

entific Mission, 1800 K Street NW, Washington, D. C. Mr. J. W. Boag, Radiotherapeutic Research Unit, Medical Research Council, U. K., will spend a year working on physical problems in radiology with Dr. U. Fano at NBS. Miss E. J. Hanson, Biophysics Research Unit, Medical Research Council, U. K., is spending a year here under a Rockefeller Foundation fellowship and is to work with K. R. Porter of the Rockefeller Institute for Medical Research from August 1953 to February 1954.

Miscellany

The President's proposal for reorganizing the Department of Defense, made public on April 30th, calls for the abolition of the Department's Research and Development Board and for the transfer of its functions to the Secretary of Defense. Terming the organizational arrangement of the RDB "too slow and too clumsy" to serve as an effective management tool for the Secretary, President Eisenhower indicated that its functions would ultimately be assigned to one of several new Assistant Secretaries of Defense to be appointed to the Department. "The abolition of the present statutory staff agencies," the President said, "and the provision of the new Assistant Secretaries to aid the Secretary of Defense will be the key to the attainment of increased effectiveness at low cost in the Department of Defense."

Secretary of Defense Charles E. Wilson, in an appearance before a Senate appropriations subcommittee on June 8th, was questioned on the adequacy of funds for research under the Administration's program for reducing the amount of new Air Force appropriations by five billion dollars. Mr. Wilson was reported to have observed that if the U. S. still lags behind in jet planes, it was the fault of the previous Democratic administration because "pitifully little" was spent on research in the late 1940's and in the spring of 1950. Mr. Wilson was variously quoted by the press as saying that "research" covered a multitude of stupid projects and that he was cutting funds for "pure" research, as commenting that "the scientists talk a lot about pure research", and as recalling that former General Motors official Charles F. Kettering had his own definition for pure science: if successful, it could not be of any possible use to the people who put up the money for it—that made it pure. Mr. Wilson was further quoted as remarking, "I am not interested, as a military project, in why potatoes turn brown when they are fried", and, upon being asked to select a rather more appropriate field of research in which results were unpromising, as mentioning the case of the atomic-powered aircraft where "If everything worked out as the scientists planned, it would have been a bum airplane".

Funds for military research and development are to be reduced by another twenty-five percent in addition to cuts already made in the Truman recommendations for the 1954 fiscal year. Mr. Truman had asked for a

Defense Department research appropriation of \$1.6 billion, which was later reduced to \$1.3 billion in President Eisenhower's recommendation to Congress. New orders issued to the armed services by Mr. Wilson in June call for a revised figure of \$975 million, of which no more than half is to be spent during the first six months of the fiscal year beginning July 1st. Each of the military services has been required to submit lists of its expendable and its nonexpendable research projects to the Secretary.

Atomic Energy Commissioner Henry D. Smyth, in a commencement address prepared for delivery at Case Institute of Technology on June 4th, discussed some of the modern relationships between science, industry, and Government. "Today," he said, "progress in many of our largest industries is directly dependent upon the work of engineers and scientists either in industrial research laboratories or in universities. The scientist in his laboratory has replaced the inventor in his workshop as the primary source of technological development. This trend has certainly been accentuated by two world wars with their tremendous emphasis on advancing the technology of war regardless of expense, but I believe the trend was already there and will continue. The disappearance of the gap between the research laboratory and the application of science to industry means that the successful industrial leaders of the future must understand engineering and scientific methods, preferably from training in one of these disciplines." As an outstanding example of the narrowing gap between scientific discoveries and their industrial applications, he pointed to the atomic energy industry which, he said, "has developed from ideas and experiments in physics laboratories in 1939 until in 1953, only fourteen years later, it is an industry larger—at least in plant investment—than U. S. Steel and General Motors combined."

National Science Foundation prospects for the next fiscal year appear brighter than ever before, even though the \$15 million NSF appropriation requested by the previous administration was cut to about \$12 million in the Budget Bureau's report. The House of Representatives Appropriations Committee has approved \$5.7 million and the Senate Committee has called for \$10 million. A compromise figure promises to be nearly twice as large as the \$4.75 million authorized for current NSF operations. Identical bills (S. 977 and H. R. 4689) have been introduced in both Senate and House to raise the limit of \$15 million allowed under the National Science Foundation Act.

Notes from Abroad

Construction of a nuclear reactor by the West German chemical industries in cooperation with the Bonn Government has been urged by W. A. Menne, president of the Association of Chemical Industries, according to a dispatch to *The New York Times* dated April 29th. Claiming that more than two hundred

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 Jungfraujoch 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