

News of Science

Japan Reports Fusion

Physicists of Osaka University in Japan, directed by Minoru Okada, report that they have obtained a thermonuclear fusion reaction comparable to that announced recently by Great Britain and the United States [*Science* 127, 275 (7 Feb. 1958)]. A discharge chamber was operated at 85,000 volts and about 1.1 million amperes; a fusion reaction is believed to have occurred for a millionth of a second. It is estimated that the experiment produced temperatures of 1 million degrees Centigrade. Okada told the press that the heat could well have been double that amount and that the experimental equipment should be able to produce 5 million degrees centigrade.

Yasuji Fushimi, chairman of the Atomic Energy Committee of the Japan Academy of Sciences, says that the apparatus used was "much smaller than the British Zeta and cost about one-tenth as much." He observed, however, that the number of neutrons emitted in the Japanese reaction, estimated at 5 million, "seemed to show a better result than Britain's Zeta apparatus." The British experiment produced 3 million neutrons per pulse.

Fushimi also said that Japan's work in thermonuclear fusion was "in the same stage as the Soviet Union was in the tests announced two years ago." In 1956 a Soviet scientist, Igor Kurchatov, told an audience in Britain that temperatures of about 1 million degrees centigrade had been obtained in experiments in which massive electric currents were discharged in short bursts through tubes containing gases such as heavy hydrogen.

National Water Shortage

The Population Reference Bureau warned in a report released on 3 February that "water shortages are now a national problem" and that the United States "might not have enough of this precious mineral to go around" in the not-too-distant future. Although the nation as a whole has increased development and conservation of its water re-

sources in the past 10 years, "our steady population growth is placing heavier and heavier demands on supplies of this most basic natural resource."

The bureau says communities in 45 of the 48 states have been affected by lack of water at one time or another. Furthermore, in 1957, an estimated one in every four Americans felt the water shortage in some manner.

The hardest hit states are those in the Southwest. Paradoxically, this area has received a very large influx of persons from other states in recent years. Projections of the U.S. Census Bureau indicate that five of these states (Nevada, Arizona, California, New Mexico, and Utah) are expected to be among those showing the highest percentage of population increase between 1955 and 1970. Some of these localities may be forced to take steps to restrict the number of new residents, and more especially of new industries. To demonstrate the water shortage in various parts of the nation, the report cites the following cases.

In Dallas, Texas, last year, "water bars" did a lively business selling distilled water at 50 cents a gallon—more than the price of gasoline.

Last fall, the three large reservoirs that serve northeastern New Jersey industry and cities were down to about one-third of normal capacity.

Even in the humid parts of the nation, startling increases in water use have been noted, especially in Indiana and Massachusetts. In southern Indiana, some 100,000 gallons of water a day had to be trucked into rural areas, where farm wells went dry during the record drought in the summer of 1953. Since then, ground-water reserves have improved, but there are considerable areas suffering chronic summer shortages. With an estimated population increase of close to 20 percent for the northeastern United States by 1970, greater expenditures to meet water shortages are predicted there as in large sections of the Midwest. Robert L. Cook, director of the Population Reference Bureau, comments that "there should be vigorous appraisal of some of the economic and social factors behind current fertility trends and migration."

The Research Information Committee of the American Institute of Industrial Engineers is starting to secure abstracts of research performed in the period 1 July 1952 to 1 July 1957. Sources from which information will be solicited are universities, industrial organizations, research institutions, and nonprofit organizations, including Government agencies and professional societies. The information-collecting program will provide a valuable service to industry and universities and especially to industrial engineers. Research abstracts are to be collected in the areas of work measurement, methods, plant engineering, human engineering, engineering economics, organization planning, industrial statistics, production control, data processing, operations research, and cost analysis.

The committee will appreciate all information on Industrial Engineering research, past and present, about which it might gather more specific details. Write: Research Information Committee, AIIE, Department of Industrial Engineering, Washington University, St. Louis 5, Mo.

Solar House

A sun-heated house has just been completed in Lexington, Mass., by a team of engineers and architects of Massachusetts Institute of Technology. The result of 20 years of solar energy research at M.I.T., the house has been built to demonstrate that enough facts and equipment are now available to combine a reliably engineered solar heating system with a house designed for comfortable suburban living in a northern climate. The house will be sold to a private family, but M.I.T. engineers will retain separate access to a basement equipment and instrument room to gather data on the performance of the solar heating system after the purchaser has moved in.

The solar collector in the house consists of 640 square feet of glass, two layers thick, over a similar area of thin (.025-inch-thick) aluminum sheet painted a heat-absorbing black. The aluminum sheet absorbs the solar energy, and the glass lets the sunshine in but keeps the longer waves of heat energy from passing back out again.

Water is circulated through copper tubes attached to the aluminum sheet, and the captured solar energy is then transferred from the sheet to the water. This hot water is stored, in turn, in a 1500-gallon basement tank. To heat the house, the hot water in the tank is pumped through a heat exchanger to transfer the heat from the water to a stream of air. This warm air is then

forced through ducts and registers to heat the living spaces.

The house uses a small auxiliary oil furnace whenever there is a succession of sunless days. But the present solar system can take care of up to three cloudy days in a row if they have been preceded by a stretch of reasonably mild and sunny weather. The oil burner also insures that hot water for domestic use will be no cooler than 135°F, for the solar system itself can heat the living spaces of the house with water as cool as 95 degrees.

