and the University (Columbia University Press, New York, 1966. 219 pp., $5.95), edited by Boyd R. Keenan of the Purdue political science department. Like all collections of papers, this one is characterized by a variety of points of view, diverse concerns, and some repetition. Indeed, the volume has more to say about the research and development plight of the Midwest than about the impact of "big science" upon universities. Yet at the same time the papers as a whole represent another useful contribution to the discussion of the interaction of science and society.

Of the participants whose papers are included in this volume, five spoke as representatives of government (Donald F. Hornig as Assistant to the President for Science and Technology, Leland J. Haworth of the National Science Foundation, Harvey Brooks as a member of the President's Science Advisory Committee, and congressmen J. Edward Roush of the House Committee on Science and Astronautics and John Brademas of the House Committee on Education and Labor). Six others spoke as associates of independent, nonprofit research institutes (I include the Argonne National Laboratory here despite its administrative attachment to the University of Chicago). Two others from such institutions made little if any reference to their own organizations. Only two persons, Frederick Seitz and Edward Teller, spoke as university men, and Teller addressed his remarks to the imbalance between "pure" and "applied" science as he perceives it in the university today. The roster of contributors is completed by Sir Eric Ashby of Cambridge University and Kenneth W. Thompson of the Rockefeller Foundation.

There are at least four somewhat different subjects considered in the book. First, there is a review and status report on the involvement of the federal government in support of scientific research and development. Hornig's observations are most helpful in providing a current perspective. The federal government is supporting 75 percent of all university research and 90 percent of all research in the biological sciences. It directly supports about one-third of all graduate students in the natural sciences and probably supports another one-third or more indirectly. It supports 90 percent of all research and development in the aerospace industry and 75 percent of research and development in the electronics industry. It supports almost no research and development in the chemical, textile, metals, and automotive industries. Again and again it is pointed out that government research and development interest is primarily mission- or problem-oriented and that it is concentrated in the fields of national defense and its related concerns, atomic power and space. Health-related research, at least, doesn't need a defense justification.

Second, there is the subject of the relation of the federal government to universities. Inevitably, in a symposium held a few months after Berkeley, there is some intimation that universities have put their research role ahead of their instructional role and even a suggestion that research laboratories apart from universities have some obvious advantages (the absence of students). The whole subject of scholarship in its instruction and research components needs more thorough exploration than it receives here, as does the subject of the interrelationship between undergraduate and graduate education.

Third, there is the inevitable concern about whether the Midwest is being disadvantaged in current federal science policies and programs. Congressman Brademas says yes. Philip Abelson of the Carnegie Institution and this journal places much of the blame upon Midwest business leadership. Hornig implies that the fault, if any, is a lack of aerospace and electronic industries in the Middle West.

Finally, some little attention is given to the vague but exciting matter of the interrelationship which may exist among research, technological development, and economic growth. Here is a social and political concern which deserves its own careful research.

Science as an emerging social institution, as a major political concern within the traditional framework of our political processes, as an important segment of the federal budget, as a university activity, as a contributor to national security and economic growth —in other words, science in its social, political, and economic context as well as in terms of its intellectual commitment—needs systematic attention. This little volume provides some of the insights upon which the necessary synthesis of our thought and action must eventually be founded.

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Conference and Symposium Reports

Incompatibility in Fungi. A symposium (Edinburgh), August 1964. Karl Esser and John R. Raper, Eds. Springer-Verlag, New York, 1965. 132 pp. Illus. Paper, $6. Twelve papers: "Heterogenic incompatibility" by K. Esser; "Incompatibility in yeasts" by M. Ahmad; "The function of the mating-type locus in filamentous Ascomycetes" by G. N. Bistis; "The genetics of tetrapolar incompatibility" by P. R. Day; "Somatic recombination in Basidiomycetes" by A. H. Ellingboe; "Somatic recombination in the Basidiomycete *Coprinus radiatus*" by N. Prud'homme; "Incompatibility and nuclear migration" by P. J. Snider; "Short communication: Results of electron microscope work on *Coprinus*" by P. R. Day and R. M. Giesy; "Physiological aspects of tetrapolar incompatibility" by S. Dick; "Genetic investigation into the mode of action of the genes controlling self-incompatibility and heterothallism in Basidiomycetes" by Y. Parag; "The natural history of recombination systems" by J. H. Burnett; and "The genetical interest of incompatibility in fungi" by K. Mather.

Instruments and Measurements: Automatic Control. Proceedings of a symposium (Stockholm, Sweden), September 1964. Birger Qvarnström, Torgny Schütt, and Vera Runnström-Reio. Academic Press, New York, 1965. 191 pp. Illus. Paper, $12. Fourteen papers.

Pulse Radiolysis. Proceedings, International Symposium (Manchester, England), April 1965. M. Ebert, J. P. Keene, A. J. Swallow, and J. H. Baxendale, Eds. Academic Press, New York, 1965. 321 pp. Illus. $11. Twenty-two papers.

Sensitivity Methods in Control Theory. Proceedings of an international symposium (Dubrovnik, Yugoslavia), August–September 1964. L. Radanović, Ed. Pergamon, New York, 1966. 456 pp. Illus. $13.50. Thirty papers on the following topics: Basic Approaches (6 papers); Sensitivity Functions (11 papers); Compensation of Parameter Variations (6 papers); Synthesis of Insensitive Structures (3 papers); and Sensitivity and Optimality (4 papers).

Tokyo Summer Lectures in Theoretical Physics, 1965, pt. II, *High Energy Physics.* Gyo Takeda, Ed. Syokabo, Tokyo; Benjamin, New York, 1966. 127 pp. Illus. $5.75. Ten papers: "Nuclear democracy, Regge poles and the analytic S-matrix" by G. F. Chew; "Bootstrapping with the Regge boundary condition" by G. F. Chew; "The S-matrix at very high energy" by L. Van Hove; "High energy behavior of the forward scattering amplitude" by Toichiro Kinoshita; "Present status of weak interactions" by R. E. Marshak; "Parity-SU_3 mixing for mesons" by R. E. Marshak; "Algebra and symmetries: Unitary spin and its dynamical extensions. Generalized algebraic methods in particle physics" by Y. Ne'eman; "Electromagnetic properties of the baryon (hyperfine structure of hydrogen)" by Y. Nambu; "Hidden symmetries and the question of massless particles" by S. A. Bludman; and "Mass formulae in $SU(3)$ and $SU(6)$" by S. L. Glashow.