A Drama and Questions

And the Band Played On. Politics, People, and the AIDS Epidemic. RANDY SHILTS. St. Martin's, New York, 1987. xxiv, 630 pp. $24.95.

When the first signs of it emerged in 1979–1980, nothing was known about the pandemic disease we now call the acquired immunodeficiency syndrome. Yet as 1987 ended the Centers for Disease Control (CDC) knew of over 46,000 cases in the United States alone and estimated that between 1 and 1.5 million Americans were already infected with the human immunodeficiency virus (HIV) that causes the disease (*Morbidity and Mortality Weekly Report*, 18 December 1987). According to some estimates more than 179,000 Americans will have died from AIDS by 1991.

Public health, education, and research measures are critical for stemming the spread of AIDS, as are health service and other public policies for assuring attention to those affected. How did our health and social institutions respond during the first years of the epidemic? What was done poorly and what was done well? It is important to consider these questions critically if we are to manage AIDS and other health emergencies effectively.

Randy Shilts's *And the Band Played On* is a disturbing book, whether one reads it as a citizen or as a scientist. Shilts points a steady finger of blame at society in general, and at biomedical scientists and health policy-makers in particular, for failing to stem the tide of AIDS. It is a book that I want to like and recommend because I agree with a main conclusion Shilts reaches—that the response to AIDS by the public and private sectors has been fragmented, inadequate, and characterized by a "business as usual" approach although a different response was, and still is, required. Because it focuses public attention on the growing AIDS epidemic, I am delighted by the media coverage given the book. Yet despite these points of agreement, I take issue with how Shilts arrives at some conclusions, with a simplistic interpretation of events, and with omissions from the story.

A skillful journalist for the *San Francisco Chronicle*, Shilts weaves different stories together in recounting events of the first five years of the AIDS epidemic. The narrative takes the form of a journal, where personal histories replete with gossip are presented along with background material in chronological order. First, there are the stories of men who early recognized the seriousness of AIDS and attempted to fight it personally, as community activists, scientists, and politicians. The tragedies of several who succumb to the disease are skillfully and compassionately told.

Second, the hunt for the virus that causes AIDS is detailed. Shilts vividly portrays personal ambition as the force driving science. On his account, it is the unscrupulous and politically sophisticated scientist who rises to command research resources, whereas the hard-working, selfless, and ethical scientist is crushed. Although this picture is incomplete and imbalanced, it points to serious problems in the way biomedical science is fostered.

The third story chronicles the lack of responsiveness on the part of social institutions, most prominently local, state, and federal government, as well as the press. The thesis emerges that homophobia prevented an early response to a devastating disease and that attention was paid to the epidemic only after scientists and the predominantly heterosexual "establishment" saw their own interest merge with the vanquishing of AIDS. In short, Shilts draws a depressing free-market analysis of the management of the AIDS epidemic. On this analysis, scientific interest turned to AIDS only when the solution of the problem was seen as leading to the Nobel Prize; and the establishment's interest in public health measures developed only when AIDS was viewed as spreading from "them" to "us" and was thus a legitimate political issue.

The importance of homophobia in understanding the response to AIDS cannot be denied. Shilts clearly shows that homophobia among both heterosexuals and homosexuals affected early confrontation of the epidemic. Shilts's documentation adds to the previously published analysis by sociologist Dennis Altman in *AIDS in the Mind of America* (Doubleday, 1986). Yet there is as much danger in overemphasizing homophobia as the explanation for social non-responsiveness as there is in denying it. Even had this disease first appeared in a different population, we would probably not have been much better able to respond early. This lesson is absent from Shilts's analysis, but it is one that should force examination of the organization of biomedical research and health-care delivery.

