Summer 2010 Books and Media Recommendations

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"Summertime, and the livin' is easy...." I have a romantic notion that all types of chemistry educators have just a bit more down time in the summer. Enough time to pick up a book to read for personal edification, to improve their teaching, or (gasp) for fun. The idea predates my contributions to this *Journal*, because *JCE* has published a summer reading issue since 1997. New contributor Cynthia Woodbridge joins in this year, along with Hal Harris, Brian Coppola, and me. With 20 different book and media recommendations *(1−20)*, there is something for everyone this year: enjoy!

C. M. Woodbridge Recommends...

The Lithium Murder

The Lithium Murder (1) opens with a janitor, Michael Deramo, overhearing a conversation between two scientists about problems with their research project: lithium batteries. The scientists discuss the problems of impurities in the batteries, the environmental issues about disposing of lithium, and how all this will delay their potential patent. Michael sees dollar signs... and then he winds up dead.

Enter retired physicist Dr. Gloria Lamerino and her boyfriend, Detective Matt Gennaro. How did Gloria get involved with this murder? It wasn't because of her boyfriend, who has recruited her in previous books as a consultant on murders involving science. Instead, it was her landlord: Gloria lives above a funeral parlor. And so we are off on another adventure with Gloria and Matt as they solve yet another murder in Revere, MA, where the residents (and especially employees of the Charger Street Lab) seem to have an unusually short life expectancy. Assuming the author plans to continue this series through the remainder of the periodic table, I suspect the population of Revere to be severely reduced by the time the series ends. Or perhaps Gloria and Matt will go on vacation (perhaps a honeymoon?) and find murders to solve at their destinations.

The Lithium Murder is part of a series, and author Camille Minichino (herself a retired Ph.D. physicist) currently is on *The Oxygen Murder (21)*. In addition to *The Lithium Murder*, I have read *The Hydrogen Murder (22)*, *The Helium Murder (23)*, and *The Carbon Murder (24)*. So far, *Lithium* is my favorite. The science is interesting, and the Italian-American family dynamics are spot-on (at least if the Italian half of my family is any indication). As the series progresses, we learn more about Gloria and her previous life in Berkeley as well as how she is adjusting and adapting to life in Revere and her relationship with her boyfriend. Any installment in the series works as a stand-alone book, but I enjoyed reading several of them to see the evolution of the characters and find out how the author relates the title element to pertinent scientific issues.

I think any of the books in the series would be a good beach read as well as a great book to share with one's students. I've enjoyed each one that I've read so far, and I'm looking forward to seeing how much of the periodic table the author is able to cover.

Classroom Virtuoso: Recollections of a Life in Learning

Professor Victor Cahn is a professor of English at Skidmore College. In addition to being a teacher, he is also an accomplished playwright and violinist. His book, *Classroom Virtuoso (2)*, is a memoir of his life with a particular emphasis on teaching. Professor Cahn introduces himself (appropriately enough) in the Introduction, where we learn that he doesn't cook, enjoys performing, and is an enthusiastic pedestrian *(2)*. From there, we are off on a journey through his career, beginning with his days as a student, his early teaching career at several east-coast prep schools (Mercersburg Academy, Pomfret, and Phillips Exeter), and his tenure at Bowdoin College and Skidmore College.

Classroom Virtuoso is a book about being a teacher. Professor Cahn introduces us to some of his teachers whom he found most memorable. He discusses his interactions with students, and he provides a critical self-assessment not just of courses that went very well, but also of courses that either started poorly or hit some bumps along the way. And yet, this isn't a book like Wilbert McKeachie's *Teaching Tips (25)*, which has specific guidance about writing syllabi, good classroom policies, and devising meaningful assignments. Nor is this book like Ken Bain's *What the Best College Teachers Do (26)*, which contains profiles of highly effective instructors and their best practices. Instead, Professor Cahn simply tells the reader what he likes about teaching. The reader then gleans from the anecdotes and reflections what it is that makes Professor Cahn a good teacher. I think his "secret" is that he tries to improve his students and himself at all times. Others may find different lessons in the book.

