

second to invade neighbors and take their possessions, and the third for the people to rise up against the government. Drought and floods led to crop failure and disease, which led to war and revolution, which led to the deaths of an estimated third of the world's population. Only one state addressed the crisis effectively—early Tokugawa Japan. Parker makes clear that Shogun Iemitsu succeeded in reforming the nobility and civil service so that the population of Japan survived and even grew through the seventeenth century (he instructed that large stores of grain be set aside in years of plenty and forbade the growing of cash crops instead of food crops in lean years). But the population of Japan was already small as a result of the century of war that had put the shogunate in power.

Perhaps the most gruesome chapters are those that trace the English, Scottish, and Irish civil and religious wars. Parker offers telling quotes: "In 1652 an English soldier in Ireland reported that 'You may ride twenty miles and scarce discern anything, or fix your eye upon any object, but dead men hanging on trees and gibbets.'" The arrival of famine conditions just at the time when the three populations were most riven by religious disagreement meant that divine self-justifications were ready to hand, and armies had no reservations about being brutal.

Global Crisis presents us with a challenge: it implies that we should worry about the consequences of global warming as much as its explanations, at least if we want to avoid the bloody havoc of the seventeenth century. Parker shows us that the population must be fed, that agriculture focused on profit eventually fails, that a starving population cannot be overtaxed to preserve the privilege of the few, and that devastation that is predictable must be prepared for (he writes of the barrier completed in the Thames in 1982, at a cost of £534 million, to preserve London from flooding; the property it has protected is now worth £200 billion). I am not the only one who missed *Global Crisis*—it has gathered only a handful of reviews on Amazon. But it is one of the best and most important books of the year. Every bureaucrat should have a copy. I've already started to reread mine. ■

AT DEATH'S DOOR

The hope and hokum of immortality

By Bee Wilson

Discussed in this essay:

The Book of Immortality: The Science, Belief, and Magic Behind Living Forever, by Adam Leith Gollner. Scribner. 416 pages. \$28. scribnerbooks.com.

The Long and the Short of It: The Science of Life Span and Aging, by Jonathan Silvertown. University of Chicago Press. 192 pages. \$25. press.uchicago.edu.

The Longevity Seekers: Science, Business, and the Fountain of Youth, by Ted Anton. University of Chicago Press. 240 pages. \$26. press.uchicago.edu.

Counterclockwise: My Year of Hypnosis, Hormones, Dark Chocolate, and Other Adventures in the World of Anti-Aging, by Lauren Kessler. Rodale. 256 pages. \$24.99. rodale.com.



In Kazuo Ishiguro's 2005 novel *Never Let Me Go*, the main characters, who are human clones, hear rumors about something called a

Bee Wilson's *Consider the Fork: A History of How We Cook and Eat (Basic Books)* was released in paperback in October.

"deferral." There is speculation that if two clones can prove to the authorities that they are in love, they might be granted a reprieve from their fate, which is to donate their major organs one by one and then to die. After careful consideration, Tommy and Kathy

visit a former teacher to explain that they are in love and to ask for a deferral. But she disappoints them: there are no deferrals, under any circumstances. It was only a wishful rumor, she tells them, or rather a series of rumors "that gets created from scratch over and over."

At some level, we all know death is in the cards. You see a photo of aged hands—papery, with raised veins—clapping a cup of coffee and realize with a jolt that they are yours. The year of your birth, which once seemed so fresh, recedes. Pets die. Parents die. Yet we carry within us the secret hope that aging is something that happens to other people; the *Mahabharata* says that the greatest wonder in the world is that "no man, though he sees others dying all around him, believes that he himself will die." Each new generation has sought to defer the dreadful truth with the wishful rumor of immortality, which is really a series of rumors created from scratch over and over.

In his wonderful exploration of the subject, *The Book of Immortality*, Adam Leith Gollner recounts some of the desperate magic that immortalists resorted to in the past, such as the euphemistically named "monkey gland" surgeries of the 1920s, in which the Franco-Russian doctor Serge Voronoff transplanted ape testicles into the scrotums of rich men. "Registered testicle-graft doctors sprouted up everywhere from Turin to Rio de Janeiro," notes Gollner—until it became clear the glands didn't work. There were legion other dead ends: "elixirs, hormones, prayers, pills, spells." In the ninth century A.D. in China, there was an epidemic of "elixir poisoning" brought on by the ingestion of cinabar (mercuric sulphide) and other toxic substances in hopes of regaining youthful vitality. The life source was often sought in either the very young or the very old—in fetuses or in corpses. In medieval Europe, there were experiments to transfuse the blood of young boys into old men: "[T]hree boys died draining themselves for Pope Innocent VIII," writes Gollner. And "scraps and powders of shredded or ground mummified corpses" were prescribed as youth-giving medicine as recently as the Second World War.

Gollner suggests that none of us is entirely immune from the impulse behind such grotesque magic, even if it leads us to nothing more potent than yoga, watered-down Buddhism, and antioxidant-rich green tea. Gollner's first book, *The Fruit Hunters*, explored fruit obsessions across the world and combined serious investigative journalism with a humorous appreciation of the wilder niches of gastronomy. He acquainted us with a variety of oranges that taste like chicken noodle soup and with the fruitarians, who eat nothing but windfall. *The Book of Immortality* is an even better showcase for Gollner's talents, a picaresque in various subcultures of life extension that is openhearted but not credulous, sardonic but not cynical. His take on immortality is informed by a near-death experience he had as a teenager in Hungary, when after a soccer match he accidentally shot himself in the mouth with a BB gun and time seemed to stop. "I hovered out into midair, two stories up, as though on wings." The experience fails to persuade Gollner "that death is—or is not—the end." But it leaves him sympathetic to the human search for a hereafter. "Death is something we cannot rationally comprehend," he writes. "The only way to contend with it is by attaching ourselves to stories."

