properties of ferrites under C. L. Hogan.

Publications

Up-to-date information on radiological, blast, and heat effects of nuclear detonations are contained in *The Effects of Nuclear Weapons*, a 579-page handbook just published by the Atomic Energy Commission as the successor to an earlier AEC volume, *The Effects of Atomic Weapons*, published seven years ago. Both publications were prepared under the editorship of Samuel Glasstone, author of several widely-known books on atomic energy. The new book was compiled by the Armed Forces Special Weapons Project of the Department of Defense at the request of the AEC and with the Commission's assistance. It contains the results of observation and experiment in laboratory work and nuclear test detonations since 1950 and was prepared in the light of Federal Civil Defense Administration requirements for information necessary for civil defense planning. Former Federal Civil Defense Administrator Val Peterson, who headed the FCDA during the period when the handbook was being prepared, endorsed the