every botanical garden there. A wonderful report was compiled, submitted to Mr. Barkley, but it was never published, and no one to-day knows where it is.

At that time, Professor H. H. Bartlett, of Michigan, represented the botanists in a committee striving to separate the "Botanical Garden" from the Congress, so that it might function as a scientific institution. B. Y. Morrison represented the Department of Agriculture, which also tried to gain control, both futilely.

Mr. Barkley appointed David Lynn, the Capital architect, as acting director. This made Wm. Pagett, the assistant director, the functional director, and the conditions went on in the same unscientific way.

On February 1 Mr. Pagett retired. Through the aid of scientists in states whose senators and representatives were on the library committees, more than a majority of such members were pledged to have a scientist made functional director. None was consulted. Mr. Lynn promoted a German gardener, Mr. Sauberer, to be assistant director. It still works without scientific guidance.

MARIUS VAN REMLAR

FULL EMPLOYMENT AFTER THE WAR

A CORRESPONDENT has indicated to me privately that my recent discussion regarding achieving full employment after the war[1] carried an implication that government-sponsored research should be frowned upon. This was inadvertent and far from my thought. I did intend to emphasize the desirability "that a substantial amount of investigation should remain in private hands" and that if research were sponsored by the government alone it would be in danger of becoming sterile. There is no doubt that much government-sponsored research has been tremendously valuable.

ROGER J. WILLIAMS

THE UNIVERSITY OF TEXAS

SCIENTIFIC BOOKS

SCIENCE IN PROGRESS

Science in Progress. Fourth Series. 1945. Yale University Press. xvi + 331 pp. $3.00.

THIS book consists of eleven "Sigma Xi lectures" on a great diversity of scientific topics. All but one were delivered before numerous chapters of Sigma Xi by traveling lecturers; the exception is the 1944 "Annual Sigma Xi lecture" of the general meeting at Cleveland in September of that year. Presumably therefore they were designed for audiences consisting in the main of scientists, yet not of specialists in their respective fields. I will try to assess them primarily though not entirely from the standpoint of such an audience, though their great diversity in length suggests that some at least have been rewritten.

As the ideal lecture I commend that of Selig Hecht, called "Energy and Vision" and dealing, as its author says, "with the simple question: How much energy do we need to see light?" As the outcome of very ingenious and very delicate experiments it is found that the astonishingly small number of 5 photons absorbed in the retinal rods is enough to produce the sensation of a flash in the dark-adapted eye. I can not imagine how the presentation could have been bettered, and I congratulate the audiences which heard it. Near the end Hecht inquires: If five photons suffice, why not one? The answer, if I paraphrase it correctly, is: If only one were sufficient the brain would often be fooled by a single nerve impulse arising "fortuitously," so it waits for attestation by five nerves before accepting the testimony. Very clever of the brain!

I. I. Rabi, in what is unfortunately the shortest paper of all, has contributed an extremely condensed and congested account of his method of "radiofrequency spectroscopy" for detecting the precession of molecules in magnetic fields and providing the grounds for inferences about the parts of these molecules. All physicists and many others can guess why the author's time was too scant to permit of more, and I can only assure the non-physicists that it was bad luck for them.

P. Debye treats of the art of "magnetic cooling," which leads to temperatures by far the lowest ever reached, and of which he was one of the two independent inventors. This is a difficult matter to expound, as the reviewer well knows. Debye draws the analogy between isothermal compression and adiabatic expansion of an ideal gas on the one hand, and isothermal magnetization and adiabatic demagnetization of a paramagnetic medium on the other. This has the disadvantage that the "work" which appears in the latter case is far from easy to grasp, and the advantage of avoiding the tricky concepts of entropy and order. But having gained this advantage Debye promptly tosses it away, and the lecture proceeds to a study of the entropy of trivalent iron ion, in which I fear that the non-physicists of the audiences got lost.

H. Eyring speaks of the detailed history of chemical reactions as interpreted by modern statistical theory: his title is "The Drift toward Equilibrium." At the beginning his style is fluent, graceful and witty, and the audiences must have been delighted. The description of a chain-reaction is humorous and vivid,

[1] SCIENCE, 101: 537, 1945.