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The penultimate chapter, "Little Lessons Learned along the Way", is indeed a list of small lessons Professor Cahn has learned. I particularly like the last one: "You are entitled to your opinion. I am equally entitled to ignore it" (*2*, p 147). While I may not agree with his opinion about which is the saddest Muppet or the most stimulating book in the Bible or the best song from a Gilbert and Sullivan operetta, I enjoyed reading this chapter and began to wonder what my list would look like. Perhaps someday I'll actually write it.

I found *Classroom Virtuoso* to be a thoroughly enjoyable read. It gave me many new ideas about teaching and what it means to be a teacher without being didactic. I also find myself hoping that a new unit of measure, the cahn, is proposed. Read the book and see if you agree with me.

Chemistry Was Their Life: Pioneer British Women Chemists, 1880–1949

This text, *Chemistry Was Their Life (3)*, was inspired by the 1947 publication *British Chemists (27)*. In all the biographies in the latter book, not one was of a woman, despite the fact that there were 896 women who were members of either the Royal Institute of Chemistry or the Chemical Society during this time frame *(3)*. This surprising omission appears to be what inspired the Rayner-Canhams to delve into the archives of various British institutions and compile biographies of 141 of these women, which are collected in this volume. In addition to the biographies, the book contains a remarkable amount of material, including topics as diverse as educational practices, statistics about which schools women attended, choices of fields of study, and employment law. I've read the book twice now, and I'm certain that I will see something new when I read it again.

I especially enjoyed the biographies of Dorothy Crowfoot and Rosalind Franklin. Although each account is fairly short (approximately eight pages apiece), these are representative of the longer biographies contained in the book. These two women represent the extremes of academic recognition for women: Crowfoot's work was lauded, but Franklin's contributions went unrecognized until well after her death. Despite winning the Nobel prize, however, Crowfoot spent most of her career deeply in debt and was promoted well after most of her male peers.

Because this book contains so much information, I think it is a much better "look-up" resource than something to sit down and read over brunch on a Sunday afternoon. I'm glad I read this book, and I'm glad to know it's available, but I'm not completely certain that I entirely enjoyed it. I learned a great deal, and there are certainly passages that I took pleasure in reading. *Chemistry Was Their Life* is certainly a book I will read again and attempt to track down some of the source material to read, but it's not as readable as the Rayner-Canhams' earlier collaboration *(28)*, a fact that I find somewhat disappointing.

Nanoscale: Visualizing an Invisible World

I ran across this book in the library and it looked interesting, so I picked it. *Nanoscale (4)* contains 50 short "chapters", each one of which concerns a molecule, a compound, or a concept. Each entry has a color illustration on one page and a short essay about the system described. This was a very easy book to read in several hours, but then I found myself going back and reading it again.

In the introduction, Kenneth Deffeyes (who wrote the essays) states that this book could be considered an update of Pauling and Hayward's book, *The Architecture of Molecules (29)*. Kenneth Deffeyes, a professor of geology at Princeton University, and Stephen Deffeyes, an illustrator, collaborated to produce this book, which shows the reader the invisible, namely, the structure of various substances that make up everyday matter. How did they decide to include each substance? In their own words (*4*, p viii):

> Each of the 50 subjects here was selected because it illustrates how atomic structure creates a property such as hardness, color, or toxicity; because it has a great story; or sometimes simply because it is beautiful.

And so, readers start their journey with air and move on through viruses, twin planes, montmorillonite, fuel cells, flash memory, and quasicrystals, to name but a few of the subjects covered in this book. In addition to the essays about the subject, snippets about the history and practice of crystallography are included along the way. It was interesting to learn that minerals in collections at some universities were misidentified until they were studied with X-ray crystallography.

