A workshop to review the current knowledge of trachoma was held at Coolfont, West Virginia, from May 27 to June 2, 1984. The workshop was organized by the International Center for Epidemiologic and Preventive Ophthalmology and was sponsored by the Edna McConnell Clark Foundation. A report summarizing the discussions and conclusions of this meeting has been published elsewhere [1]. Two broad topics were considered: (1) animal models and immunopathogenesis and (2) epidemiologic and field studies.

The basic biologic characteristics of the chlamydiae are reviewed by Schachter, who stresses the widespread occurrence of ocular and genital infection caused by these ubiquitous organisms. In early trials crude trachoma vaccines produced short-lived protection but also had deleterious effects. Purified subunit vaccines may offer an attractive alternative, but a number of problems remain to be solved, not the least of which is the separation of protective from sensitizing antigens.

Grayston and his associates review their extensive epidemiologic and experimental studies, which have clearly shown the importance of reinfection in the pathogenesis of trachoma. These investigators detail the longitudinal family studies they have undertaken in Taiwan and describe the evolution of trachoma and the dynamics of reinfection within these families. Much of the information obtained in these studies is based on the immunodiagnostic methods developed by this group of researchers, and the usefulness of these methods in different clinical settings is reviewed by Darougar. At present, antibodies to chlamydiae are best detected with a microimmunofluorescent assay. Serologic screening can be useful for population studies, and the detection of serum IgM or tear IgA antibodies in an individual is suggestive of current infection. Although humoral components are likely to be important in protective immunity, neither the specificity nor the class of protective antibodies is known.

The rapid expansion in our knowledge of the various chlamydial antigens over the last few years is summarized by MacDonald. Antigens that have been purified to date include a genus-specific lipopolysaccharide of variable molecular weight and a major outer membrane protein of 38,000-42,000 daltons; the latter is a major structural protein and is also a species-specific antigen. A number of other proteins have also been isolated. MacDonald speculates on the importance of these different antigens in the life cycle of the chlamydiae and in the response of the host to infection.

Studies in experimental animals have been important to an understanding of the spectrum of disease caused by chlamydiae and an elucidation of the pattern of infection. As pointed out by Taylor, much still needs to be known about the various aspects of the immune response to chlamydial infection, and much could be learned in this regard from studies in appropriate animal models. Useful models include not only those of ocular infection but also those of genital tract infection, as reported by both Johnson and Patton. Both Chlamydia trachomatis and Chlamydia psittaci have been used in these models. Animal models in particular lend themselves to the longitudinal collection of specimens, and detailed study of the histopathologic and immunologic responses to experimental infection offers insight into human responses. These and other studies have demonstrated the involvement of cell-mediated immunity in the response to chlamydial infection. Williams and Schachter have used a murine model that offers a greater opportunity for immunologic manipulation than exists in larger species. The studies of these researchers confirm the importance of thymus-derived cells and macrophages in the response of the host to chlamydial infection. However, the exact role played by cellular immunity is unclear; although certain T cells or their products may be protective, others may also be important in the pathogenesis of scarring.

The common epidemiologic denominators of communities with endemic trachoma have been summarized by Treharne. Trachoma tends to be a community disease, although much of its transmission probably occurs within the family. Trachoma is par-
particularly prevalent in areas where hygiene is poor and poverty is common. To date, relatively little work has been done on the identification of specific risk factors that may be amenable to intervention. The disappearance of trachoma from a number of areas with seemingly minimal improvements in hygiene suggests that alterations in a few key hygienic practices may have a profound impact. Taylor and Sommer show how a careful analysis of risk factors in a given community may uncover one such practice that is of particular local importance. In their study the frequency of face washing was found to be especially important, although this observation may well be population- or culture-specific.

Dawson reviews the antibiotic regimens currently available for trachoma control, concentrating particularly on their cost-effectiveness. He makes persuasive arguments for the inclusion of systemic antibiotic treatment and recommends such therapy for children with a significant risk of blindness. The various strategies for developing comprehensive national programs against trachoma are outlined by Thylefors. At present, these programs are often limited to intermittent mass topical treatment and trichiasis surgery campaigns. Successful national programs need a long-term perspective and should eventually be integrated with general health services.

Hollows, in an especially challenging paper, strongly emphasizes the necessity of community involvement in any trachoma control program. On the basis of his own experience, he describes the steps needed to effect the cultural change or behavioral modification that will be required for the achievement of trachoma control. Such action must be community-based and provide both the appropriate health hardware and the activities to enable its use. Finally, Dunn looks at the problem of trachoma as a medical-social scientist. He points out that little sociomedical research has been undertaken and outlines the contributions that such research could make. Two of the major areas described are the identification of socioeconomic factors that influence the transmission of trachoma and the development of appropriately targeted programs of health education.

These working papers cover the spectrum of research in trachoma, from molecular biology to medical anthropology. It is hoped that they will provide a useful review and stimulate new work on this challenging disease.

HUGH R. TAYLOR

International Center for Epidemiologic and Preventive Ophthalmology
Dana Center
The Wilmer Institute
The Johns Hopkins University
Baltimore, Maryland

References