

"Political Oppression and the Persecution of Dissidents," "The Fight Against Religion and the Suffering of the Faithful," "The Abuse of Psychiatry," and "The Oppression of Non-Russian Nationalities in the Soviet Union."

A three-page "finding" composed by a twelve-member panel that heard the testimony follows. The "finding" states that "the majority of the witnesses . . . made plausible statements of their own personal experiences during the years 1965-1975, in most cases with exact information as to the time and place of the events mentioned." The panel concludes that "on the basis of the statements made by the witnesses, the panel finds it to have been established that in the Soviet Union freedom of thought and expression is restricted, that non-conformist behavior encounters harassment in vital conditions of life, such as in the field of employment, housing and educational facilities, that freedom of movement inside the country, foreign travel as well as emigration are severely restricted, that religious freedom is substantially restricted, that the interests and aspirations of Soviet national minorities . . . are suppressed in vital respects . . . , and that in the Soviet Union there are people in prisons, camps and psychiatric wards who are deprived of their liberty, often under inhuman conditions, people who must clearly be termed political prisoners."

While much evidence can be mustered to substantiate such conclusions, the evidence in this compilation does not. The witnesses provided the panel with documentation that is not included in the book and without which the testimony amounts to no more than allegations. The panel limited each witness to ten minutes, with the result that most of them did little more than state charges. Furthermore, the testimony contains no footnotes, which poses a particular problem as regards witnesses' citations to legislative enactments.

Despite the panel's conclusion that the witnesses generally provided exact information as to time and place of events, in many instances the facts were sketchy. The book contains no indication that either the panel or the editors endeavored to verify witnesses' testimony from other sources.

The foreword states that the witnesses and panelists were chosen to assure political impartiality. Yet many of the panelists have published works containing strong indictments of Soviet human rights practices. And most of the émigré witnesses exhibit deep philosophical differences with the Soviet government. The book's endeavor to achieve impartiality is further impaired by the inclusion near the beginning of a "Declaration of the Organizers" of the hearing, which asserts that the USSR "mercilessly . . . choke[s] any form of dissent" and states in capital letters, "LET OUR PEOPLE GO."

The above criticisms notwithstanding, the book does bring to light many important and interesting allegations that warrant verification.

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SOVIET SCIENCE AND TECHNOLOGY: DOMESTIC AND FOREIGN PERSPECTIVES. Edited by *John R. Thomas* and *Ursula M. Kruse-Vaucienne*. Washington, D.C.: The National Science Foundation and The George Washington University, 1977. xlv, 455 pp.

In recent years a group of scholars has begun to focus more attention on Soviet science and technology, areas central to an understanding of the Soviet Union but previously neglected in Western scholarship. The most widely read texts on Soviet history, society, and politics still largely ignore science and technology. One positive feature of the specialist studies is that they may eventually begin to influence the textbook writers. The present volume, based on a workshop held in November 1976 and sponsored by the National Science Foundation, reflects the growth of this field,

the variety of viewpoints represented in the field, as well as some of its strengths and still evident weaknesses.

The book contains nineteen formal papers, in addition to a number of informal presentations, summaries of discussions, and an overview of major conclusions by the editors. It is divided into five sections: (1) Soviet science policy and organization, (2) the interaction of Soviet science with the Soviet system, (3) the interaction of Soviet science and technology with the economy, (4) the impact of foreign technology on the Soviet economy, and (5) cooperation between the United States and the USSR in science and technology. As these topics and the sponsorship of the workshop suggest, one of the central aims was to present information and conclusions useful to government policymakers, corporate leaders, university administrators, and others concerned with scientific exchanges and technological transfers between the United States and the Soviet Union. Curiously, however, the volume is weakest in its failure to provide concrete suggestions for strengthening Soviet-American cooperation in these efforts and assuring more definite benefits for the United States. The strength of the study rests in the empirical and carefully documented case studies which highlight our developing knowledge and the large areas of our ignorance about Soviet science and technology.