Approximately half of the entries are about molecules or solids. The remainder are about classes of materials (e.g., twinned crystals and amino acids) or concepts (e.g., twin planes and fuel cells). Although the essays about different materials were interesting and the accompanying illustrations were well done, I found myself preferring the essays about topics. To me, this book was reminiscent of Atkins' *Molecules (30)*; however, Atkins' book focused on organic molecules, whereas this book focuses on materials, which are closer to my field of interest. Overall, I found Atkins' essays on each molecule to be more complete. This text left me wanting more, and I'm not entirely certain whether that is a good or bad thing.

This is definitely a book I would recommend for professors and students alike, and it is one I plan to include on my shelf of books as well. I hope that the authors consider writing an additional volume.

Lies, Damned Lies, and Science: How To Sort through the Noise around Global Warming, the Latest Health Claims, and Other Scientific Controversies

People are bombarded with scientific or quasi-scientific information on the Internet, in newspapers, and on television news. A quick search of the Health page at the MSNBC Web site, http://www.msnbc.com/id/%20%203032076/ns/health (accessed May 2010) brings us slugs such as "Senate panel passes food safety reform bill", "Uninsured ER patients twice as likely to die", "Lower doses of swine flu vaccine may be enough", "New mammogram advice raises worries", "AIDS is top cause of death for young women", or "Toxic toys? Health group finds high lead levels" to name but a few *(31)*. We should be able to read articles like these critically, and with an eye toward the bias of the authors and the credibility of the work. Unfortunately, many readers do not practice these skills. Whether it is a lack of time or of scientific expertise, it is easier to accept the claims of the so-called experts instead of separating the actual science from the bunk.

The preface to Dr. Sherry Seethaler's *Lies, Damned Lies, and Science (5)* opens with a quote from Cardinal Wolsey: "Be very, very careful what you put into that head, because you will never, ever get it out" (*5*, p xvii). Whether the reader is a young person or someone who isn't confident about his or her scientific knowledge, lack of critical reading and thinking skills leads to

Figure 1. Cover images of five of the books recommended for summer reading, 2010 *(2, 4, 5, 9, 10)*. The cover of *Plastic Fantastic (9)* by Eugenie Samuel Reich, Palgrave Macmillan, 2010, is reproduced with permission of Palgrave Macmillan.

misinformation and misunderstandings. Are advertisers and the media counting on the fact that their misleading bottom lines are what will remain with the general public? Perhaps. Seethaler's book attempts to show people that they don't have to be scientific experts to sort through the chaff in order to find useful science and make informed decisions about science and technology issues. (The chaos of newspaper headlines depicted on the book's cover, shown in Figure 1, underscores the prevalence of claims and the need for critical evaluation.) Some of her advice is, at heart, encouraging readers to train themselves in critical reading and thinking skills: identifying bias, knowing where to get reputable information, making lists of pros and cons, and so on. Another aspect of her advice rests on readers coming to understand what science is and why (for example) scientists disagree or whether a reported statistic can be simply accepted at face value.

This book indirectly describes what scientists do: how we conduct experiments, or what we think about when analyzing data, or how we determine which data are credible. I would recommend *Lies, Damned Lies, and Science* to scientists and nonscientists alike. I would especially recommend it to science teachers who are training future generations in the critical thinking and reading skills demanded not just of good scientists but also of informed citizens.

Hal Harris Recommends...

The Sweetness at the Bottom of the Pie

Meet Flavia de Luce. You are going to like her. It is 1950 and Flavia, a very precocious 11-year-old, lives with her father and two older sisters in a small village in England in a deteriorating, grand mansion. Her passion is chemistry, which she has learned on her own by reading a textbook owned by her deceased mother and practicing in a laboratory inherited from her uncle. This little girl is full of the kind of chemical knowledge that fascinated most of us when we were young. She knows all about poisons, and she describes how to steam-distill urushiol from poison ivy to prank her sister. Flavia puts her wits and her chemistry to work to solve a murder mystery that literally drops on her doorstep. A stranger (who turns out to have deep connections to the family) is found dying in the cucumber patch by Flavia herself. When Flavia's father is arrested for the crime, the young CSI goes to work to clear him and also to discover who the stranger was and why he was killed. *The Sweetness at the Bottom of the Pie (6)* is an entertaining, light, and wholesome read. It has already won the Debut Dagger Award from the Crime Writer's Association. Flavia reminds me of Harry Potter, but her power comes from chemical knowledge rather than magic. This is a book you can enjoy at the beach.

