THE BEST AMERICAN SERIES™ 2003

THE BEST AMERICAN SCIENCE AND NATURE WRITING

RICHARD DAWKINS

EDITOR

TIM FOLGER

SERIES EDITOR

The Best American Science and Nature Writing 2003

Edited and with an Introduction
by Richard Dawkins

Tim Folger, Series Editor

HOUGHTON MIFFLIN COMPANY
BOSTON · NEW YORK 2003

Visit our Web site: www.houghtonmifflinbooks.com.

ISSN 1530-1508
ISBN 0-618-17891-0
ISBN 0-618-17892-9 (pbk.)

Printed in the United States of America

MP 10 9 8 7 6 5 4 3 2 1

Foreword

FOR A FEW CENTURIES NOW a remarkable story has been unfolding. Not everyone likes the story — it shatters myths of every sort, questions all beliefs, and to be honest, the plot is not always easy to follow. Worst of all — or best of all, depending on your point of view — no one knows how or if the story will end, even though the narrative's pace seems ever to accelerate. The story, of course, is the one that science tells us about the universe, and of the emergence on a small, watery speck of a world of an unusually curious and fractious bipedal species.

Like children getting a first inkling of the wide and intimidating horizons outside their front door, we *Homo sapiens* are just beginning to understand our true and ever-so-tentative place in the cosmos. For a wrenching sense of perspective on the brevity of our species' reign to date, Timothy Ferris, one of the contributors to this volume and a passionate lifelong amateur astronomer, recommends a meditation on the Andromeda galaxy. Andromeda is the most distant object that can be seen with the naked eye — it's about 3 million light-years from Earth, visible as a small, fuzzy patch in the autumn sky. Now, 3 million years ago — which is when the light from Andromeda that reaches your eyes on any given night began its journey — is about when the first hominids appeared. While that is certainly worth pondering, Ferris really wants you to consider a somewhat subtler experience.

Andromeda, remember, is a galaxy like our own Milky Way, only

half again as large, and contains about 200 billion stars, herded by gravity into a spiral disk some 150,000 light-years wide. When you look at that island of stars, the light from its far and near edges hits your retina at the same time. But, as Ferris points out, the light from the more distant edge had to travel 150,000 light-years farther — the width of Andromeda — than the light from the galaxy's nearer shore. In a single glimpse of Andromeda, then, your eyes capture light that encompasses a span of 150,000 years, which is roughly equal to the length of time that humans have walked the Earth.

What holy book, what myth, can match the grandeur of that reality? In the face of such sublimity, why would any of us want to cling to the old tales, the comforting ones written thousands of years ago, the ones with all the answers but not many questions? No prophet ever imagined a universe built on such a scale, a cosmos so vast that fleeting light itself becomes a mere yardstick. Perhaps more wondrous than the enormity of the universe is the fact that we can actually measure its size and even pin down, to within a few tens of millions of years, its age.

As I write, two science stories, one exhilarating, one tragic, have managed to squeeze into headlines dominated by the threat of war and color-coded security warnings. One story concerns a NASA spacecraft — the Wilkinson Microwave Anisotropy Probe. From its orbit beyond the moon the probe has answered some of the biggest questions the human mind can pose. To an accuracy of 1 percent, we now know that the universe was born 13.7 billion years ago, and that it will probably expand forever. (On reflection, how could it have been otherwise? It's difficult to imagine something reversing and shutting down this whole explosive, radiant extravaganza.) The MAP spacecraft also confirmed that only about 4 percent of the matter in the universe is made from ingredients that we're familiar with — protons, neutrons, and electrons. Everything else in the cosmos consists of some unknown substance that physicists simply call dark matter, because they can't see it and have no clear idea about what it is. We are, it seems, made of exotic stuff.

The other story, the loss of the *Columbia* space shuttle, raises questions about the purpose of the space program and whether lives should be risked when we can design robotic spacecraft to explore the solar system and beyond. I have no doubt how *Colum-*

bia's astronauts would have answered that question. Some species evolved to remain anchored to one spot — barnacles, mussels, and molds come to mind — but not humans. Have you ever seen photos of the fossil hominid footprints from Laetoli, Tanzania? The prints were made 3.6 million years ago (a bit over the one-way light-speed travel time to Andromeda) when two australopithecines walked through some volcanic ash. They always remind me of another collection of footprints, ones left in lunar dust just over thirty years ago. We've still got a lot of ground to cover, and the *Columbia*'s crew would not want us to stop now.

