

lems of a systems nature were given adequate space in the 15% of the book allotted to Space Technology.

In summary, the book did not achieve its purpose in outlining the technical and scientific challenges to space. It provides an excellent history and status of governmental programs and international activities in space and similarly an excellent discussion of the more basic scientific problem areas of interest in space. It is not recommended for reading on the engineering aspects of space technology.

ROBERT F. TRAPP
National Aeronautics
and Space Administration
Washington, D. C.

(About the Reviewer: Mr. Trapp is currently Chief of Man-System Integration Division in the office of Advanced Research and Technology, National Aeronautics and Space Administration, Washington, D. C. In this capacity he is involved with all aspects of incorporating man into future space systems. Mr. Trapp's previous experience includes six years with Douglas Aircraft Company, Missiles and Space Division, in charge of their nuclear space system activities. Mr. Trapp has been active for some years in the American Nuclear Society, serving as chairman to the recently organized Aerospace Division; he served as chairman of the Los Angeles section of the American Nuclear Society and is currently a candidate for the Board of Directors.)

Law and Administration. (*Progr. Nucl. Energy, Ser. X, 3.*) JERRY L. WEINSTEIN, ed. A Pergamon Press Book, Macmillan, New York, 19, 1962. 483 pp. \$20.00.

Progress in Nuclear Energy, Series X on "Law and Administration," has as Volume 3 this comprehensive summary on nuclear liability.

For the most part, this is somewhat heavy reading; however, in total, it is extremely intriguing. For here in one volume one finds legal and administrative problems and a status report on the still preliminary effort towards resolving the knotty questions of nuclear liability that make current day questions of nuclear design and materials seem relatively straightforward and soluble.

Here is a new industry that has exploded into being, as compared to the gradual evolution of all previous major industries, which involves certain risks quite unlike those with which we have long been familiar. For whenever radioactive materials are present a potential hazard may be said to exist. It is still too early to establish the extent of the potential hazard (conceivably catastrophic), who is responsible for its control, or even at the time of an accident determine its ultimate extent because the effects of exposure to radiation may be delayed many years. Add to these uncertainties the complexities of private versus public control, international participation, land and water shipment of potentially hazardous materials, nuclear ships as well as land based stations, multisupplier participation, limited insurance coverage, etc., and you have a plot that thickens as you read.

The editor, in the introduction, defines the problem well, including an explanation of the nature of liability, licensing and safety, personal liability, transport of radioactive materials insurance, state responsibility, national legislation, the Paris Convention, and nuclear ships. This is followed by sixteen articles by recognized authorities

covering each of the major topics identified in the introduction. In conclusion, the volume includes six appendices which present the existing legislation on nuclear liability in the United States, the Federal Republic of Germany, Switzerland, the United Kingdom, Sweden, and the OECD Convention.

The volume provides a comprehensive discussion and analysis of probable or possible application of law and legal principles to various activities involving nuclear materials. It presents a summary of the growing body of national and international law designed to adopt existing or establish new rules of liability to meet the unique risks and characteristics associated with the production and utilization of atomic energy.

For persons engaged in, or associated with, atomic energy activities, the legislative treatment of liability in connection with operation of nuclear reactors, supplying components, transportation of fuel elements, and handling of reactor wastes is particularly interesting and illuminating.

The articles dealing with liability aspects of international transactions and operation of nuclear-powered ships give the reader a good insight into the problems involved and the solutions attained or in process through international conventions. On reflection, it is somewhat staggering to encompass the amount of effort and time which has been devoted over the past several years in fitting nuclear energy into society's laws and customs—or perhaps adjusting society's laws and customs to atomic energy.

Undoubtedly, the hazards associated with some nuclear activities demand the comprehensive licensing and regulation programs of the United States and other countries which are described in this volume. The paradox of this and the extensive treatment of the measures taken to provide for "liability" is that in the more than 20 years experience of nuclear operations the safety records in nuclear installations are better than most other industries. The articles reviewing nuclear incidents and summarizing concepts and procedures in safety evaluation do a good job of bringing this fact into focus.

In the light of this, there is cause to be concerned whether society may overlegislate in a manner which will stifle the full development of atomic energy, and whether it is in the over-all best interest of society to have the atomic energy industry and its associated activities relegated to such severe legal duties in order to protect against very remote possibilities of harm or damage.

S. R. SAPIRIE
U. S. Atomic Energy Commission
Oak Ridge, Tennessee

(About the Reviewer: Sam R. Sapirie has had thirty years experience of working for the United States Government, the last seventeen at Oak Ridge. His nuclear experience started in 1946 as Assistant Director of Operations of the Manhattan District (having previously been on war engineering and construction with the Corps of Engineers in the Milwaukee District and in Western Canada and Alaska). When the Atomic Energy Commission received custody of the program in January 1947, he became Director of Production and Engineering and later Deputy Manager before becoming Manager, Oak Ridge Operations, in February 1951.)