It is perhaps the picture of a self-aggrandizing scientific community, detached from the realities of dread disease, that should most interest and disturb the readers of *Science*. Shilts draws a portrait of a community whose incentives and rewards have so gone awry that collaboration and communication of new results are compromised by rivalry. Clearly, not all of science fits this mold. But even isolated incidents should raise eyebrows. If there are heroes in this account they are scientists who like Jay Levy have not received due credit or needed resources. Shilts's villain is NIH's Robert Gallo. Drawn as brilliant, arrogant, and unscrupulous, Gallo's portrait should lead the scientific community to ask whether the "superstar system" that fosters personal scientific empires is productive or counterproductive and whether the ends truly justify the means. The questions also arise for other areas of science—Shilts's picture of Gallo mirrors those of Carlo Rubbia drawn by Gary Taubes in *Nobel Dreams* (Random House, 1987) and of Guillemin and Schally in Nicholas Wade's *Nobel Duel* (Doubleday, 1981).

Other questions that the narrative suggests but that are neither spelled out nor developed include: What is the appropriate way to set priorities for resource allocation (personnel, funds, capital equipment) during a health emergency? What is the appropriate division of labor between federal agencies (such as the CDC and NIH)? Who is in charge during a public health crisis? Who should have oversight of government efforts against a new disease? What are the costs of a massive reallocation of resources toward a new disease? Who is responsible for providing education and health care services? What happens to other serious health and research efforts in the face of a new disease? How do partisan and science politics relate to each other? How are these and other questions to be answered? The failure to acknowledge that unresolved, complex, and difficult problems are the underlying explanation for the response to the AIDS epidemic leads Shilts to a too simple, incomplete, and unsatisfying view of the issues involved.

Sensationalist and seductive devices and gossip, as well as facile writing, draw the reader into the book. Glib treatment of both the science associated with AIDS and the complexity of the health care system, as well as overly exhaustive details of true personal tragedies, lead me to suspect that this book is itself both victim and example of the quality of the response to AIDS. An example is the vehicle Shilts uses to explain how AIDS, a new disease at the end of the 20th century, made its way to North America.

Early in this book of over 600 pages we are introduced to Gaetan Dugas, "patient

zero" or the index case in a CDC epidemiology study. We are told that researchers "would retrace the airline steward's travel during that [1980] summer, fingering through his fabric-covered address book to try and fathom the bizarre coincidences and the unique role the handsome young steward performed in the coming epidemic." In the ensuing 400-odd pages Shilts argues (as has been widely reported in television and newspaper accounts of this book) that Dugas seemed to "introduce" the disease to the New World and that, as the establishment knew so much about Dugas, it is inconceivable that they could not have stopped the spread of the disease. Anyone knowledgeable knows that to pin a global epidemic on the actions of single individual is absurd. No epidemiologist would claim that without Dugas there would have been no AIDS epidemic. Even Shilts knows this, for on p. 439 he writes: "Whether Gaetan Dugas actually was the person who brought AIDS to North America remains a question of debate and is ultimately unanswerable." So patient zero is only a convenient device to engage the reader.

I doubt that many will read to p. 439 or catch the caveat. Perhaps some will argue that literary license excuses such misinformation. Other examples include calling interleukin-2 "a culture" rather than a regulatory factor made by cells in culture (p. 270), or depicting the AIDS virus as a member of "a small subgroup of viruses, retroviruses," that in 1981 were "at best an obscure microbe" (p. 73). Retrovirology had been a thriving field for a decade prior to the appearance of AIDS, and many attribute to the richness and maturity of that field the ability to learn so much so quickly about AIDS. Contrary to the image of "obscurity," the contribution of pre-1981 retrovirology to understanding AIDS is a powerful argument for the support of non-targeted, basic biomedical research.

Shilts's inaccuracies may make good copy, but concerning an epidemic where rampant misinformation has caused serious problems inattention to detail is unforgivable. The tactics Shilts uses for making a point often have the same fault he attempts to expose. A reading by a technical consultant could well have eliminated these problems. Yet the errors are frustrating and raise the question whether similar misstatements characterize the political analysis.