The hard-won new knowledge of the age and fate of the universe is something true and lasting. It doesn't depend on any particular culture's view of reality. It's not an opinion, or even a theory. It's the way things really are. The universe existed for a long time before we arrived to impose our visions of heaven and hell on it. Odds are that it will be around for a long time after we're gone. If you can stand another dose of cosmic humility, consider an illustration that appeared last January in the journal *Science*. The illustration showed the face of a clock, where each hour represented 1 billion years. Earth's first life appeared shortly before 1 A.M. Now we're at 4:30 A.M. In another half hour — 500 million years in real time — Earth's last living creatures, probably bacteria, will die, fried by a swollen sun. At noon the sun, by then a red giant, will have swallowed Mercury, Venus, and Earth. Not a comforting vision. But if confronting that reality challenges our beliefs and jolts our complacency, that is surely a good thing. The world has far too many people who, surfeited with murderous certainty, have stopped asking questions. How strange, though, that even those who scorn the worldview of science may nevertheless own computers, fly in passenger jets, use cell phones, or watch satellite television, apparently never considering that all these spring from the same source that tells us the universe is expanding and that life evolves.

It's too bad that the qualities necessary for good science — skepticism, secularism, and humanism — aren't as common as cell phones. Maybe someday they will be; we're still a young species. Meanwhile, those same qualities make for some unforgettable stories, no small solace in troubled times. In these pages you'll encounter Oliver Sacks asking if we are alone in the universe; Steven Weinberg, a Nobel laureate physicist, asks why our government is

planning to spend billions of dollars on a missile defense plan that can't possibly work; Daniel Lazare shows that whatever else the Bible might be, it is not an accurate account of ancient history in the Near East; Natalie Angier, last year's guest editor, tells a surprising story about the vital evolutionary role of grandmothers; Elizabeth Loftus brings a psychologist's perspective to the sex scandals roiling the Catholic Church with an essay on the fallibility of memory. No doubt our new guest editor's introduction will further whet your appetite.

So, curious biped, sit, read, and wonder. Above all, wonder. That's what science is all about.

Even though most of a continent and all of an ocean separate us, working with Richard Dawkins has been a real treat for me. His books — *The Selfish Gene* and *The Blind Watchmaker* among them — are the rare sort that change the way you look at the world.

I would also like to remind readers of the passing last year of two remarkable men, David Wilkinson and Stephen Jay Gould. Wilkinson, a professor of physics at Princeton, was a key figure in the discovery that the universe began with the Big Bang. The MAP spacecraft, which might never have existed without Wilkinson's efforts, was renamed in his honor. When Gould, a paleontologist, gifted popularizer of science, and baseball fan, died in May 2002, the world lost an eloquent defender of evolution and rationalism.

Once again this year I'm in debt to Deanne Urmy and Melissa Grella at Houghton Mifflin for their help in pulling this book together. And for many years to come I hope to remain in the debt of Anne Nolan, the most supportive and lovely biped I have ever known.

TIM FOLGER

Introduction

IN INTRODUCING THIS ANTHOLOGY of American scientific writing I invoke two recently dead heroes, one a scientist and American, the other a writer, not trained in science and not from America but a lover of both. Carl Sagan gave one of his last books the characteristically memorable subtitle *Science as a Candle in the Dark.* Douglas Adams chose to study English literature at Cambridge, but he explained to me, in a televised conversation in 1997, that his reading habits have now changed: "I think I read much more science than novels. I think the role of the novel has changed a little bit. In the nineteenth century the novel was where you went to get your serious reflections and questionings about life. You'd go to Tolstoy and Dostoevsky. Nowadays, of course, you know the scientists actually tell us much, much more about such issues than you would ever get from novelists. So I think for the real solid red meat of what I read I go to science books, and read some novels as light relief."

Even while listening to him, I reflected on my frustration, going into bookshops and trying to find scientific books. If there is a science section at all, it is dwarfed not only by fiction, history, biography, "self-help," cookery, and gardening, but also by "new age," "occult," and religion. It has become a commonplace that astrology books outsell astronomy by a large margin.

