renewable resource". In this respect, the further statement that "wood as a rich source of chemical materials has all but been neglected except in Japan" is surprising, in view of the very extensive research in this field in North America (especially thermal methods), and Russia, which is essentially not represented in the book. It is probable in this respect that the conference was originally designed to emphasize biological and biochemical utilization rather than thermal and chemical utilization, although this intention is not stated in the book.

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Towards Better Carbohydrate Vaccines, edited by R. BELL AND G. TORRIGIANI, John Wiley & Sons, Chichester, 1987, ix + 357 pages + Subject Index, £37.50.

This book consists of the proceedings of a meeting organized by the World Health Organization in October, 1986. It contains papers presented on various topics relevant to the development of carbohydrate vaccines, followed by a discussion of each paper; there is a general discussion section at the end of the book. Among the topics considered are (*a*) the occurrence of carbohydrates on various cells, (*b*) carbohydrates as antigens, (*c*) disease agents and current prophylaxis, and (*d*) carbohydrates as immunogens.

The papers presented are rather uneven in quality. Some are well written and concise, providing adequate background information, with appropriate references, on the topic being considered. Others are too general and sketchy, and not very illuminating, and they cite old, rather than more-recent, work to make a point. The lack of editing is woefully apparent in the discussion that follows. In some places, the text is incoherent and redundant. Sometimes, reference is made to data (apparently shown on a slide) that do not appear in the text of the paper being discussed. Often, abbreviations and terms are used which are not defined, and reference is made to work which is not cited.

On balance, this book does a good job in defining all of the major issues involved in developing carbohydrate vaccines, and in describing many of the promising experimental approaches now being applied; however, it does not provide much in the way of answers to the problems involved. The General Discussion section illustrates how little is really known on how carbohydrates are handled, processed (?), and presented to the immune system, as well as of the events involved in initiating an antibody response to these materials. Obviously, it

is difficult to make generalizations, because, for reasons not yet known, carbohydrates differ greatly in their immunogenicity and ability to induce tolerance, as well as in the isotype of the antibodies made. This most probably reflects the fact that the immune response to most polysaccharides is quite complex and under multigenic control; furthermore, none of the genes involved are linked to the major histocompatibility complex (MHC), a finding that should come as a surprise to those immunologists preoccupied with the importance of the MHC in other experimental systems. It is a pity that the genetic aspects, as well as the use of new agents as adjuvants, were not considered at this meeting.

This book would be more suited as a reference work in a departmental or institutional library than as an item for personal purchase.

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