The Age of Entanglement: When Quantum Physics Was Reborn

Although quantum mechanics has been able to answer many practical questions about the structure and bonding of atoms, molecules, nuclei, and even subatomic particles, it still does not adequately yield its own ultimate meaning. The ability of an electron to be in more than one place at once, to appear on both sides of a node, and to have no defined boundary are only the "down payments" for the mysteries of quantum mechanics, about which even its developers were conflicted. I was fortunate to have heard a David Mermin lecture based on his famous *Physics Today* article, "Is the Moon There When Nobody Looks?" *(32)*, an understandable introduction to the disturbing consequences of what is called "entanglement" that is still well worth reading. The first part of author Louisa Gilder's description of modern quantum mechanics in *The Age of Entanglement (7)* does not break much new ground, but this reader tuned in when she began to describe David Bohm and his "hidden variables" attempts to find a deterministic interpretation. She builds her history through real correspondence and imagined but plausible conversations between the likes of J. M. Jauch, John Bell, and interviews with Nicolas Gisin and Anton Zeilinger. She may have filled some gaps with conversations that never occurred, but through that, she has made clear how truly disturbing quantum mechanics is.

Newton and the Counterfeiter: The Unknown Detective Career of the World's Greatest Scientist

Isaac Newton was a complex man. Every student learns of (but few master) the laws bearing his name that govern the motion of objects from bullets to planets. Many know that the same great mind invented calculus along the way toward his *Principia Mathematica*. But Newton was also intrigued with alchemy throughout his life, and filled notebook after notebook with descriptions of experimental results. He may even have had a mental breakdown as a consequence of depression after a promising route to transmutation collapsed. Newton never married, and little is known of any life we would call "personal", but in *Newton and the Counterfeiter (8)* Thomas Levenson has

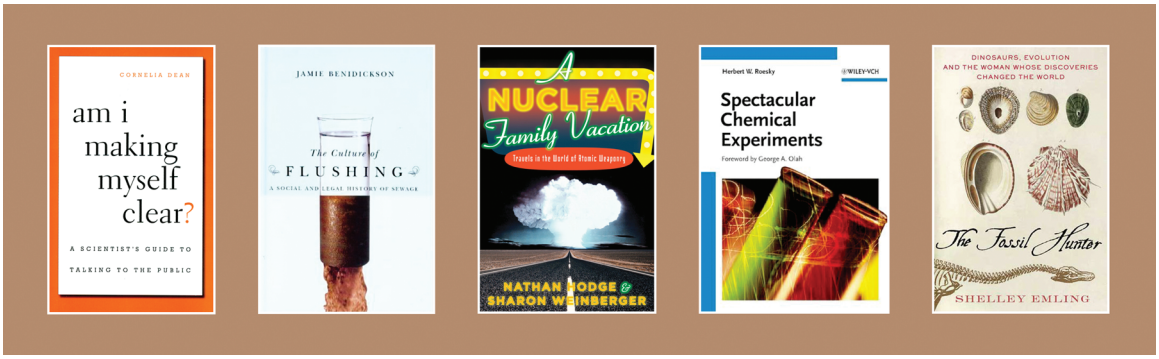

Figure 2. Cover images of five of the books recommended for summer reading, 2010 *(11, 15, 18−20)*. The cover of *The Culture of Flushing: A Social and Legal History of Sewage (15)* by Jamie Benidickson, University of British Columbia Press, 2007, is reproduced with permission of the University of British Columbia Press.

unearthed a rich trove of original material related to Newton's job in later life, Warden of the Mint. At the time (1687−1702), England was fighting a war with France while her currency was both being counterfeited and undermined by silver and gold arbitrage. The greatest physicist turned into a relentless and ferocious defender of the coin of the realm. He used intense coercion to induce counterfeiters to turn on one another and often obtained the death penalty for those convicted. Levenson focuses on a particular notorious culprit, William Chaloner, but it was clear that Newton was fighting a host of clever counterfeiters, and that he waged an effective, vociferous defense of England's money.

