who have to cope with congestion in the real world often find simulation, or numerical evaluation, to be more useful tools in the computer age.

But blind simulation is a very expensive business, and the mathematician is still needed to provide insights rather than formulae. Information of a qualitative or approximate kind about stability, robustness, sensitivity, rates of convergence, may be just what the practical man needs, or if not will enable him to ask the right questions of his computer. There has been distinguished work along these lines, but much remains to be done; in particular the many-server queue still presents a formidable challenge.

Although the Russian school has been by no means isolated from Western developments, it has inevitably differed in emphasis, and an account from that viewpoint of the present state of the theory is valuable and stimulating. Borovkov has taken a very fundamental approach, fitting a wide variety of models into a general framework. Explicit formulae are kept in their place, and he usefully stresses the limiting results which justify robust approximations of real practical use.

He does not discuss the relevance of the theory to the real world, and the book is only (!) an authoritative synthesis of the underlying mathematics. It will be read, and with great profit, by mathematicians seeking uses for the powerful tools of random process theory. Will they be able to make any contribution, however indirect, to the world which does not read the learned journals? There is no doubt that modern telecommunications systems work better because of the achievements of Erlang and his successors, but some other applications of the theory have been less fruitful (largely because a queue is often a complex feedback mechanism). Perhaps one rather trite conclusion is that here, as in other areas of applied mathematics, mathematicians should direct their attention to questions to which someone, somewhere, wants to know the answer.

J. F. C. KINGMAN

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*Matrix groups*, by D. A. Suprunenko, Translations of Mathematical Monographs, vol. 45, American Mathematical Society, Providence, Rhode Island, 1976, viii + 252 pp., $31.20.

If I recall correctly, John Thompson prefaced his talk at the group theory symposium at the University of Illinois in 1967 with the remark "I believe in a heliocentric view of the universe, with the linear groups playing the role of the sun". Given the nature of the development of group theory in the past one hundred years, such a credo seems very appropriate. The earliest work in group theory was concerned mainly with permutation groups, the principal example of which was the Galois group acting on the roots of a polynomial equation. Interest in linear groups arose first in a geometric context. Boole and Cayley in the 1840's and 1850's initiated invariant theory, i.e. the study of rational functions of several variables that are invariant under various groups of linear or affine changes of variables. This work occupied the attention of many prominent mathematicians for many years; one major development was the annunciation of Klein's Erlanger Program, which stressed that geometric