Turning back to Adams, I asked him, "What is it about science that really gets your blood running?" and he replied: "The world is a thing of utter inordinate complexity and richness and strange-

ness that is absolutely awesome. I mean, the idea that such complexity can arise not only out of such simplicity but probably absolutely out of nothing is the most fabulous, extraordinary idea. And once you get some kind of inkling of how that might have happened — it's just wonderful. And I feel, you know, that the opportunity to spend seventy or eighty years of your life in such a universe is time well spent as far as I am concerned!"

Carl Sagan obviously shared those sentiments and devoted much of his career to expounding them, but *The Demon-Haunted World,* whose subtitle I quoted, has a darker theme. The darkness of ignorance breeds fear. In the words of a prayer which I early learned from my Cornish grandmother,

> From ghoulies and ghosties and long-leggety beasties
> And things that go bump in the night
> Good Lord deliver us.

Some say it is Scottish, not Cornish, but the sentiments are anyway worldwide. People are afraid of the dark. Science, as Sagan argued and personally exemplified, has the power to reduce ignorance and dispel fear. We should all read science and learn to think like scientists, not because science is useful (though it is), but because the light of knowledge is wonderful and banishes the debilitating and time-wasting fear of the dark. That uncompromisingly articulate chemist Peter Atkins has a utopian vision of a scientifically enlightened world which I share: "When we have dealt with the values of the fundamental constants by seeing that they are unavoidably so, and have dismissed them as irrelevant, we shall have arrived at complete understanding. Fundamental science can then rest. We are almost there. Complete knowledge is within our grasp. Comprehension is moving across the face of the Earth, like the sunrise."

Unfortunately, science arouses fears of its own, usually because of a confusion with technology. Even technology is not inherently frightening, but it can, of course, do bad things as well as good. If you want to do good, or if you want to do bad, science will provide the most effective way in either case. The trick is to choose the good rather than the bad, and what I fear is the judgment of those to whom society delegates that choice.

Science is the systematic method by which we apprehend what is true about the real world in which we live. If you want consolation,

or an ethical guide to the good life, you can look elsewhere (and may be disappointed). But if you want to know what is true about reality, science is the only way. If there were a better way, science would embrace it.

Science can be seen as a sophisticated extension of the sense organs nature gave us. Properly used, the worldwide cooperative enterprise of science works like a telescope pointing toward reality; or, turned around, a microscope to dissect details and analyze causes. So understood, science is fundamentally a benign force, even though the technology that it spawns is powerful enough to be dangerous when abused. Ignorance of science can never be a good thing, and scientists have a paramount duty to explain their subject and make it as simple as possible (though no simpler, as Einstein rightly insisted).

Ignorance is usually a passive state, seldom deliberately sought or intrinsically blameworthy. Unfortunately, there do seem to be some people who positively prefer ignorance and resent being told the truth. Michael Shermer, debonair editor and proprietor of *Skeptic* magazine, tells of the audience reaction when he unmasked a professional charlatan onstage. Far from showing Shermer the gratitude he deserved for exposing a fake who was conning them, the audience was hostile. "One woman glared at me and told me it was 'inappropriate' to destroy these people's hopes during their time of grief."

Admittedly, this particular phony's claim was to communicate with the dead, so the bereaved may have had special reasons for resenting a scientific debunker. But Shermer's experience is typical of a more general mood of protective affection for ignorance. Far from being seen as a candle in the dark, or as a wonderful source of poetic inspiration, science is too often decried as poetry's spoilsport.

A more snobbish denigration of science can be found in some, but by no means all, literary circles. "Scientism" is as dirty a word as any in today's intellectual lexicon. Scientific explanations that have the virtue of simplicity are derided as "simplistic." Obscurity is often mistaken for profundity; simple clarity can be taken for arrogance. Analytical minds are denigrated as "reductionist" — as with "sin," we may not know what it means, but we do know that we are against it. The Nobel Prize–winning immunologist and polymath

Peter Medawar, not a man to suffer fools gladly, remarked that "reductive analysis is the most successful research stratagem ever devised," and continued: "Some resent the whole idea of elucidating any entity or state of affairs that would otherwise have continued to languish in a familiar and nonthreatening squalor of incomprehension."

Nonscientific ways of thinking — intuitive, sensitive, imaginative (as if science were *not* imaginative!) — are thought by some to have a built-in superiority over cold, austere, scientific "reason." Here's Medawar again, this time in his celebrated lecture "Science and Literature": "The official Romantic view is that Reason and the Imagination are antithetical, or at best that they provide alternative pathways leading to the truth, the pathway of Reason being long and winding and stopping short of the summit, so that while Reason is breathing heavily there is Imagination capering lightly up the hill."