Plastic Fantastic: How the Biggest Fraud in Physics Shook the Scientific World

Jan Hendrik Schon published some of the most exciting and groundbreaking physics of the past decade. He published it in the most prestigious specialty journals such as *Physical Review Letters*, *Nature*, and *Science*. He won several important prizes and was being nominated for more of them when a problem came to light. The problem was that Schon had no data to substantiate his "discoveries". His deception was disclosed neither by assiduous reviewers or journal editors nor by his supervisors at Bell Labs, but by an ad hoc group of skeptical readers of his papers on solid-state physics, molecular electronics, superconductivity, and nanoscience. They saw that his results were too good to be true, contained identical "background noise" in some figures, and that there were too many breakthroughs in too little time to be plausible. While in *Plastic Fantastic (9)* author Eugenie Samuel Reich gets the big picture largely correct, she fails to give sufficient credit, in my opinion, to some junior scientists, such as Lydia Sohn, who risked their own careers to challenge the integrity of a rising, supposed superstar. The fundamental problem turned out to have been something that is taught in the first chemistry course: how and why to record one's original data in a scientific notebook.

Don't Be Such a Scientist: Talking Substance in an Age of Style

One of the most memorable lectures I have ever experienced was given by Nobelist Willard Libby. He spoke at University of California, Irvine in 1968 or 1969, but the essence of his talk about the atmosphere of Venus is still fresh in my mind because he told such an engaging, entertaining story. While it turned out that his conclusion (that there ought to be ice caps on Venus nearly five miles thick) was completely erroneous, the weaving of the evidence through narrative is what made his argument stick with me all these years. Biologist and filmmaker Randy Olson's perspective on science for the public is also that of a storyteller, and he has a lot to teach us about how science should be presented. In *Don't Be Such a Scientist (10)*, he advises us to meet our audience on their own turf and with persuasion rather than argument from authority. If you want to see an example of his work on creationism and intelligent design, seek out a copy of his documentary video *Flock of Dodos (33)* on DVD. It is one of the fairest treatments I have seen. I haven't yet viewed his film on climate change, *Sizzle: A Global Warming Comedy (34)*, but I intend to do so soon.

Am I Making Myself Clear?: A Scientist's Guide to Talking to the Public

The world has never more needed public understanding of science than it does now, and those of us in science education have a special obligation in this regard. The answers to health care, global warming, conservation of the environment, and so forth are not going to be found in science alone, but if they are to be addressed rationally, science literacy will be necessary. With *Am I Making Myself Clear? (11)*, Cornelia Dean has helped to make it easier for all of us to be effective when we are given an opportunity (or when we make our own opportunity) to communicate to the public. This nice little handbook (it is even the size of your hand) conveys information clearly using thoughtful design (see the cover, shown in Figure 2) and includes an index. *Am I Making Myself Clear?* provides excellent specific guidance for writers and speakers, from public lectures and debates to TV or radio "sound bites", letters to the editor, or writing for the Web. This book will help you make the most of those occasions. I intend to consult it regularly.

Brian P. Coppola Recommends...

The Man from Earth

Grant me these 90 minutes of your life and you will not be disappointed.

My first recommendation, and my only one if I were forced to it, is an overlooked movie from 2007 called *The Man from Earth (12)*. This is Jerome Bixby's last sci-fi story. Bixby was the writer of the classic *Star Trek* episode "Mirror, Mirror", which

gave rise to the entire mirror universe saga that ran through every incarnation of the TV shows. But I digress.

