This effort has resulted here in the identification and description of twelve aspects, pervasive despite all local differences. They are laid out in chapters given in alphabetical order: "Assessment," "Business and Industry," "Curriculum Connections," "Equity," "Family and Community," "Finance," "Higher Education," "Materials and Technology," "Policy," "Research," "School Organization," "Teacher Education." Historians of science will be glad to find, on many pages, eloquent arguments to connect science teaching with the humanities and to strive for interdisciplinarity in the curriculum. The report even has the courage to point a finger at specific, well-known national reform movements that fail in this respect (see, e.g., pp. 124–125).

Even though it is a gold mine of ideas and references for reformers and students of education, the report is modest in self-assessment, with remarks such as "This is at best . . . only a first step" and pleas to have readers respond by e-mail to such questions as "Are there some themes that could be used to bring greater coherence to the collection?" And elsewhere, "The job is not over." Indeed; but this volume is a good deal more than a first step toward educational rearmament.

GERALD HOLTON

Kurt Vogel; A. P. Iuskevich. *Mathematikegeschichte ohne Grenzen: Die Korrespondenz zwischen K. Vogel und A. P. Juschkewitsch.* Edited by **M. Folkerts, M. M. Rozanskaja,** and **I. Luther.** (Algorismus: Studien zur Geschichte der Mathematik und der Naturwissenschaften, 22.) xxxv + 263 pp., notes, index. Munich: Institute für Geschichte der Naturwissenschaften, 1997. DM 29.80 (paper).

A. P. Youschkevich; K. Vogel. *A. P. Youshkevich–K. Vogel: Istorija matematiki bez granic.* Edited by **M. M. Rozanskaja, I. Luther,** and **M. Folkerts.** 310 pp. Moscow: Janus-K, 1997.

In 1997 a remarkable volume was published simultaneously in Moscow and Munich: the correspondence between the Russian-Soviet historian of mathematics Adol'f Pavlovich Youshkevich (1906–1993), the "grand seigneur" of Soviet historians of mathematics, and the leader of German historians of mathematics, Kurt Vogel (1888–1985). Their correspondence had begun in 1955, when official diplomatic relationships between the Federal Republic of Germany and the Soviet Union were established, and continued until Vogel's death in 1985. For thirty years the two historians remained in contact, despite the political and social changes in their two countries and the concomitant political and ideological conflicts, debates, and discussions. Not only is the correspondence itself remarkable, but the two participants led quite different lives and had to overcome very different conditions to become leading figures among the historians of mathematics in their respective countries.

Kurt Vogel studied mathematics and physics at the universities of Erlangen and Göttingen. From 1913 until 1920 he served as an officer in the Imperial Army, and after the war he began to teach, first at a *Realschule,* then from 1927 to 1954 as a professor at a *Gymnasium* in Munich. In 1936 he became a *Privatdozent* at the university in Munich and the head of the Institute for History of Science and Mathematics. His first interest was the history of Byzantine mathematics, but he later studied the history of Babylonian mathematics as well. He undertook a new edition of Johannes Tropfke's important *History of Elementary Mathematics* and also produced editions of several early mathematical works, including the *Bamberger Rechenbuch* of 1482. At the same time he studied the history of Greek mathematics, especially arithmetic. Despite officially retiring in 1963, he continued to work at the university until 1970. His honors included the Sarton Medal of the History of Science Society, which he received in 1969, and he was a member of the oldest academy of science in Germany, the Leopoldina Halle (Deutsche Akademie der Naturforscher Leopoldina).

Adol'f Pavlovich Youshkevich was born in Odessa. Thanks to Russian imperial politics he was brought up among anti-Semites. He was educated at schools in St. Petersburg, which became Petrograd after 1914, then studied mathematics at Moscow University and became a mathematician. Between 1930 and 1952 he worked at the Technical University in Moscow, from 1940 as a professor of mathematics. During World War II he was evacuated from Moscow with other members of the university. He survived Stalinism more or less unscathed, but he never forgot the years of the "great terror," 1936–1938, and the anti-Semitic crackdowns against so-called cosmopolitanism in the 1940s. In 1945 he got the chance to work in the Institute for History of Science and Technology at the Soviet Academy of Science (recently renamed the Vavilov Institute of the Russian Academy of Science) in Moscow. In 1952, when he was expelled from the Technical University because of anti-Semitism, he continued to work in the institute, becoming head of the Department of His-

