

ly, the straightforward procedure would be to note that the multiplicity  $N$  is related to the isotopic spin  $T$  by  $N = 2T + 1$ . Because the nucleon has a multiplicity of two (proton and neutron), it follows immediately that  $T = 1/2$ . Eisele's treatment has the advantage that it enables him to illustrate the use of Clebsch-Gordan coefficients, a subject not mentioned earlier in the book, and considered "well known" when introduced.

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## Survival and the Bomb: Methods of Civil Defense

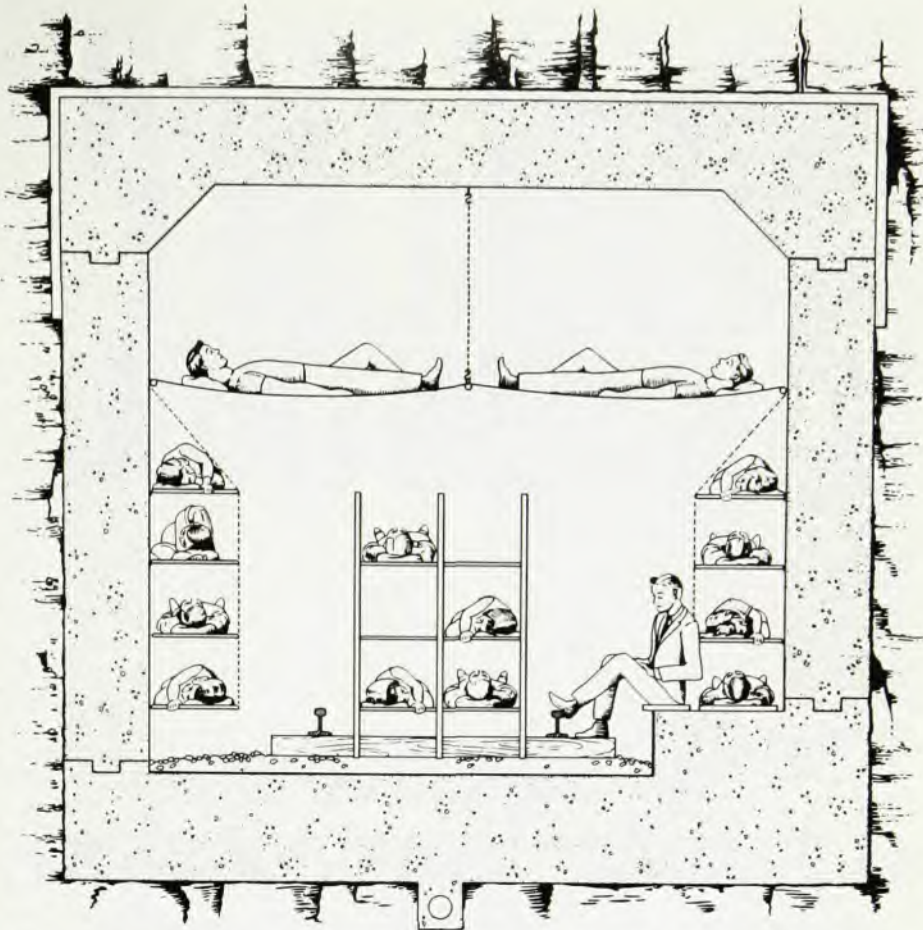
E. P. Wigner, ed.

307 pp. Indiana U. P., Bloomington, Ind., 1969. \$7.50

"A book which tries to present the facts squarely yet does not disregard problems which cannot be dealt with at the same level of precision as physical phenomena . . . The consequences of civil defense preparation appear to us to be almost as important as their effect on the physical survival of our people." These are remarks in Eugene Wigner's preface to this set of short essays on civil defense. They promise a book that has not been written.

The book that was written is instead a somewhat one-sided discussion of civil-defense preparations and their effects in case of war. The second dimension of the problem, effects of civil-defense preparations on the social and political atmosphere of the US and on the likelihood of war, is dealt with too briefly or omitted in Wigner's introductory essay. This second dimension to civil defense is admittedly difficult to deal with, but the questions should be carefully explored. Wigner omits the possibility that the US could itself threaten to or actually start a nuclear war, and he does not discuss the reaction of the USSR to the changed strategic balance between the great powers caused by a massive US civil-defense program. The possibility that the US might become intransigent towards the USSR after these massive preparations is dismissed with cold-war rhetoric such as "All conflicts between East and West since the termination of the Second World War have been initiated by some move of the East toward an extension of its power" and again "The independence of the countries liberated by the US is complete—those 'liberated' by the USSR are still under tight rein."

