and publish the results. This is an unusual arrangement which ought to have yielded an unusually detailed account of the critical and irreducible politics of weapons development. But the book depends a great deal upon material already published and on general assertions illustrated by a few specific examples briefly presented. It is not in fact an unusually fine-grained analysis.

There are limits, however, to the improvement that greater detail might bring. Ultimately the defects of the book are reasonably seen as defects in the state of the art of political analysis. Sapolsky does not try to advance the art in any theoretical dimension but rather seeks to use it to good advantage in analyzing the Polaris case. He does a creditable job of this, and makes a good case for the importance of politics. He leaves us wanting to know a great deal more about how politics actually works.

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Australia Antigen

Hepatitis-Associated Antigen and Viruses. A. J. ZUCKERMAN. North-Holland, Amsterdam, and Elsevier, New York, 1972. x, 222 pp., illus. $20.75.

Hepatitis-virus laboratory research appeared to be withering away in a perennially barren and desolate field until Blumberg planted Australia antigen at its periphery in the mid-1960's. Firmly established in its association with human hepatitis by 1968, the antigen suddenly flourished and quickly took over almost the entire field. This surge in hepatitis research spawned numerous meetings, the proceedings of many of which have been published as books or special issues of journals. Some of these publications have proved to be highly useful as collections of current references, particularly for readers already acquainted with the recent developments. With such an abundance at hand one might well ask if Zuckerman's new monograph is really necessary, since it covers much of the same territory. However, it is unique in its organization, breadth, and balance, and particularly in providing the perspective of a single author who has long been an active and regular contributor to many aspects of hepatitis research. This book should serve a much wider audience than any of its predecessors, including Zuckerman's own *Virus Diseases of the Liver*, which was published in 1970 just in time to catch the beginning of the antigen era.

For some potential readers, this new volume will appear to suffer from superficiality and brevity—a few chapters are disappointingly narrow or short—but most of the topics are presented in sufficient detail and with adequate references to satisfy even those well-established workers in one part of the field whose knowledge of the entire field may be limited. Its conciseness, clarity, and style make it specially suitable for the uninitiated reader who wants to gain relatively easy access to almost any of the multifarious activities in current hepatitis research. The author's familiarity with and understanding of the rapidly accumulating literature (published prior to March 1972) are apparent in his thorough coverage of generally accepted information as well as in his clear statements concerning controversial or unconfirmed reports, for example, on the "Milan" and fecal antigens purportedly related to infectious hepatitis (type A). However, the focus is quite properly on serum hepatitis (type B) and the increasingly recognized complexity of the little particles known as Australia (hepatitis-associated) or hepatitis B antigen. In general the illustrations, including numerous electron micrographs, are well chosen, clear, and helpful.

This book is perhaps best considered as a panoramic progress report. Undoubtedly it will call for a sequel within the next few years when, it is to be hoped, the "viruses" part of the title can take top billing.

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Zoonosis

Venezuelan Encephalitis. Proceedings of a workshop-symposium, Washington, D.C., Sept. 1971. Pan American Health Organization, Washington, D.C., 1972. xiv, 416 pp., illus. Paper, $5. PAHO Scientific Publication No. 243.

The designation of the conference on Venezuelan equine encephalitis (VEE) as a workshop-symposium reflects its two objectives: the comprehensive presentation of current knowledge concerning VEE; and an attempt to define future research needs, largely by free discussion among the more than 100 experts participating. Thus, the record of the discussion is a particularly important part of the proceedings, which are notable for their completeness and probable accuracy (typically, at PAHO conferences, transcripts of a discussant's extemporaneous comments are made available to him within 24 hours for verification and minor editing). The table of contents guides the reader to the formal papers and to the related discussion sections but, except for naming the invited discussants, leaves him on his own to unearth the frequent significant contributions made in the discussions.

The coverage is broad but, presumably reflecting the present state of knowledge, uneven; it ranges from ultrastructure and biochemistry of the virus (touched on lightly) through antigenic characteristics (well studied) and aspects of host-parasite interaction, for both vertebrate and invertebrate hosts, to epidemiology and control, which are extensively covered (five of eight sessions and 260 of 410 pages of text are devoted to these topics).

Except to dedicated arbovirologists, VEE virus heretofore has been an unimportant exotic agent. Its status changed sharply with the recent (1970–71) northward progression of epidemic equine disease and related disease in man from Central America through Mexico to Texas. In point of fact, the disease potential of VEE was evident long before its recent northward move. Extensive epidemics involving horses (hundreds of thousands, a mortality of 28 to 30 percent) and man (many thousands of cases and hundreds of deaths) have been recognized since 1935 in northern South America (chiefly Venezuela, Colombia, and Ecuador) and in Central America.

The story of VEE is unusually complex even for an arbovirus. There are several serologically distinct varieties, only certain of which (subtypes 1A, 1B, and 1C) are virulent for equines and associated with epidemics. Extensive enzootic areas are known, each with its characteristic variety of virus, none of which has been associated with epidemics. Indeed, the major unknown part of the story is the source (and reservoir) of the "epidemic" varieties. A range of vertebrate and invertebrate (mosquito) species can be infected, and both con-