tory of Mathematics in 1960. He held this post until his death in 1993, through all the changes both in the country and in the Academy of Science itself. He became a specialist in various fields of the history of mathematics, especially the history of analysis and the work of Leonhard Euler. He wrote several books and brought out many edited works on the history of mathematics. He too was awarded the Sarton Medal and was a member (1958) of the Leopoldina Halle. Everyone who had the good fortune to know him personally was impressed by his enormous knowledge, his charm, and his humor—and by his behavior as the "German professor," his nickname at the institute.

These very different historians of mathematics, both of whom were interested in ancient Babylonian, Greek, and medieval mathematics, knew each other chiefly through their work. Vogel was one of the rare historians of mathematics in the Western world who could read and speak Russian. When correspondence with colleagues in the "capitalist countries" of the West was permitted to those in the institutes of the Academy of Science (under strict restrictions, as the introduction reveals [pp. xxxi–xxxii]), Youshkevich wrote to Vogel, marking the beginning of their long correspondence. Because of political circumstances in the Soviet Union, travel was difficult for Youshkevich. Meetings between the two correspondents were thus very rare. Their first encounter took place in East Berlin in March 1957, at the celebration of the 250th birthday of Euler. Other meetings came about at the International Congresses for History of Science in Ithaca (1962), Paris (1968), and Moscow (1971).

The reader of these letters must bear in mind the particular political conditions under which both participants wrote: Kurt Vogel in West Germany, a free country tainted by hysteria with regard to the "Reds" and the Soviet Union; Adol'f Youshkevich in the post-Stalinist Soviet Union, where the activities of all inhabitants and especially their relations with the West were strictly policed and censored by the KGB. But they were historians of mathematics, and their letters must have been dull reading for their censors. Poor censors; Youshkevich and Vogel no doubt baffled them with their endless inquiries about the best translation for particular mathematical terms, the most appropriate definition of a function, and so on.

This dialogue between two founders of national schools of history of mathematics is interesting, as any letters between important figures in science or culture would be. But more than that, the correspondence allows us to learn about the problems of history of mathematics as a field, both in terms of particular questions and in terms of methodological problems; it also reveals the difficulties of teaching the history of mathematics at the university level in the two countries. Both Vogel and Youshkevich were important in introducing lectures on the history of mathematics to the university system of their native countries. The reader will find many interesting subjects in this work. Moreover, the correspondence can help us to understand the world of science through the lives of two remarkable scientists who were important for their countries and who belonged to the old—horrible—twentieth century.

ANNETTE VOGT

Robert Royal. *The Virgin and the Dynamo: Use and Abuse of Religion in Environmental Debates.* xi + 271 pp., figs., index. Grand Rapids, Mich.: William B. Eerdmans Publishing Company, 1999. $25 (paper).

Taking his cue from a perceptive metaphor of Henry Adams, Robert Royal envisages much of our culture as a conflict between "the Virgin" and "the Dynamo," the former being a spirituality that encompasses beauty, human values, and religious belief, the latter essentially the achievements of modern science and technology. Elaboration of this dichotomy takes up much of the book, not least because of the ambiguities that lie in every one of the words used to describe it. Greatest of all the problems is the fact that religion has been used to justify both the exploitation of nature and its conservation. And of course the debates have long been haunted by facile generalizations, discredited predictions, flawed analyses, and much else that prompted the *cri de coeur,* "If we really want to know what we are about at our present moment, we need some very large intellectual perspectives" (p. 60).

Royal queries the common religious view that environmental disasters "are all part of one interlocking apocalypse" and considers fears of a population explosion to be "grossly exaggerated" (p. 19). He tends to be optimistic about the future effects of acid rain and does not consider ozone depletion in the upper atmosphere a potentially serious problem. Controversially, he views sustainable development as "a socialist mistake of thinking that a central bureaucracy can plan for the operation of a whole economic order better than the innovators and entrepreneurs within it" (p. 17).

In discussing the relevance or otherwise of re-