Wigner does not consider the concern that the US may be gradually developing into a military state, destroying in the process the qualities of life worth defending, and that, in particular, mas-



**Subway tubes as mass shelters.** This cross section of a 16-foot-square tube shows how four or even five persons per foot can be housed. (From *Survival and the Bomb*.)

sive civil-defense preparations could be an essential ingredient in this process. There has been a deep change in military and police institutions and in the attitudes of many Americans towards them since the 1930's. It is likely that the internal problems of giant bureaucracies, entrenched and growing, is the greatest threat to the future of either the US or USSR. The obvious examples of dangerous self-perpetuating giant bureaucracies are the secret police in the USSR and the Defense Department and its closely associated industries in the US. (I am implying no comparison of the methods and purposes of these institutions.) The effects of a massive civil-defense program institutionally and on the daily lives of all of us must be considered in this light.

Enough of the vital questions that are not dealt with. This book is an espousal of a massive civil-defense program. It consists of essays selected and introduced by Wigner, with the key essay referred to above also written by him. The essays range from human behavior at the Siege of Budapest (Second World War) to improved shelters and accessories. The latter is the other key essay. It deals with very large, well-designed shelters. There is no warning

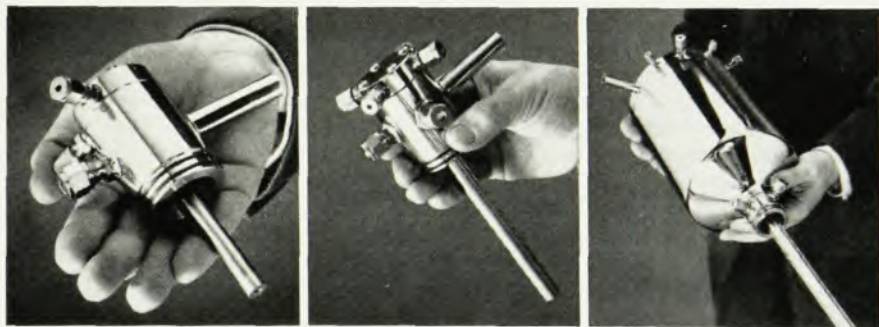
that the home shelter, suggested without discussion for less populated areas, will likely be expensive and useless. There is a well-presented summary of the "Effects of Nuclear Weapons" by Wallace Brode and John Newman.

There is also an essay on active defense with the arguments against the old Nike-Zeus antiballistic missile system. The article is vague about current antiballistic missile proposals. It contains a calculation claiming that the antiballistic missile is more expensive than civil defense for protection of people, except perhaps in the most densely populated areas. Ample arguments and general agreement about the ineffectiveness of antiballistic missiles in defense of cities is perhaps too recent to be included. It is assumed in this and some other essays that everyone will have 15 minutes warning, and that they will be well trained or that shelters will be so ubiquitous that this amount of time will suffice to bring many into deep shelters.

An essay on morale contains the suggestion that "Many people when confronted by the appalling casualties may react so emotionally that they are unable to perform their assignments. Some special form of preparation . . . is necessary . . . but a good deal of re-

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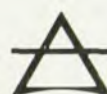
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search is needed in order to be sure that (such preparation does) not do more harm than good." Another essay is a brief whitewash of medical and ecological damage by nuclear explosions. The book ends with well presented essays on design of massive shelter systems, on decontamination and on recovery. A relatively optimistic impression is left by these because they do not emphasize accumulation of different deleterious effects.

So rapidly has thought and sophistication developed on the general subject "Survival and the Bomb" that the impression of these essays taken together is that of a message from another time.

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## Stochastic Theory and Cascade Processes

By S. K. Srinivasan

216 pp. American Elsevier, New York, 1969. \$12.50

In recent years there has been considerable interest in, and development of, the stochastic theory of point processes. Important contributions have been made by investigators in queueing theory, neutron transport and noise theory. Thus, there is scope for a good account of these developments, particularly as they apply to problems in physics. Unfortunately, this book is written in so murky a manner that it is not a very good introduction to the theory of cascade processes, and it is a quite poor introduction to the auxiliary topics that are mentioned.

The first four chapters are devoted to the general ideas of point processes, and an introduction to the use of generating functionals and associated techniques. Although some rather weighty definitions are given and enlarged on, the specific applications do not appear to include any that are new or that can not be derived by more elementary methods.

In addition, short sections on queueing processes and the kinetic theory of fluids convey no information at all. The chapters that follow are detailed accounts of cascade theory with a final chapter on population processes. In the chapters on cascade theory, there are few results outside of first and second moments, little that advances previous work done in the 1940's and 1950's and no account of the extensive numerical calculations by Messel and his collaborators. The last chapter on population growth extends some models that are of mathematical interest only.

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