Medawar goes on to point out that this view was even once supported by scientists themselves. Newton claimed to make no hypotheses, and scientists generally were supposed to employ "a calculus of discovery, a formulary of intellectual behaviour which could be relied upon to conduct the scientist towards the truth, and this new calculus was thought of almost as an antidote to the imagination."

Medawar's own view, inherited from his "personal guru" Karl Popper and shared by most scientists today, was that imagination is seminal to all science but is tempered by critical testing against the real world. Creative imagination and critical rigor are both to be found in this collection of contemporary American scientific literature.

For a non-American to be invited by a leading American publisher to anthologize American writings about science is an honor, the more so because American science is, by almost any index one could conjure, preeminent in the world. Whether we measure the money spent on research or count the numbers of active scientists working, of books and journal articles published, or of major prizes won, the United States leads the rest of the world by a convincing margin. My admiration for American science is so enthusiastic, so downright *grateful,* that I hope I may not be thought presumptuous if I sound a note of discordant warning. American science leads the world, but so does American *anti*-science. Nowhere is this more clearly seen than in my own field of evolution.

Evolution is one of the most securely established facts in all science. The knowledge that we are cousins to apes, kangaroos, and bacteria is beyond all educated doubt: as certain as our (once doubted) knowledge that the planets orbit the sun, and that South America was once joined to Africa, and India distant from Asia. Particularly secure is the fact that life's evolution began a matter of billions of years ago. And yet, if polls are to be believed, approximately 45 percent of the population of the United States firmly believes, to the contrary, an elementary falsehood: all species separately owe their existence to "intelligent design" less than ten thousand years ago. Worse, the nature of American democratic institutions is such that this perversely ignorant half of the population (which does *not,* I hasten to add, include leading churchmen or leading scholars in any discipline) is in many districts strongly placed to influence local educational policy. I have met biology teachers in various states who feel physically intimidated from teaching the central theorem of their subject. Even reputable publishers have felt sufficiently threatened to censor school textbooks of biology.

That 45 percent figure really is something of a national educational disgrace. You'd have to travel right past Europe to the theocratic societies around the Middle East before you hit a comparable level of antiscientific miseducation. It is bafflingly paradoxical that the United States is by far the world's leading scientific nation while *simultaneously* housing the most scientifically illiterate populace outside the Third World.

Sputnik, the Russian satellite launched in 1957, was widely seen as a salutary lesson, spurring the United States out of complacency and into redoubled educational efforts in science. Those efforts paid off spectacularly, for example, in the dazzling successes of the space program and the Human Genome Project. But more than forty years have passed since Sputnik, and I am not the only Americophile to suggest that another such fright may be needed. Short of that — well, in any case — we need excellent scientific writing for a general audience. Fortunately that high-quality commodity is in abundant supply in America, which has made the compiling of this anthology both easy and a pleasure. The only difficulty, indeed the only pain, has been in deciding what to leave out.

Should a collection such as this be timely or timeless? Topical and of-the-moment? Or *sub specie aeternitatis*? I think both. On the

one hand, the volume is one of a series, tied to a particular year, sandwiched between predecessors and successors. That nudges us in the direction of topicality: what are the hot scientific subjects of 2003; what are the current political and social issues that scientific writings of the previous year might illuminate? On the other hand, science's ambitions — more so, I venture, than any other discipline's — approach the timeless, even the eternal. Laws of nature that changed from year to year, or even from eon to eon, would seem too parochial to deserve the name. Of course our *understanding* of natural law changes — for the better — from decade to decade, but that is another matter. And, within the unchanging laws of the universe, their physical manifestations change, on time scales spanning gigayears to femtoseconds.

Biology, like physics, anchors itself in uniformitarianism. Its defining engine — evolution — is change, change par excellence. But evolution is the same *kind* of change now as it was in the Cretaceous, and as it will be in all futures we can imagine. The play's the same, though the players that walk the stage are different. Their costumes are similar enough to connect, say, triceratops with rhinoceros, or allosaurus with tiger, in ecological continuity. If an ecologist, a physiologist, a biochemist, and a geneticist were to mount an expedition to the Cretaceous or the Carboniferous, their 2003-vintage skills and education would serve them almost as well as if they were going to, say, Madagascar today. DNA is DNA, proteins are proteins. They and their interactions change only trivially. The principles of Darwinian natural selection, of Mendelian and molecular genetics, of physiology and ecology, the laws of island biogeography, all these surely applied to dinosaurs, and before them to mammal-like reptiles, just as they apply now to birds and modern mammals. They will still apply in a hundred million years' time, when we are extinct and new faunistic players have taken the stage. The leg muscles of a tyrannosaur in hot-breathed pursuit were fueled by ATP such as any modern biochemist would recognize, charged up by Krebs cycles indistinguishable from the Krebs cycles of today. The science of life doesn't change from eon to eon, even if life itself does.

