periods of occupation of the sites. Appendix C is a descriptive register of the 867 sites plotted in the surveys. References and notes are admirably copious and detailed.

It is unfortunate in such a large book that the notes to the tables in the text are reduced to such minuscule proportions. The same must be said about the otherwise finely produced maps and figures which illustrate the settlement and irrigation patterns. The numerals indicating the sites are unnecessarily tiny and difficult to read. It would have been more helpful to the reader if all the known site names were included in the index. As it is they are listed in the site register only numerically. But these are minor details which detract not from the overall excellence of this pioneering study.

GEORGE F. DALES
South Asia Section,
University Museum, Philadelphia

Soviet Geography

This book by Roy E. H. Mellor, **Geography of the U.S.S.R.** (St. Martin's Press, New York, 1965. 418 pp.; text edition, $8.50; trade edition, $12), should be a most welcome addition to the relatively small number of textbooks currently available in English on Soviet geographic conditions. The book, which examines the U.S.S.R. on a topical basis, may be divided into sections on the physical environment, the people and governmental administration, and the economic system.

The first part of the opening chapter deals briefly with the physical relief and geologic structure of the Soviet Union as a whole. This discussion precedes a rather detailed description of the landforms, including the geomorphology, of the major physical regions —the European plain, the west Siberian lowland, the central Siberian uplands, northeastern Siberia, southeastern Siberia, and the mountain systems. The Arctic islands and the country's rivers, lakes, and seas are treated in the last few pages of the chapter. In the second chapter the author considers the characteristics of the climate, soils, and vegetation. To facilitate description, the country is divided into nine climatic regions and ten soil-vegetation regions. The remainder of the book progresses from a discussion of the growth of the Russian state to the geographical exploration; population distribution and ethnic composition; town, village, and territorial administration; and finally a treatment of the individual topics of agriculture, fuel and minerals, industry, and transportation. A few notes and a number of references for further study of specific topics appear at the end of each chapter.

The book's 59 maps and 24 tables are well planned, free of unnecessary detail, and are effectively integrated into the text. The 34 pages near the back of the text contain an appendix, glossary, bibliography, and illustrations. The appendix lists the 1959 population of Soviet towns of 50,000 or more as well as the former names of many of the towns. The short glossary is helpful, but its value could have been greatly enhanced if all of the italicized terms that appeared in the book had been listed. The five-page bibliography includes a list of general and regional textbooks, atlases, periodicals, and statistical handbooks from both English and Russian sources. These references are mainly (there are a few repetitions) supplementary to those given at the end of each chapter. The 32 photographs are printed on glossy paper and are of high quality. Unfortunately, they are not keyed into the text nor are they cited in the textual materials. Only two photographs are dated.

Geography of the U.S.S.R. has a few faults, but they are minor in view of the book's quality and usefulness. The text conveys a remarkable amount of information in a style that is easily read and understood. No doubt it will become an important reference and textbook.

B. ROSS GUEST
Department of Earth Sciences,
Northern Illinois University, DeKalb

Mathematics and Logic

In **Symbolic Logic and the Real Number System: An Introduction to the Foundations of Number Systems** (Harper and Row, New York, 1965. 237 pp. Illus. $7.50), A. H. Lightstone has two primary objectives: to set forth "the impact of symbolic logic on mathematics" and "to develop the real number system on the basis of ordinary arithmetic." This exposition should lead the reader to a real feeling for the concepts of logic rather than merely an ability to manipulate; for example, the use of a contrast between $p = q$ and p iff q could well tend to clarify a hazy area. Material on sets, functions, relations, operations, and so on leads to a discussion of mathematical systems. The ordered-pair approach used is sometimes burdensome, particularly in the notation for examples of mathematical systems; moreover, in the definition of isomorphism the all-important property is concealed in the notation. Illustrative examples are used effectively.

The development of the real number system proceeds from the Peano postulates through the systems of natural numbers, integers, rational numbers, and real numbers. Many parts of this (for example, the thought sequence leading to a definition of "less than") require considerable sophistication on the part of the reader. The real numbers are developed from the rationals by using sequences of decimal fractions, since the author believes that this is more natural than either the Dedekind cut or Cauchy sequence approach. The operations which this requires are simple enough as entities, but when they are combined the effect is not always clear. I question whether the intended simplicity is attained.

Some typographical errors may cause difficulty in reading, though most are evident. The proof (indirect) of Theorem 5.4.2 contains an example which appears to be an illustration; however, the contradiction obtained for the example turns out to be the theorem contradiction, no explanation of this unusual procedure being offered. A lemma (p. 125) includes uniqueness, but there is no mention of proof. Corollary 4.1.1 follows Theorem 4.1.14 rather than Theorem 4.1.1, hence back reference is not as easy as it could be.

Lightstone concludes his interesting exposition with a discussion of the properties of real numbers.

G. CUTHBERT WEBBER
Department of Mathematics,
University of Delaware, Newark

Impact of Big Science

In April 1965, Purdue University sponsored a symposium on the general theme of "Science and Public Policy: Evolving Institutions." The principal papers presented on that occasion are brought together in **Science**