As a political statement *And the Band Played On* again mirrors its subject. For example, Shilts traces the role of New York writer Larry Kramer from his correct assessment that the "establishment" would be slow to respond, the founding of the Gay Men's Health Crisis, and the writing of *The Normal Heart*—a play that galvanized New York City theatergoers into awareness of the city's abysmal response to AIDS. Like Kramer's play, *And the Band Played On* is a personal and selective view of the first years of the AIDS epidemic. It is a moving portrait of a community laid waste by a deadly disease and an indictment of society's failure to recognize and address a health emergency. It is also an impressionistic tableau that calls in question the organization and responsibility of the biomedical community.

In sum, this angry book raises legitimate and serious questions but leaves the answers to the reader. *And the Band Played On* is a flawed but important addition to the literature of AIDS.

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Smooth Muscle Function

Regulation and Contraction of Smooth Muscle. MARION J. SIEGMAN, ANDREW P. SOMLYO, and NEWMAN L. STEPHENS, Eds. Liss, New York, 1987. xxii, 507 pp., illus. $96. Progress in Clinical and Biological Research, vol. 245. From a conference, Minaki, Ontario, July 1986.

In recent years there has been considerable interest in the contraction and regulation of smooth muscle. For years researchers on smooth muscle function have relied heavily on the large amount of knowledge obtained from the study of skeletal muscle proteins and fibers. Smooth muscle differs from the striated muscles that clothe the skeleton in two primary respects. Whereas striated muscle fibers have a highly ordered arrangement of thin and thick filaments that makes the muscle amenable to study by electron microscopy, x-ray diffraction, and sophisticated mechanical techniques, smooth muscle has a far less ordered arrangement of filaments, which drastically complicates its study and has been the greatest impediment to a detailed understanding of the contractile events. The second major difference between the two types of muscle lies in their regulation by calcium. Striated muscle is regulated by a complex of proteins, troponin and tropomyosin, located on the actin-containing filaments. In smooth muscle calcium regulation is thought to be primarily due to phosphorylation of a particular subunit of the myosin molecule by means of a calcium- and calmodulin-dependent kinase.

The study of smooth muscle contractility now integrates researchers from physiology, biochemistry, pharmacology, and anatomy. This volume reflects the diversity of disciplines and provides a useful reference for understanding the current state of knowledge in this progressing field.

The papers are divided into six sections, each consisting of five to ten contributions. In addition, 19 poster presentations are included at the end of the volume. The only major area of smooth muscle research that is not well represented is the study of ion channels and electrophysiology. This, in part, reflects the fact that enough information on the contractile proteins and the contraction of fibers has been obtained in recent years to warrant a full symposium on just these aspects of smooth muscle function.

The first section details the ultrastructure of smooth muscle, specifically the arrangement of contractile units within the muscle. There are excellent electron micrographs of isolated native thick filaments and of the interdigitating thin and thick filaments present in skinned smooth muscle cells. Furthermore, several papers provide convincing evidence that smooth muscle, like the better-studied striated muscle, contracts by means of a relative sliding of thin and thick filaments due to cycling crossbridges composed of the "heads" of myosin molecules. Data that support this model come from both transient kinetic analysis of purified actin and myosin and caged ATP experiments with skinned smooth muscle.

The next two sections deal with the biochemistry of the purified contractile proteins. The contributions here include studies of the effect of phosphorylation on the conformation of myosin, the mode of action of caldesmon, and the biochemistry of the kinases and phosphatases that are involved in the phosphorylation and dephosphorylation of myosin.

There is a section on the pharmacology of smooth muscle that, in general, concentrates on trying to explain the effects of various drugs on the function of smooth muscle by integrating what is known about the contractile mechanism and biochemistry of the purified proteins.

The final two sections deal with the physiology and energetics of either intact or chemically skinned smooth muscle fibers. This is perhaps the most interesting area of smooth muscle research, for it is quite clear that our knowledge about the function of the purified smooth muscle contractile proteins is not sufficient to explain the complexity of a smooth muscle fiber contraction. This complexity is primarily manifest in the so-called "latch phenomenon" that occurs during stress maintenance in a sustained smooth muscle contraction. During the latch state, tension is maintained by presumably slowly cycling and sometimes dephosphorylated