So far, so timeless. But we live in 2003. Our lives are measured in decades and our psychological horizons crammed somewhere between seconds and centuries, seldom reaching further. Science's

laws and principles may be timeless, but science bears mightily upon our fleeting selves. The science and nature writing of 2002 is not the same as it was ten years ago, partly because we now know more about what is eternally true, but also because the world in which we live changes, and so does science's impact upon it. Some of the essays and articles in this book are firmly date-stamped; some are timeless. We need both.

Nature writing perennially returns to the theme of conservation and extinction. Of all arguments in favor of preserving species from extinction, I am moved more by aesthetic sentiment than by utilitarian advocacies of the "You never know whether something in the rain forest might eventually turn out to be useful to humanity" kind. But aesthetic isn't a big enough word, nor is sentiment. Douglas Adams's Professor Chronotis used his time machine for only one regular purpose: he would visit pre-seventeenth-century Mauritius, weep over the dodo, and return. The sense of irreparable loss — grief — our descendants will feel for elephants and whales brings today's imagination up short. Today we are still privileged to watch these great creatures, dodos for future generations to weep over. And we are still finding out new and extraordinary things about them, as "Four Ears to the Ground" and "Fat Heads Sink Ships" both show.

My personal dodo has long been the marsupial *Thylacinus,* often irritatingly called the Tasmanian tiger — irritatingly because it was much more like a dog (with a few stripes across the rump). I once wrote of it, "To any dog-lover, the contemplation of this alternative approach to the dog design, this evolutionary traveller along a parallel road separated by 100 million years, this part familiar yet part utterly alien other-worldly dog, is a moving experience. Maybe they were pests to humans, but humans were much bigger pests to them; now there are no thylacines left and a considerable surplus of humans." It is too late for the dodo, but "Raising the Dead" airs the faint hope (it may never reach the status of an expectation) of one day bringing *Thylacinus* back from the dead by cloning DNA from pickled museum specimens.

I once had the good fortune to spend two weeks in a tropical research center in Panama with my senior colleague and friend, the zoologist John Maynard Smith. We were being shown round by a young researcher whose enthusiasm moved Maynard Smith to

whisper to me: "What a pleasure to listen to a man who really loves his animals." The "animals" in question were various species of palm tree. I was reminded of this when reading "Terminal Ice." It is all about men who love their animals, but their animals are icebergs. The article ends more grimly on what today's icebergs may be telling us about our globally warmed future. Complementing this article, "Ice Memory" tells how cores taken from glaciers constitute a sensitive record of climate changes of the past, perhaps foreshadowing an even grimmer future unconnected with global warming.

In my choice, I have been mindful that North America's natural heritage is perhaps the richest and most beautiful in the temperate world. It is also under threat from powerful interests more concerned with commercial exploitation than science, or beauty, or anything that we might recognize as civilized values at all. I do not, therefore apologize for including, among the natural history articles, some with a political agenda. These include "Maine's War on Coyotes" — and, by the way, on the subject of coyotophilia, I am sorry it was not possible to include extensive passages from Barbara Kingsolver's beautiful novel *Prodigal Summer.* "Sounding the Alarm" is a remembrance of the prophet Rachel Carson, and "The Bottleneck" a similar warning for our times from Edward O. Wilson.

Wilson is a scientific prophet if ever there was one, and I have also included a biographical piece representing him as a latter-day Thoreau, "Finding a Wild, Fearsome World Beneath Every Fallen Leaf." As another matched pair — article with biography of its author — I offer "The Fully Immersive Mind of Oliver Sacks" paired with Sacks himself on a slightly unexpected subject, "Anybody Out There?" The same theme, the possibility of extraterrestrial life, is treated rather differently by Tim Appenzeller in "At Home in the Heavens."