A central problem, which a number of these papers touch, concerns the reasons for the uneven quality of Soviet science and the dichotomy between the high level of Soviet theoretical science in a number of areas and relatively poor Soviet technological performance. In their overview, the editors assess the strengths and weaknesses of Soviet science and technology pinpointed by the workshop participants, and they list no fewer than twelve. One of the problems with such lists, however, is the lack of any attempt to rank order them. Reading the individual papers, one realizes why. No real agreement is reached among the participants as to the principal causes of the weaknesses. In his presentation, John Thomas makes the rather dubious statement that "the prime reason for the low performance of Soviet science is the lack of a unified scientific command as it has in other key areas, e.g. the military." The implication is that scientific creativity can be commanded the way a general commands an army. No real evidence is offered to support this view, which contradicts such respected studies as those of Joseph Ben-David (*The Scientist's Role in Society*), who concludes that the nations with the most creative scientific achievements have been those in which scientific organization is more decentralized and diverse. Thomas seems to have accepted certain Soviet categories of thinking, such as the conclusion that "duplication of effort" is necessarily bad for science, whereas, in fact, a certain amount of duplication and competition may be healthy both for scientific creativity and technological innovation. Another participant, Philip Hanson, hits the nail on the head when he concludes that Soviet problems with technology are systemic in nature, "attributable in large part to the lack of competitive pressures in the Soviet administrative economic system."

It is difficult to do justice in a short review to such a diverse volume, which, if anything, suffers from its attempt to cast too wide a net. There were a number of disagreements among the participants. For this reason, the summaries of discussions often make lively reading and constitute one of the most useful features of the volume. I can only single out here for particular attention the informative paper by Yakov Rabkin on the development of *naukovedenie* (science studies), Thane Gustafson's analysis of Soviet assessments of American science, David Joravsky's article on relations between the power structure and the scientific-technical intelligentsia, Loren Graham's appraisal of the changing role of the Soviet Academy of Sciences, Linda Lubrano and John Berg's comparison of Soviet and American scientific elites, Bruce Parrott's study of differing leadership attitudes toward technology, and Mark Adams's fascinating case study. The latter shows how biology and genetics in particular survived at the height of the Lysenko era, protected by some of the most respected

physicists and chemists in the Soviet Academy, including the Academy's current president. This makes even more intriguing Adams's conclusion that many scientists who worked quietly to keep genetics alive often have opposed more open political oppositionists such as Academician Sakharov.

While many of the papers are largely ahistorical and systemic in their analytical approach, one can only agree with Mark Adams's statement that the study of history "permits us to draw on many sources of data and information which allow us to formulate a more complex picture than would be possible if we studied only the current situation or very recent events." Historical studies of Soviet science and technology significantly enrich the field, and more historical knowledge would have strengthened this volume, precluding such naïve statements as the following by the editors: "Anti-intellectualism was not part of the Russian people nor is it of Soviet society."

Among the papers on Soviet technology and technology transfer from the West, Philip Hanson's article and the contribution by Donald W. Green and Herbert S. Levine stand out. They address the question concerning the extent to which the transfer of technology from the West helps the USSR improve its economic position. Their answers remain uncertain and are indicative of the difficulties of assessing the incomplete and often ambiguous data available. While only a small proportion of overall Soviet growth during 1968–73 (some 5 percent, according to Green and Levine) can be attributed to imported technology, nonetheless, in certain key areas, such as the chemical industry, the impact has been considerable. While the Soviets remain inefficient in diffusing foreign technology by comparison with Western nations and Japan, imported technology appears to raise Soviet efficiency in selected areas by comparison with past performance. Green and Levine's article indicates that Soviet investment in Western technology returns three to four times as much as the same investment made in domestic technology. If so, this helps explain one of the primary economic motives behind the Soviet interest in détente.

Overall, participants at the workshop reached a consensus that Soviet leaders are concerned about the level of their technology but are politically unprepared to reform the economy in major ways. They have instead turned to technology transfer as the strategic solution to their problems. The evidence presented in the case studies suggests that, as a solution to Soviet economic problems, the strategy of borrowing foreign technology is not working. At most, it appears to be a band-aid, and a small one at that, because of systemic resistance and restrictions on Soviet ability to purchase technology abroad. According to the contributors to this volume, the present Soviet leadership is therefore likely to bequeath to its successors major unsolved problems in the areas of science and technology, with serious implications for the future course of Soviet development.

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SOVIET SCIENCE. By *Zhores A. Medvedev*. New York and Toronto: W. W. Norton and George J. McLeod Limited, 1978. xii, 262 pp. + 12 pp. photographs. \$10.95.

Zhores Medvedev's book will be remembered as an interpretative, historical account of the changing conditions in Soviet science since the Bolshevik Revolution. It is not an institutional analysis, focusing instead on individual scientists affected by the needs and demands of a political system more concerned with its own security than with the advancement of knowledge. The author characterizes the development of Soviet science as uneven, contradictory, and often misdirected, because of incompetent political leaders and other factors outside the scientific community. This view prevails throughout the book and results in an emphasis on the negative aspects of Soviet