"Sci-fi" is definitely in quotes, here, because there are no space ships, blue alien avatars, ray guns, slime, robots, Spandex, cute kids, Keanu Reaves, explosions, or creatures that pop out from someone's belly. This movie is about an idea. A simple "What if?" scenario that then gets played out, and draws intelligently from a study of human reactions and behaviors.

The Man from Earth is a low-budget piece made up of one long conversation that takes place in a cabin (an actual cabin, not a set). In that cabin are an academic and some colleagues from various disciplines. The colleagues are surprised that their peer is giving up his tenure and moving on. But then they learn that he believes himself to be a 14,000-year-old man who must forever move on as people begin to notice he does not age.

How would a group of academic colleagues that includes a biologist, an anthropologist, a psychiatrist, and a religious studies professor go about interrogating this guy? How would he make his case?

Trust me on this one: just get it and enjoy yourself. And do yourself a favor: don't watch it alone, because you are going to want to talk to someone afterwards.

Perfecting Sound Forever: An Aural History of Recorded Music

I will admit here to a fascination with recordings of anything. Who among us does not wish that there were recordings of both momentous historical events and the common everyday lives of our ancestors? The 14,000-year-old man in *The Man from Earth (12)* would have had a lot easier time making his case if he had such documentation.

For just over a century, now, humans have been able to record and play back the musical performance of voices. In the exceptionally well-written *Perfecting Sound Forever (13)*, author Greg Milner, in the role of an opinionated historian, takes us on the fantastic voyage that begins with Edison and ends with Lady Gaga and Adam Lambert (just to pick a couple of performers who will make this review unbelievably out of date to anyone reading it after, say, 2012).

Milner has a great command of the science, at least as far as I can tell. He describes in satisfying detail the media in which we have recorded sound, from wax to digital, and the various ways in which we've pursued the Madison Avenue question, "Is it live, or it is...?" He's an audiophile, so be warned: he overwhelmingly detests the overengineered world of digital sound compared with the purist's capturing of an authentic performance.

He also has a keen sense of just the right stories to tell: for example, what appear to be the inevitable wars that are waged over format. We (of a given age) have lived through the 33.33 versus 45 versus 78 rpm record, the eight-track versus cassette tape, the vinyl album versus the CD, and now the mp3 versus the ACC versus what appears to be an almost countless number of digital formats. But what I did not know was that exactly the same war was fought over wax (Edison) versus shellac (Victor). *Plus ça change...*

We cannot imagine living in a world of profound transience. Until roughly 100 years ago, once a speech, a musical performance, or a show at the theater were made, all of these happened once and then become only the memories of those who were there. As I write this review, I am using a computer with 80 GB of hard-drive space devoted to a fraction of the music I like to listen to, mixed and matched at the whim of my mood or that of the shuffle selection (yet another statement that will date this review sooner than I can imagine). And tracing that history, as well as pointing to the future, are the greatest gifts that this book gives.

Richard Wiseman's Blog

Many try, but few Web sites make their way to the bookmark bar on my browser. This year, I added Richard Wiseman's blog *(14)* at http://richardwiseman.wordpress.com/ (accessed May 2010) to the list of survivors.

This site is a simple collection of brainteasers. Some are hard, some are impossible, and some are head-slappers once you see the solution. Each week there is a Friday Puzzle, replete with snarky commentary from viewers, and the solution (or, many solutions) revealed on Mondays.

This quote from the site sums it up neatly: "Psychologist, magician, and author Prof Richard Wiseman posts daily on quirky mind stuff. Based at University of Hertfordshire in the UK."

The Culture of Flushing: A Social and Legal History of Sewage

Lest you think that the postcolon portion of the book title, about the social and legal history of sewage, is hyperbole to set up an amusing romp through, um, poo, it is not. The foreword to *The Culture of Flushing (15)* is titled "Risk and Responsibility in a Waste-Full World". The topic only gets deeper from there on out, and it concludes with "Water Quality and the Future of Flushing".

