Book Reviews

Science in the U.S.S.R.

The Communist Party and Soviet Science. STEPHEN FORTESCUE. Johns Hopkins University Press, Baltimore, MD, 1987. x, 234 pp. $28.50.

The Soviet Union has the largest research and development apparatus in the world, with more than one-third of the world's engineers and one-fifth of its physicists. In all, it possesses over 1.5 million scientific workers who are employed in institutes of the Academy of Sciences, industrial ministries, and universities. Until recently, Western scholars have had little success in analyzing the role of the Communist Party in the administration of those institutions or in understanding how party members and scientists interact over questions of ideology, personnel, management control functions, and the science-policy process in general. Stephen Fortescue's *The Communist Party and Soviet Science* fills this gap, offering an interesting, informative, and well-researched evaluation of the role of party institutions in Soviet science. Fortescue is not concerned with the role of the party in military R&D institutes but focuses on the natural and social sciences.

Drawing on a wide range of such sources as party documents, journals and newspapers including *Pravda, Izvestiia, Kommunist*, and *Partiinaia zhizn'*, Soviet scientific journals, memoirs, emigre writings, and a thorough search of the western academic literature, Fortescue attempts to determine the strength of the Soviet scientist relative to the party apparatus. His book covers much of the ground covered in previous forays into this area of interest, but no one heretofore succeeded in presenting such a comprehensive analysis. In consecutive chapters Fortescue considers the position of ideology in Soviet science and then the organization, function, and membership of "leading party organs" (the Politburo, the Central Committee and its Science Department), the regional and local party apparatus, and primary party organizations (PPOs) in the administration of science. He argues that the Academy of Science and the State Committee for Science and Technology have power that exceeds that of the Science Department (whose influence is limited to ideological matters) and rivals that of GOSPLAN—the State Planning Commission. Though he focuses almost exclusively upon institutions, he also indicates that the bulk of the science policy-making process takes place within the state apparatus. However, the regional party apparatus and PPOs have gained in importance and power in general science management since the Khrushchev years through their control of conference travel, publication, and personnel appointments.

Fortescue's approach reveals the pitfalls of using Soviet materials, as well as the payoff possible from persistent effort. He takes the reader through the membership and background of the officials who work in the Science Department of the Central Committee and the regional party apparatus. For example, he shows that the percentage of the Central Committee membership working in science is not far below the percentage of Party members working in science. Elsewhere, however, he admits that there is a dearth of information concerning the technical or natural sciences and can only claim that his conclusions "seem" or "appear" to hold. The drawbacks are evident when Fortescue considers the L'vov reform for the regional planning of science, treating extensively a reform that he admits is small-scale, or when he presents evidence on the relative influence of scientists on policy-making based on an analysis of their membership in party organizations. It is not clear that "attendance" at a meeting or writing an article shows involvement in the policy process.

Where Fortescue offers quantitative analysis of the personnel involved, he runs head on into the problem of the meagerness of sources. For the most part, he succeeds in presenting his data in an orderly and instructive fashion, showing us the extent of overlap between scientist and party official, how the central party apparatus is not really capable of knowledgeable administration of science policy, and how, therefore, most party control must be exercised at the regional and local level. Still he might have stated this more clearly. More charts to summarize the data would have been useful. This quantitative analysis is also the strength of Fortescue's approach, however. He uses his evidence circumspectly and generates some of the most revealing information to date about the career patterns and interests of individuals involved in the science policy process in the Soviet Union.

It must be pointed out that Fortescue's attempt to place his analysis within the framework of three different models of the Soviet polity—totalitarian, "vanguard party," and pluralist models—does not quite succeed. He considers these issues directly only at the beginning and the end of the book. As a result the exposition of the models appears to be out of place, if not superfluous. I share Fortescue's conclusion that the need for scientific-technical expertise in post-industrial society requires that Soviet party leaders rely on the advice of scientists and that an interest-group or pluralist model is the most applicable of the three he considers. But concern with this theoretical issue diverts him from consideration of more fundamental factors affecting the strengths and weaknesses of Soviet science. Such factors include the bureaucratic-functional and structural and other "traditional" impediments to innovation and rationalization of party control. In addition, when considering the role of the party apparatus in day-to-day science management, Fortescue limits himself to consideration of personnel appointments, management issues, and the so-called "science-production tie," rarely addressing the role of the party official and the scientist in research plan formation or the budget process.

All in all, however, Fortescue's book succeeds in its stated purpose, convincingly demonstrating that the importance of scientific-technical advice for the Soviet state is such that experts have achieved a position of power, influence, and responsibility within the Soviet system.

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Deep-Crustal Evolution

The Nature of the Lower Continental Crust. J. B. DAWSON, D. A. CARSWELL, J. HALL, and K. H. WEDEPOHL, Eds. Blackwell Scientific, Palo Alto, CA, 1986. viii, 394 pp., illus. $78. Geological Society Special Publication no. 24. From a meeting, London, Oct. 1984.

The lower continental crust is defined as having seismic velocities ranging from about 6.4 to 7.3 kilometers per second and densities of about 2.1 to 3.1 grams per cubic centimeter. A relatively low radiogenic heat flow is also assumed. The genesis of the boundaries of the lower crust, namely the Conrad discontinuity on top and the deeper Mohorovičić (Moho) discontinuity below, remains enigmatic, a circumstance that is further complicated by the putative nonexistence of a Conrad discontinuity in North America. This timely and well-edited collection of 30 papers brings together new observations, constraints, and models concerning the evolution of the lower continental crust.

Deep seismic reflection profiles obtained in recent years suggest a lower continental crust that is crudely laminated, often overlain by a more transparent middle crust. Other profiles show no distinct layering of the lower crust, however. A consensus is emerging that listric normal faults and listric