The house was built under the direction of the Space Heating Committee of the Solar Energy Conversion Project, financed by funds contributed by Godfrey L. Cabot. Members of the Space Heating Committee are: Lawrence B. Anderson, chairman of the department of architecture; Albert G. H. Dietz, department of civil engineering; August L. Hesselschwerdt, department of mechanical engineering; Hoyt C. Hottel, department of chemical engineering; and Joseph Kaye, department of mechanical engineering.

Female Mortality

Only the women of Norway have a lower mortality than those of the United States. In Norway the female death rate from all causes is 6.4 per 1000 per year; in the United States the corresponding rate is 6.9 per 1000. The Metropolitan Life Insurance Company provided these figures from a study of 19 countries.

The female death rate from tuberculosis of the respiratory system ranges from a low of 4 per 100,000 in the United States, Australia, and New Zealand, to a high of 47 per 100,000 in Japan. Pneumonia as a cause of death among women also shows a wide variation from the 16 per 100,000 in the United States to the high of 53 per 100,000 in Finland. Only in deaths from motor vehicle accidents do American women suffer the highest rate in the world, 11 per 100,000. The lowest death rate from this cause—2 per 100,000—is found in Israel.

Alexander von Humboldt Centenary

The approaching 100th anniversary of the death of Alexander von Humboldt (1769–1859) has occasioned activities in many lands which focus attention on a great and uniquely influential scientist. Famed for his American travels and diverse contributions to various sciences, Humboldt regarded himself quite justly as “half-American,” as is testified by the great esteem in which he was held for half a century by American scientists, statesmen, explorers, and educators. An

appraisal of Humboldt's impact on science having been long overdue, the coming centenary is to do justice to his special contributions to plant geography, geology, terrestrial magnetism, and cosmography, and to the generosity of his nature, to which early American science owes a great deal.

The following abstract is meant to give a preliminary picture of various commemorative projects.

In this country the American Philosophical Society, which elected Humboldt a foreign member shortly after his visit in 1804, is sponsoring a documentation of Humboldt which is to assemble autographs and microfilm copies of unpublished letters and related documents. By appointing me library research associate, and aiding me with a grant, the society has received the generous cooperation of domestic and foreign institutions useful for historians of science who are bound to benefit from this task. In addition the society will issue a number of publications which are to include Humboldt's correspondence with T. Jefferson, J. Madison, A. Gallatin, and prominent Americans of a later period (1840–1859).

Another Humboldt tradition in this country is to be honored by the American Academy of Arts and Sciences in Boston, of which Humboldt was made an honorary member at the time of John Quincy Adams. A symposium is being considered to which foreign scholars will also be invited.

In Washington, D.C., I was able to interest the Pan American Union in a memorial meeting to be held under its auspices next year. There also, the Smithsonian Institution may arrange for an exhibition of Humboldt documents.

Other institutions, such as the American Geographical Society and the University of Texas, will contribute to the Humboldt centenary.

A comprehensive collection of Humboldt's letters has long been wanting, especially in Germany, Humboldt's native land, to which he returned following a prolonged residence of 24 years in Paris. Such a project is now under way in East Germany under the auspices of a Humboldt Centenary Committee of the German Academy of Sciences in Berlin, whose members also include scientists from the Federal Republic of Germany and Austria. The editorial and research office is located at Leipzig under the guidance of Adalbert Plott, a Humboldt scholar of long standing. According to information which he most kindly sent me quite recently, several volumes are being prepared. These consist of letters, collected articles, and a complete bibliography. So far 5000 or more items have been assembled.

Humboldt's contributions to Latin

American science are being evaluated at the Deutsche Ibero-Amerika Stiftung in Hamburg, a foundation supported by German business interests. Two of its members, A. Meyer-Abich, of the University of Hamburg, and Hans Schneider, traveled all over Latin America in search of Humboldt documents, copies of which are being assembled in the Linga Library of the University of Hamburg, a gift of D. Carlos Linga from Mexico. The Gesellschaft für Erdkunde in West Berlin is preparing a memorial volume on Humboldt and will hold a commemorative meeting next year.

One of the leading scientific institutions in the Soviet Union is reported to be planning to honor Humboldt's contributions to Russian science, especially in reference to Humboldt's studies in the Ural Mountains and Central Asia.

Our Latin American neighbors have formed centenary committees, some of which, such as the Venezuelan committee at Caracas, will publish several volumes dealing with Humboldt travels in that country.

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Grants, Fellowships, and Awards

Advanced basic research and teaching. The University of Wisconsin will receive \$100,000 a year for 5 years from the Wisconsin Alumni Research Foundation to support a 5-year postdoctoral fellowship program in basic research related to national defense. The grant will provide about 15 fellowships annually for outstanding young scientists to prepare for careers in advanced basic research teaching. Each fellowship will carry a maximum stipend of \$6000 for the academic year or \$7200 on a 12-month basis. The selection of recipients has begun. The University Research Committee reports that “any individual who recently has received his doctor's degree and has demonstrated his ability and interest in basic research related to the natural sciences will be considered for these awards.”

Natural Sciences. The Weizmann Institute of Science, Rehovoth, Israel, has announced two Chaim Weizmann Memorial Fellowships in the natural sciences for the academic year 1958–59. These annual fellowships are intended for young scientists with several years of postdoctoral research experience. It is expected that the candidate will have worked in a field close enough to one of the subjects under investigation at the Weizmann Institute to be able to join an existing research team. The stipend, including fare, ranges from \$3500 for a single fellow to \$5500 for a married scientist with family. Payment is made in