Through a series of case studies, Benidickson, a legal historian, takes the reader through a well-constructed and highly accessible narrative about how humans in three developed countries (the United States, Canada, and the U.K.) have, since the 19th century, evolved the use of an increasingly precious commodity (clean water) to carry wastes into the waterways.

I could imagine parts of this book forming the foundation for an interesting first-year undergraduate seminar. There are plenty of chemistry hooks here to hang other readings on, and the book itself is replete with references that would make good object lessons in the construction of scientific knowledge. We science educators always say we are trying to help the next generation of voters to make informed choices, and doing something creative with this book would be a step in that direction.

For Your Entertainment

The iPod Shuffle that I listen to on long trips just went from being called "George and Darren" to "George, Darren, and Adam", so I thought I would share that as a recommendation. I cannot comment on music with any feigned wisdom or perspective; I simply listen to what I enjoy listening to.

If you do not like the sound of the new wave, hard rock, or heavy metal music that dominated MTV during the first decade of its existence (1981−1990), prior to the whiney, woe-is-me suicidal tone of the alternative rock genre, then you might want to skip on to the next page. (The same holds true if you're one of those PBS and classical music fans.)

I was completely unaware of Adam Lambert and his recent collection, *For Your Entertainment (16)*, until he caused a stir at the 2009 American Music Awards, and only then because the online news services picked up the report the next morning. While checking out the news (or, in this case, "the news"), I was surprised by how strikingly good the song was. I snagged a copy of

the video before ABC Productions pulled it down. As a helpful aside, if you do not know about downloadhelper *(35)*, the world's most useful plug-in because it lets you snag copies of videos, then I just did you a big favor. Use it with Firefox Web browser for optimal results.

Lambert's music is a synthesis of mainly 1980s sounds with contemporary interpretations influenced by the intervening decades. Greg Milner (see my review of his book above, ref *13*) undoubtedly hates this music because the raw talent of the singer is drowned in production. But the raw talent and the range create my interest: every song by this artist does not sound the same, and they all sound good. Frankly, that is not a combination that happens often.

From hard-rock anthems to catchy postdisco tunes to melancholy ballads, Lambert mixes it up and has joined what is, for me, a small pantheon of male vocalists whose versatility I enjoy the most in the music I can constantly listen to. In the late 1980s, George Michael split from Wham! and became this sort of singer. In the late 1990s, Darren Hayes split from Savage Garden and became this sort of singer. And now, in the late 2000s, Adam Lambert does it from the get-go. His debut collection, *For Your Entertainment*, is exactly what the title says. I hope he makes it.

Cheryl Frech Recommends...

Before the Dawn: Recovering the Lost History of Our Ancestors

In addition to editing the *Journal's* book reviews, I organize a community book group, so I pay attention to the books others are reading. My husband received *Before the Dawn (17)* as a Father's Day gift in 2009; in the intervening months, he's read it twice. That seemed to be a good recommendation, so I picked it up.

Nicholas Wade is a science writer for the *New York Times*; in fact, he has an article or a book review in nearly every Tuesday's *Science Times* section *(36)*. In *Before the Dawn*, Wade ties together numerous findings about genetics, sociology, anthropology, and linguistics and weaves them into a narrative of human history. Each chapter is prefaced with a quoted passage from the work of Charles Darwin. The 12 chapters have simple titles such as "Settlement", "Language", "History", and more controversially, "Race" and "Evolution".

Advances in genetics and archeology have been announced since *Before the Dawn* was published in 2006, but this book is so well-written and intriguing that it provides an excellent starting place if you are new to the area. For example, in the chapter entitled "First Words", Wade explains what was known at the time about the then-recently discovered *FOXP2* gene that had been dubbed "the language gene". Subsequent research has only revealed that the role of the *FOXP2* gene is even more complicated than first thought.

