can supply the funds which will make such experiments possible. Here is a clear case where the very progress of science depends on the establishment of Federal support of basic research.

John Quincy Adams, in his first message to Congress in 1825, said: "In assuming her station among the civilized nations of the earth it would seem that our nation has contracted the engagement to contribute her share of mind, of labor and of expense to the improvement of those parts of knowledge which lie beyond the reach of individual acquisition." Now, as the boundaries of knowledge are being rapidly pressed back, it is our obligation to provide the means for solving those problems "which lie beyond the reach of individual acquisition." I do not mean that we must find a substitute for the labors of individual scientists, for this is the very essence of scientific research. Rather I believe that the Federal Government must provide whatever the individual scientist needs to make his efforts bear fruit.

I know there are some who say that science has now become such a terrible instrument of destruction that we must now call a halt to its advancement. No scientist can support such an idea, and history has shown that every such attempt to restrain human progress is doomed to failure.

Rather I think that we must face the issue squarely. If we have now learned how to harness the very forces of the sun, if we can now achieve such scientific miracles, then certainly it lies within our power to solve the economic and political problems which threaten to turn our knowledge into destructive channels. This is an obligation which all of us must meet. And you, as scientists, have begun to play an ever-more critical role in this great project. I think that you and, indeed, the people of our nation should be proud of all the men of science who have begun to find the means of explaining to the world that scientific progress and human progress can not follow separate paths.

It is my firm purpose to do what I can, within the Congress, to provide for all science and for all scientists the support which they need and deserve. The proposed Science Foundation can be a national investment that may yield undreamed-of returns in knowledge, in wealth and in human progress. But its immediate value may be dwarfed if it will also make science a more vital part of our nation's heritage—if it draws scientists ever deeper into the stream of democratic advance that has made our nation great.

OBITUARY

LEONARD SALOMON ORNSTEIN

PROFESSOR L. S. ORNSTEIN died at Utrecht, Holland, in May, 1941, after an illness of several months. In November, 1940, all Jewish teachers were dismissed by the Nazis, and he was forbidden to visit his laboratory. An earlier illness returned, and he passed away before the full pressure of Nazi persecution was exerted against the Jews. His wife and three children, aided by many of his associates and former students, were able to live "underground" and have survived the war.

A student of Lorentz, Leonard Salomon Ornstein obtained his degree at Leiden in 1908. For a few years he occupied a lectureship in mathematical physics at Groningen. In 1914 he was called to the University of Utrecht as a successor to Debye in the chair of theoretical physics. Ornstein's interest soon turned to the experimental side of physics, and after serving as acting director for several years, he was appointed in 1925 director of the physics laboratory at Utrecht, giving up the professorship of theoretical physics, and devoting all his time to the direction of the research activities at the institute for the rest of his life. In 1931–32 he was rector of the University of Utrecht.

Ornstein's work, the extent of which may be judged from well over 200 publications, lay chiefly in problems of kinetic theory and in measurements of light intensity. In the first field, he contributed to the theory of Brownian movement and to the properties of liquid crystals. In the second, he secured his greatest fame for his development of the methods of photographic photometry and for their application to the measurement of spectral intensities. Under his direction, the photographic plate became an instrument of precision. In his laboratory was developed the well-known Moll microphotometer. Standards of light were established accurately to further the photographic methods.

Ornstein and his students made use of the exact quantitative measurement of spectral intensities in a wide variety of problems. As examples may be mentioned isotope ratios, accommodation coefficients, excitation functions of spectral lines by electron impact and diffusion coefficients. One of the early applications led to the empirical development of the familiar sum rules of multiplet intensities. From measurements of the intensities of band spectra it was established that some arcs are regions of thermal equilibrium at very high temperatures. This led not only

to wide studies of gas discharges, but also to an extensive program of determination of transition probabilities of excited atoms. Often only relative probabilities could be found at first, but in a few cases absolute values were secured, and eventually it may be expected, through interlocking, all values may be put on an absolute basis.

It is hardly an exaggeration to say the whole work of Ornstein's laboratory involved in some way the measurement of light intensities or the use of a blackened photographic plate. From biology to engineering Ornstein's fertile mind found application and uses for the principles he had developed.

In a sense unknown in American universities Ornstein was "the Professor." Intimately acquainted with all that was going on in his institute, he was able to keep in touch with the work of every individual through the Dutch "coffee table" around which each day at 11 o'clock would gather "the Professor" and some 20 or 30 of the faculty, assistants and advanced graduate students. To this coffee table and to his institute, it was Professor Ornstein's pride and pleasure to welcome students who came from all over the world to learn at first hand the methods he had developed.

R. C. MASON

RECENT DEATHS

DR. CHARLES SANDERSON CATHCART, for thirty-seven years State chemist at the New Jersey Experiment Station at New Brunswick, N. J., died on December 9.

DR. THEODORE H. FRISON, since 1931 chief of the Illinois State Natural History Survey, died on December 9. He was fifty years old.

MYRON S. FALK, of Greenwich, Conn., a well-known civil engineer and author of standard text-books on the design of bridges, died on November 26. He was sixty-seven years old.

STANLEY H. ZIMMERMAN, fifty-five, plant manager of the Post Products Division of the General Foods Corporation, and since 1939 a member of the board of control of the Michigan College of Mining and Technology, died on November 27.

DR. ALAN ESTIS FLOWERS, who, for the last twenty years was head of the research and development department of the De Laval Separator Company, died on December 4. He was sixty-nine years old.

THE death at the age of seventy-seven years is announced of Dr. Vladimir Leontievich Komaroff, the botanist, formerly president of the Academy of Sciences of the U.S.S.R. A state funeral was ordered for him.

SCIENTIFIC EVENTS

SELECTIVE SERVICE

IT is reported in a United Press dispatch that the Selective Service recommended to local draft boards on November 29 that they defer registrants who are studying or teaching physical sciences or engineering as part of a plan to increase the country's scientific knowledge.

Acting on a request by John W. Snyder, reconversion director, Selective Service sent a memorandum to local boards to the effect that "the demands of long-range national interest require a resumption of advanced studies for men having high technical and scientific qualifications."

It recommended that the boards give "serious consideration" to the deferment of registrants who are doing the following things:

1. Taking advanced studies and working for a master's or doctor's degree in the physical sciences or engineering.
2. Teaching physical science or engineering in an accredited college or university.
3. Doing university research in the physical sciences or engineering.

The program is aimed at developing fully the technical skills which had been acquired and to provide adequate teaching facilities for returning veterans who desired to resume their studies in these fields.

A committee to carry out the program was formed by representatives from the Office of Scientific Research and Development, the War and Navy Departments, the Civilian Production Administration and other government agencies. Under the plan:

Registrants will be certified by the committee for deferment only if their work contributes "significantly" to the national interest, and if they can prove that research would be delayed by inability to carry on their work.

Registrants wishing to be certified must present a notarized statement of their intentions to the Office of War Mobilization and Reconversion in Washington.

They also must present a statement signed by a "responsible" college or university official certifying that the registrant has been accepted as a candidate for an advanced degree, as a teacher, or as a research worker in physical sciences.

Any registrant who has completed at least three years of work leading to a bachelor's degree in science may be certified if he has served not less than two years in a project directly connected with the war effort.

The physical sciences are defined as including mathematics, physics and chemistry, and the engineering courses as including civil, mechanical and electrical engineering.