That title is a possibly unconscious allusion to Stuart Kauffman's otherwise very different *At Home in the Universe,* which in turn has weaker resonances with Timothy Ferris's *Coming of Age in the Milky Way.* Ferris himself is represented here by "Astronomy's New Stars," in praise of amateur astronomers. "The Very Best Telescope" pleases me because it presents a technical innovation as the solution to a problem: always my strategy when explaining the design of natural instruments such as eyes and echolocation systems. "A New

View of Our Universe" reaches the philosophical — some would say theological — cutting edge of cosmology. Is the universe not only our home but tailor-made for the task?

From theology sublime to theology mundane, "False Testament" reveals no great surprises, but the details are fascinating to those of us raised in a Judeo-Christian culture, and perhaps instructive, even salutary, to the benighted 45 percent that I mentioned earlier. Another archaeological piece is "Treasure Under Saddam's Feet." The dam that would flood these priceless antiquities to oblivion is due for completion in 2007. Might a halt to the damming plans turn out to be an unexpected benefit of war? I doubt it. In any case, war arouses greater fears for Iraq's other treasures, which rival those of Greece and Egypt in their archaeological importance.

How closely related are you to me? Probably closer than you think. My guess is based on the mathematics of Joseph Chang, discussed in "The Royal We." Most people have a natural curiosity about their ancestral past, and genetics is starting to develop methods to satisfy it, along with our sometimes morbid curiosity about our individual futures, as David Ewing Duncan discovers in "DNA as Destiny." Incidentally, those fearful that genetics may teach them too much about their own inexorable fates might take comfort from something we have known all along: identical twins don't habitually die on the same day. But how fated are we by our genes when it comes to abilities and talents? Steven Pinker, in "The Blank Slate," brings his customary acumen and style to dispelling the many misunderstandings that surround this question.

Pinker is identified with evolutionary psychology, one of those names — another being behavioral ecology — now used as a euphemism for what used to be called sociobiology. Natalie Angier's "Weighing the Grandma Factor" is a second piece in a genre that is regarded by some, for reasons that I understand but deny, as politically controversial. There's no denying, however, the controversy in some of the pieces I have chosen on scientific approaches to political or social questions. Steven Weinberg is one of the world's most distinguished physicists, and his "The Truth About Missile Defense" is an important document that should (but probably won't) be studied by politicians up to the highest level. Lawyers and judges should pay similar attention to Elizabeth Loftus's "Memory Faults

and Fixes." Dr. Loftus is another scientific hero, whose courageous — and how sad that courage should be *necessary* — testimony on the sometimes inadvertent but more usually deliberate implanting of false memories has saved a significant number of innocent people from the current Salem-like hysteria over pedophilia.

"Embryo Police" is an American view of an institution that exerts considerable power in my own country, the Human Fertilization and Embryology Authority (HFEA). A famous case handled by the HFEA is that of Diane Blood, a young woman who tragically lost her husband to meningitis in 1995. While he was on a life support system, before his death, she persuaded the doctors to extract and freeze some of his sperm so that she might have his baby as they had always planned. The doctors obliged, but the HFEA subsequently denied her permission to undergo the in vitro fertilization on the grounds that her husband, in his terminal coma, could not give his written consent. After fighting them in the courts for years, Mrs. Blood was eventually allowed to take her husband's sperm abroad, and a European IVF clinic eventually gave her beloved husband two posthumous sons. She had to fight again to amend their birth certificates so their father was recorded as "Stephen Blood" rather than "Unknown." Perhaps unfairly, some might see Mrs. Blood's case as a cautionary tale from Britain for America, about the grief that can arise when lawyers and moralistic busybodies are given a license to poke their noses into private matters.

Diet is a political as well as a scientific issue, increasingly so as the epidemic of obesity gathers pace. Dr. Robert Atkins's long-running campaign to shift the blame from fats to carbohydrates is the subject of "What If It's All Been a Big Fat Lie?" I am not expert enough to give an authoritative verdict, but as a dispassionate observer I think it looks as though Atkins and his followers have built up a case that is at least compelling enough to demand a clear answer from that part of the medical establishment which once ridiculed him and now sounds desperate for his findings to go away.

The treatment of women in scientific careers was, until quite recently, often horribly unjust. The exclusion of Rosalind Franklin, she whose X-ray photographs were so crucial to Watson and Crick's discovery of the double helix, from the Common Room at King's College London, where her male colleagues could go and talk science, is infamous. I was reminded of it when I read "My Mother, the