A Nuclear Family Vacation: Travels in the World of Atomic Weaponry

As my family will attest, my philosophy is that vacations are for both relaxation and education. So when I spotted the book *A Nuclear Family Vacation (18)* at the public library, I eagerly checked it out and kept renewing it while I pored over the chapters and considered our summer plans. Eventually I returned the book to the library and bought my own copy.

Authors Nathan Hodge and Sharon Weinberger are a husband-and-wife team of journalists who specialize in national security and defense. Just as there are Revolutionary War or Civil War aficionados who have visited all of the relevant battlefields and museums, Hodge and Weinberger are Cold War or "Armageddon tourists".

The book is an educational travelogue through both U.S. and international sites. The pair begins in the American West, visiting the Nevada test site. Next is virtually the entire state of New Mexico, starting with White Sands and the Trinity Site, Los Alamos, Sandia National Laboratory, and the National Atomic Museum in Albuquerque. They visit Lawrence Livermore National Laboratory, NORAD headquarters in Colorado, and missile silos in Nebraska and South Dakota. Other U.S. sites include Oak Ridge National Laboratories, a secret bunker in Greenbrier, West Virginia, and Rocket City U.S.A., Huntsville, Alabama. Farther afield, they are able to visit nuclear sites in the Marshall Islands, Kazakhstan, Russia, and Iran.

In the epilogue, Hodge and Weinberger conclude that they did not find a cohesive nuclear arms strategy in the United States or abroad and suggest that it may be time for a comprehensive conversation about eliminating the nuclear arsenal. Perhaps you will read this book and visit a nuclear site near you, or read it to educate yourself about the intricate relationship between recent scientific and political history.

Spectacular Chemical Experiments

Books about chemical demonstrations are very much like cookbooks: you cannot have too many of either on your respective bookshelves. Every once in a while you need to buy a new one so that you are not eating the same meals or doing the same demonstrations over and over again. Both kinds of books are fun to sit and read. And finally, the best cookbooks and demonstration books have color photographs. And so, for your summer reading pleasure, I suggest *Spectacular Chemical Experiments (19)*.

Roesky's book contains 86 experiments grouped into general themes: Water; The Color Blue; The Color Red; Chemical Varieties; and The Art Gallery of Chemistry. Each experiment is presented in a recipe-like format that includes a list of required apparatus and chemicals, hazards, procedure, theory, and waste disposal. Each experiment is preceded by a poem, quote, or interesting anecdote, the majority of which come from Germanic authors. Roesky uses these to illustrate "the ubiquitous character of chemistry and the arts", as stated in the preface (*19*, p xiii). The experiments range from old favorites to newer ones that first appeared in this *Journal* to some that are designed simply to please the eye.

If you or your department has a collection of books about chemical demonstrations, you may want to add this interesting title to the shelf.

The Fossil Hunter: Dinosaurs, Evolution, and the Woman Whose Discoveries Changed the World

Just as chemistry students may not realize the tremendous upheavals in the philosophy of science that led to the development of the quantum mechanical model of the atom in the early 20th century, those of us who are not paleontologists may not realize that the concept of a dinosaur was not established until the mid-19th century. To be exact, 1842 was the year that Richard Owen coined the term. Almost lost in the reports of the

discoveries of fossils, writings about evolution and natural history, and presentations to scientific societies is the story of Mary Anning, told in *The Fossil Hunter (20)*.

Born in 1793 in Lyme Regis on the south coast of England, Mary Anning grew up collecting fossils on the rocky cliffs with her father. Poor and uneducated, but also patient and determined, she scoured the cliffs after great storms and sold her finds to tourists and later, collectors, for meager sums. Mary excavated from the limestone and shale large *Ichthyosaurus* and *Plesiosaurus* skeletons that found their way to museums and universities where the great natural historians of the time debated the significance of her specimens.

The Fossil Hunter is written as an enhanced biography: Emling has taken the liberty to imagine Anning's days and experiences in a well-researched and annotated book. The story of Mary Anning belongs on your bookshelf alongside the biographies of other women whose stories are less well known than their contemporaries.

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