

News of Science

Controlled Fusion

In response to the report that news of British control of the fusion reaction is being suppressed [*Science* 126, 1281 (20 Dec. 1957)], Lewis L. Strauss, chairman of the Atomic Energy Commission, released the following statement from Paris, where he was attending the NATO Conference:

"A report to the effect that the United Kingdom Atomic Energy Authority has suppressed announcement of success in control of the fusion reaction at my request is completely false.

"Research on this problem has been carried on in both countries independently for a number of years. In 1953 the United States greatly accelerated its research program on which we had been spending less than a half-million dollars a year and are currently spending an amount many times as large and, indeed, as much as the research teams have called for.

"Since 1956 we have shared results and information on the project with the United Kingdom as a means of more rapidly reaching the goal we both seek.

"Periodically it occurs that first one laboratory and then another will make a useful and illuminating advance. These advances have resulted in the production and maintenance of quite high temperatures in a plasma of light nuclei and the containment of such a plasma for very brief but nevertheless appreciable lengths of time. Much longer containment, however, must be obtained and much higher temperatures reached.

"During these experiments on both sides of the Atlantic the emission of neutrons has been observed. Whether or not these neutrons are produced under thermonuclear conditions will only be ascertainable as a result of elaborate and protracted experiments.

"At a joint meeting in the United States in October, attended by scientists from both British and U.S. laboratories, information was freely exchanged. It was agreed that, although the temperatures reached in both countries suggested the achievement of neutrons from thermonuclear reactions, more work would be required to establish this as a fact.

"The realization of the production of thermonuclear neutrons, if definitely established, would be an important step—but only a step—in the long-range efforts to develop thermonuclear reactors for the production of economic power.

"Dr. Arthur E. Ruark of the U.S. Atomic Energy Commission, who heads up the several projects in the United States, has just returned from meetings at Harwell, England, on the topic and reports that the current situation is substantially the one described above.

"Three weeks ago when Sir Edwin Plowden, Chairman of the United Kingdom Atomic Energy Authority, was in the United States, we issued a joint statement to the effect that comparative observations which had been published about U.K.-U.S. progress in this field were seriously misleading. To emphasize the degree of collaboration, we arranged for substantially simultaneous publication of reports from some of the British and U.S. laboratories following the necessary concurrences on a Joint Classification Guide. The date for this publication will be as early in the new year as the papers can be made ready.

"It may be important to restate that the development of economic thermonuclear power, although I am confident that it will be realized, is still remote. It will not, therefore, interfere with the necessary development of reactors for the production of electrical energy from the fission of heavy elements."

Soviet Spokesman Describes Graduate Studies

Some aspects of graduate science education as practiced in the Soviet Union are described in a brief public report by M. Kruglyanski of the Ministry of Culture. The report, which was released in English by the Soviet Embassy in Washington, stresses the assistance that the government gives to all students who possess the interest in and ability to do scientific research. Also emphasized is the wide geographic distribution of scientific establishments in Russia. Quoted below are some of the specific points that the report makes about the various aspects of graduate science education.

Admission to graduate schools. "All citizens of the USSR, regardless of social position and origin, sex, race or nationality, have the right to enter, provided they have a higher education, at least two years of practical experience and the ability for scientific work. Only as an exception, at the recommendation of a scientific council, is one allowed to enter a graduate course immediately after graduating from college. However, even such exceptions refer only to such theoretical subjects as mathematics, physics, mechanics, astronomy, theoretical chemistry and theoretical biology."

State scholarships. "All who have qualified for entrance exams get a month's leave with pay to prepare for them. Graduate students do not have to pay for their education and all receive state scholarships. In addition they receive annual grants of one month's scholarship for the purchase of scientific literature. They are free to use equipment, laboratories, and libraries, are sent on scientific missions, participate in expeditions, etc., on the same footing as the scientific workers and teachers in the colleges and research institutes. Every year postgraduate students receive two months' paid vacation."

Academic programs. "The basic method of training is through individual work according to a definite plan under the guidance of a science instructor. Toward the end of his course, which may not exceed three years, the postgraduate student reports to the scientific council of the college or research institute on the results of his scientific work. The graduate student may submit his dissertation only if the main results of his studies have been published.

"There are also correspondence graduate courses with a four-year term, and the students enrolled in them also have a number of privileges. These include a month's leave for entrance exams, annual additional paid leave, free access to equipment and material necessary for research under the scientific program.

"There are many specialists working at higher educational and scientific research institutions, at plants and factories, and collective and state farms who are preparing their dissertations in addition to their day-to-day work. These workers get additional paid leave for finishing their theses—three months for a master's thesis and six months for a doctor's thesis."

Number and distribution of students. "Figures reveal a constant increase in the number of postgraduates. In 1939, for example, there were 12,000 postgraduate students at the colleges and scientific institutions. By 1956 this figure had risen to some 30,000. Data on the distribution of postgraduate students according to the various branches of science show the

great attention being paid to the preparation of specialists in the technical fields. These comprise approximately one-third of all postgraduate students. Second place goes to representatives of the physico-mathematical sciences and third, to the agricultural sciences."

