Feature Book Review

Medical Mysteries for Instruction

Review of: *The Medical Detectives*, by Berton Roueché; 1991; 421 pp; Penguin Group (New York); ISBN 0-452-26588-6

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The Medical Detectives is a collection of Berton Roueché's acclaimed medical investigations penned as mysteries and published in *The New Yorker* "Annals of Medicine" section from 1948 to 1988. Each of the 25 chapters reports a mysterious medical condition and places the reader alongside the medical professionals and patients as clues are revealed and the source of illness is identified by the end of each story. Anyone looking for a great short mystery will enjoy reading these stories as Roueché combines good story-telling with thorough explanations of the complex science surrounding each ailment. For educators looking to find a place for *Detectives* in their curriculum, students will likely enjoy reading the stories, which are also extremely informative regarding a variety of science topics. Science writer Lewis Thomas said—as quoted on the back cover of this edition—that Roueché's stories have been "...unofficial textbooks for medical students, interns, practitioners, scientists, and for that matter anyone interested in human illness." Roueché's writings are a proven resource, and some major points and specific suggestions for how this collection of stories can be used within the biology classroom will be discussed.

One important factor regarding the use of *Detectives* as didactic material is the comprehensive coverage of topics within the context of a range of illnesses, including drug poisoning, food poisoning, epidemics, pathogenic diseases, strange or rare and hard-to-diagnose disorders, allergies, mass hysteria, and more. Because the scientific content is fairly dense, most readers will not want to read the book cover to cover. Rather, topics covered in each story can be considered separately as they relate to learning objectives within course material. There is also an extensive index included at the end of the book that will make identifying

specific topics easy. *Detectives* seems appropriate for instruction of advanced high school students through the graduate level.

An advantage of including material like this in the list of course reading is that the background information is woven

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into the stories and allows students to encounter the information within a biologically relevant context. For example, Chapter 5, " $\text{CH}_3\text{CO}_2\text{C}_6\text{H}_4\text{CO}_2\text{H}$ (Aspirin)," published in 1956, is set amid the investigation of an accidental poisoning incident involving a child named Richard Poole. The reader soon learns—at the end of the first paragraph—the source of the poison is aspirin. The origin of the name aspirin, Roueché tells us, is the "*Spiraea*" genus of plants whose members are natural sources of the active ingredient in aspirin, salicylic acid. Roueché goes on to describe the extensive natural history of aspirin from its use by North American Indian tribes to its pharmacological origin and physiological mechanism of action (at least what was known at the time). This narrative contains countless nuggets of information regarding natural sources, synthetic production, side effects, how it is buffered to lessen toxicity, physiological route and mechanism of action, effects on different ailments including pain, fever, and arthritis as discussed by both Roueché as the narrator and different medical professionals within the story. By the story's end, we have learned all about the pharmacology and toxicology of one of the most important drugs to date. The stories give abundant information whether they are used for background for a lecture or class activity, or the starting point for a research paper or more in-depth discussion of some aspect of the course material.

No matter how well written or comprehensive, for any book to be used as a course text, the accuracy of the information should first be carefully examined. In using *Detectives*, one should take into consideration the time at which these stories were published. As stated above, the content of Roueché's writing is trusted by many in the medical field. However, because the stories in *Detectives* date back to the 1940s through the late 1980s, much of the information may be outdated with respect to knowledge, practices, and protocols. For example, trichinosis, covered in Chapter 2, "A Pig from Jersey," the cause of which Roueché describes as "a voracious endoparasitic worm," is described as a major U.S. health problem in the early 1940s. Roueché also details that there is "no specific cure." Though the parasitic cause and source of human exposure (undercooked pork) are plainly detailed, as well as the medical treatments and an epidemiological investigation, trichinosis now occurs very rarely in this country. When it does occur, effective treatments are available, unlike at the time this outbreak occurred. Thus, a trade-off for such a great collection of interesting reading by this author is that some stories in this collection will be more up-to-date or accurate than others.

The issue of outdated information, especially with respect to treatment and mechanism of action, is not necessarily a negative aspect as this may provide an opportunity to discuss historical context. An instructor could easily incorporate updated information with other course materials or reference to a Web link. Alternatively, an instructor could place the responsibility of researching updated information on the student with homework assignments or an in-class presentation. Use of this book in class could help emphasize

the many advances in modern medicine, giving students a more well-rounded exposure to course content.

The use of case studies in the biology classroom is a useful way to facilitate course discussion and to provide a more in-depth coverage of important topics. Case stories encompass many formats, but a major goal is to provide science in a relevant context and to fulfill course objectives using student-focused and engaged techniques. To those ends, one could imagine the general outline of any of these stories to be a backbone and starting point for developing new and relevant cases for a class. Case writers could structure the story to fit whatever case study format they would like. In any given chapter, the beginning of the story presents a question to the reader as a person or persons experience some symptoms of unidentified origin, and the medical professionals involved with the case collect a list of symptoms and clues. For example, Chapter 23, "The Fumigation Chamber," published in 1988, describes the case of a female physician named "Betty Page" who began suffering from severe abdominal cramps, diarrhea, nausea, and cold sweats. Partway through the story, we learn the source of her ailment is organophosphate poisoning from the pesticide fumigation of her weekend home. Any relevant symptoms not actually experienced by Dr. Page were included in the story as being read from "The Pharmacological Basis of Therapeutics" by Dr. Page's husband. Once the source was identified, the rest of the story weaves information about organophosphate insecticides throughout, including information about the negative effect organophosphates have on cholinesterase biology. Further, the story includes information about the role of cholinesterase in nervous tissue and red blood cells, and as described in the narrative, "there [was] not much information about the chronic exposure to subacute doses of organophosphates." One could imagine this as a good starting point for numerous discussion points. Some sample questions that could be part of a discussion on epidemiology might include: (1) Compared with the late 1980s, what is now known about chronic exposure to organophosphates? (2) Has the use of this class of pesticides changed since the story was published? Also, discussion in a biochemistry course might focus on the specific role of cholinesterase in nervous tissue or even generally on the role of inhibitors in enzyme biology. The important point is that a relevant context is presented at the outset, and students have an interesting framework for the specific scientific concepts they are learning about. In more advanced courses, students could be charged with writing their own cases, using any of the stories as a starting point.

This review is by no means a comprehensive analysis of the potential didactic uses of Burton Roueché's medical writings, but illustrates a few of many ways in which this book could be used in today's classroom. Though this review is written with science educators in mind, *Detectives* would also be useful in courses outside of the biological sciences. For example, *Detectives* could be used in non-science-related courses to develop critical thinking in the context of political and social effects of science and medicine.