

briefly—at the very end of Ivan’s reign—and to have been an aberration of sorts (the analogies in Russian sphragistics are mostly from the seventeenth century). All of which seems to indicate that what the seal reveals is not a fully formed system of political thought, but a moment of change, a *lack* of established tradition, and the beginnings of the kind of amorphous eclecticism and effervescence that characterized Muscovite politics after Ivan’s time.

But one may indulge these speculations only because Stökl has been so careful in avoiding them, and has provided such rich and sound material for those who will follow him in the study of these two singular artifacts. Anyone who does so will have ample reason to thank him for his careful and erudite commentary.

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PROMYSHLENNYE SELENIIA TSENTRAL'NOI ROSSII V PERIOD
GENEZISA I RAZVITIIA KAPITALIZMA. By *Ia. E. Vodarsky*. Moscow:
"Nauka," 1972. 256 pp. 1.22 rubles.

In the Soviet Union the greatest volume of work in historical geography—and often the most interesting work—is carried out by historians. Vodarsky is one of the outstanding historians so engaged, and in this book he turns his attention to a key problem in Russian historical geography, the origin of towns. Very broadly, Russian towns originated with a defensive role as fortresses, or developed from villages as *commercial centers of trade and manufacturing*. It is this latter process which Vodarsky examines in great detail, as it took place in the former Moscow *guberniia*, the heart of what is now called the Central Industrial Region. His conclusions about the nature of the process are scarcely startling, but they are most solidly based on a considerable volume of fact and conscientious perusal of the archival evidence, including factory records, the "Economic Notes" of the General Survey, and provincial descriptions.

The development went in stages from purely agricultural villages, to villages with individual craft manufacture, to villages with home-based workers (*kuSTAR* manufacture), which began to appear in the seventeenth century. In the eighteenth and early nineteenth centuries, more peasants took to manufacture, either seasonally in conjunction with working the land, or full time. Gradually a skilled work force, especially in the textile industry, was built up. With the accelerated growth of a capitalist economy in the later nineteenth century, factories and mills were set up in these villages, or the workers were brought to new settlements, established around new enterprises. Unlike some other villages in other parts of Russia, trade played a subsidiary role to manufacturing in the "urbanization" of the rural, village population. Nevertheless, although the agricultural element in the population was minimal, such settlements generally did not acquire formal urban status, a situation which Vodarsky attributes to survivals of feudalism, even after the emancipation of serfs.

The restricted geographical scope and the structure of the book make it a localized work of reference, a very sound piece of evidence toward a generalized picture, rather than an exposition of broad concepts. No less than three-quarters of its length consists of an encyclopedic description, village by village, of about one hundred manufacturing settlements, out of some thirteen hundred in the region. For each

of them is given all the available data from documentary sources. The mass of archival information thus made accessible is supported by six statistical appendixes. On one scale, here is a wealth of material for studies in local history. On a broader scale, the book makes a valuable contribution to the overall story of the urbanization of Russia, helpful alike to the historical geographer and to the economic and social historian.

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NEWTON AND RUSSIA: THE EARLY INFLUENCE, 1698–1796. By *Valentin Boss*. Russian Research Center Studies, 69. Cambridge, Mass.: Harvard University Press, 1972. xviii, 309 pp. \$19.00.

This is a welcome addition to the small literature in English on eighteenth-century Russian science. Professor Boss has worked through an enormous amount of obscure material, and has had great success in his bibliographical detective work. A good example is his detailed examination of the first Russian edition of Euclid to establish which sections were written by which of the four translators (Tacquet, Domcke, Ferquharson, Satarov). Boss has also discovered a hitherto unknown copy of the first edition of Newton's *Principia*, probably brought to Russia by Jacob Bruce, Peter the Great's adviser.

Boss gives careful and fully documented answers to the main questions he has set himself: Did Peter the Great meet Newton? (probably not, but Bruce did). Which of Newton's books did Bruce own? (the *Principia*, *Optics*, and several commentaries). Was Bruce really the Russian translator of Huygens's *Kosmotheoros*? (yes). Does Lomonosov deserve priority over Herschel for improving Newton's reflecting telescope? (yes, and in addition, Boss shows that he invented an improvement for the refracting telescope). These questions show that the history of Russian science is an underdeveloped area, with basic facts still to be established. Thus, Boss takes as his model George Sarton, the pioneer historian of science, and not those like Alexandre Koyré, who wrote more general histories of scientific ideas. Boss, like Sarton, writes for the specialist, leaving his many quotations from Latin, Russian, German, and French sources untranslated.

Boss alludes to the sharp split between the Academy of Sciences, which was controlled by Germans and was anti-Newtonian, and the Russian amateurs outside the Academy, who were more receptive to Newton and played a key role in popularizing his ideas. Boss gives only a few examples of nonacademic Newtonians, such as Bolkhovitinov, who had Newton's work taught at his Voronezh seminary, and a cousin of Sumarokov's, who published a summary of Newton's ideas in a Tobolsk journal. It would be interesting to know if there were others. It seems, from Boss's evidence, that there were very few, making it all the more important to examine the Newtonian content of the few Russian-language science publications of the time. With the exception of Lomonosov's works, which Boss does examine in detail, these were unoriginal works, translations, and popularizations. Yet, for the history of Russian science, these first steps in assimilating new ideas were just as important as the more sophisticated Newtonian-Cartesian debates of the Academicians, which Boss discusses at length. Lydia Kutina's two recent (1964, 1966) studies of the formation of scientific terminology in early eighteenth-century Russia are a