Growth of scientific potential. "During the years of Soviet power the army of scientists has grown 24-fold and today comprises 240,000 people, more than 95,000 of whom have masters' or doctors' degrees. In 1956 alone the number of scientific workers increased by more than 15 percent. With each passing year the number of scientific establishments increases, and today there are some 3,000 of them."

Geographic distribution of establishments. "When we say that science in the USSR is developing on a broad scale, we have in mind not only the ultimate results but also the geographic distribution of scientific establishments. In Uzbekistan, for example, where before the Revolution only two percent of the population were literate, today there are 150,000 specialists with secondary technical or higher education. The republic has an Academy of Sciences and several scientific institutes which employ some 6,500 scientific workers. Before the Revolution there was practically no intelligentsia in the Kazakh Soviet Socialist Republic, whereas today there are more than 230,000 specialists with secondary technical or higher education in the republic, more than 5,000 of whom are employed by the republic's Academy of Sciences and various scientific and educational establishments."

New Standard of Length

The Advisory Committee for the Definition of the Metre, chaired by L. E. Howlett, director of the Division of Applied Physics, National Research Council of Canada, has unanimously agreed on a new standard of length—a wavelength of light—to be used instead of the platinum-iridium bar kept at Sèvres, France. The leading contenders as the source for light for the standard have been the following isotopes: mercury-198, krypton-84, krypton-86, and cadmium-114. One of the wavelengths of orange light emitted by krypton-86 has been selected as the standard, and the international meter will be defined as 1,650,763.73 times this wavelength. The resulting standard will be more than 100 times as precise as the present international meter.

Although in practice the new standard is already in use, several steps remain before the wavelength becomes officially recognized. The committee mentioned above will send its recommendation to

the International Committee of Weights and Measures for consideration at its meeting in October 1958; when approved there, the recommendation will be presented to the International Conference on Weights and Measures, which will meet in 1960; at that time the standard will become the legal international standard.

Biological Science in Indonesia

The Gustavus and Louise Pfeiffer Research Foundation has recently made a grant to the department of biological sciences at the University of Indonesia in Jakarta. According to Gilbert Church, visiting chairman of the department who was sent to Indonesia as part of the University of California School of Medicine's Indonesia Project in Medical Education, the money will be used to encourage Indonesian students to continue their research in the various fields of the biological sciences, and for special equipment and supplies that may be needed but are not available in Indonesia. The research program in progress at the University of Indonesia is of special significance because heretofore almost no zoological research has been done in Indonesia.

IGY Meteorological Data

The World Meteorological Organization has announced the availability of microcards of International Geophysical Year meteorological data. The data recorded during the 18 months of the IGY will be published on approximately 18,500 microcards that will ultimately be sold in complete sets, partial sets, or individually at a price to be determined by the number of complete sets ordered. At present the estimated price for a complete set is \$5990. All orders should be placed with the World Meteorological Organization, IGY Meteorological Data Centre, 1 Avenue de la Paix, Geneva, Switzerland.

Shortage of Engineers?

Fourteen young engineers recently took a room at the Statler Hotel in New York so that they could be available for employment interviews by members of the American Society of Mechanical Engineers. The society was holding its annual meeting at the Statler and at the nearby Sheraton-McAlpin Hotel.

The men, 30 to 40 years old, were laid off a month ago when the turbomotor division of the Curtiss-Wright Corporation in Princeton, N.J., was closed for lack of work. Salaries for the 14 men

had ranged from \$9000 to \$15,000 annually.

S. Barron, a chemical engineer and spokesman for the group, reported that the group had received six or eight telephone calls a day. Some callers asked for more information, some asked for résumés, and some arranged interviews. However, no one was hired. When news of the employment predicament became known, the press commented on the sharp change in trend that it seemed to indicate and suggested that perhaps the current concern over a shortage of scientists and engineers was being exaggerated.

Proton Beam Brought Outside Accelerator

The University of Chicago's Enrico Fermi Institute for Nuclear Studies has announced that it has increased the research value of its 450-Mev synchrocyclotron by bringing a proton beam outside the accelerator and into a newly constructed underground experimental room. The beam, one of the most intense in the world and the first to have been brought outside an American accelerator, will permit use of the university's machine for physical and biological research not previously possible.

A meson beam, lighter and less powerful, was extracted from the atom smasher when it was first operated in 1951, but until recently studies of proton bombardment were limited to the 9-foot-square, 2-foot-thick vacuum chamber inside the cyclotron in which the protons are accelerated. With the new external beam, targets can easily be put in position and surrounded by the necessary detecting and recording equipment.

AAAS-Campbell Award

The first AAAS-Campbell award for Vegetable Research was given at the AAAS Indianapolis meeting to S. H. Wittwer and F. G. Teubner, Michigan State University horticulturists, for their joint work on flower formation and fruiting in the tomato. The award, which consists of \$1500 and a bronze medal, was established in 1957 by the Campbell Soup Company. It is given for "an outstanding single research contribution, of either fundamental or practical significance, relative to the production of vegetables, including mushrooms, for processing purposes, in the fields of horticulture, genetics, soil science, plant physiology, entomology, plant pathology, or other appropriate scientific areas."

A panel of seven judges, six representing societies affiliated with the AAAS and the seventh representing the AAAS, nominated 15 scientists for the award,