Gollner encounters Jesuit priests and Sufi mystics, cryonicists and drug developers—and also, in an interlude that stretches over several chapters, the magician David Copperfield, who claims to have discovered the "real" fountain of youth, a miraculous liquid that can "reverse genes," on his luxury island in the Bahamas. Copperfield's fountain supposedly can bring dead bugs back to life or "turn a brown leaf into a green leaf," but he won't let Gollner see it when he visits the island. Gollner presses him: "Surely you realize people assume the fountain isn't real?" Copperfield replies that if he lets people see the fountain they will only think it is "puffery" or a "sleight of hand," like his magic show: "The fortunate part is that I'm a magician, and it's the unfortunate part as well." Eventually the conversation turns to some illusions Copperfield once did "that involved his becoming

young." "But those were just puffery, right?" "Right."

Gollner is not entirely disparaging of the nonsense peddled by Copperfield, partly because, as he admits, he "succumbed" on the island to the charm of Copperfield's patter. (He depicts the performer as far more likable than his persona might suggest—we see him laughing "heartily" at an Adam Sandler film before falling asleep "a quarter of the way through.")

What's most interesting about Copperfield's fountain is that he presents its efficacy as a matter of science rather than of faith. The only other people to have seen the fountain, Copperfield claims, are a couple of "biology people," and he can unveil the fountain, he earnestly tells Gollner, only after the necessary "research" has been done—research that is painstakingly slow. It will ultimately, he promises, be a form of "technology," a contribution to scientific truth.

A good illusionist knows his audience, and Copperfield surely realizes that "liquids that can reverse genes" no longer sounds quite as unachievable as it once did. Why shouldn't a magician make scientific claims when so much of the science of aging now has the aura of magic?

Our hope for immortality persists in part because we tend to conflate it with a different idea, which is longevity. We blur the lines between eternal life (something infinite and otherworldly) and long life (something finite and mechanistic). The one is a supernatural state that transcends death; the other is a deferral.

Longevity, unlike immortality, is all around us: nonagenarians who walk to the office each morning; sixty-year-olds with adolescent skin, minus the acne. In 1840, the longest-lived women in the world were in Sweden; their average age at death was forty-five. As of 2009, Swedish women can expect to live eighty-three years. For Japanese women, the figure is close to eighty-six. The rate of increase in life expectancy in the developed world has been "astonishing," as Jonathan Silvertown writes in his lively monologue *The Long and the Short of It*. Since 1840, life expectancy has gone up the equivalent of fifteen minutes every hour.

The biggest reason for that increase is the decline in infant mortality, but improvements in health care and the standard of living have driven down adult mortality as well. In 1970, the average American man lived to sixty-seven; by 2006, it was seventy-five. The oldest person on record remains the Frenchwoman Jeanne Calment, who died in 1997 aged 122, but the demographer James Vaupel argues that it is likely that somewhere on earth a child is alive now who will live to 200.

Modern medicine and science, of course, have added to our optimism about longevity. Doctors now speak of "compression of morbidity," the goal of squeezing all the nasty, demeaning aspects of old age—"senescence"—into as short a time as possible, and people such as David Stipp, for many years a science writer for the *Wall Street Journal*, have triumphantly announced that the "long, weird quest to extend life span" is "finally getting somewhere."

The science of longevity has indeed taken an extraordinary turn in the past decade or so. In 2003, a paper in *Nature* announced that resveratrol, one of the polyphenol compounds in red wine, had life-extending powers. One of the paper's authors, David Sinclair, told *Science* that resveratrol was "as close to a miraculous molecule as you can find." Apparently, it triggered a class of proteins called sirtuins, which, by regulating genes associated with aging, extended life. In 2007, Sirtris, a company marketing resveratrol, released a video of a resveratrol-fed mouse running for 40 percent longer than a control mouse, and the media reacted as if a scientific cure for death were just around the corner.

In *The Longevity Seekers*, Ted Anton, a professor of English at DePaul University who has spent eleven years attending anti-aging conferences and talking to major scientists in the field, shows how rapidly the science of aging has changed. The consensus, insofar as there was one, used to be that the "processes of aging were random and uncontrollable." To work on the biology of aging seemed both futile and vaguely disreputable, precisely because immortality had such mythic overtones. When Cynthia Kenyon, a geneticist studying the roundworm *Caenorhabditis elegans* at the Univer-

sity of California, first considered examining life span, in the early 1990s, a colleague told her that this would be like "sailing off the edge of the earth."

Kenyon, however, had a hunch that something "so universal" as aging was "likely to be regulated." She was encouraged in her belief by some work done in the 1970s that had identified five strains of roundworms that lived longer than others. Kenyon—who in the words of one of her graduate students is "this woman with long blond hair, who doesn't talk or look like a scientist"—was single-minded in her hunt for the engine of aging in these worms.

And she found it. In 1993, Kenyon's lab discovered that a single-gene mutation could double the life span of *C. elegans*. When the DAF-2 gene was suppressed a little, the worms lived on average 100 percent longer. At two weeks, old age for a wild-born roundworm, these mutated worms looked in "wonderful" health. Kenyon christened DAF-2—an insulin-like receptor—the "grim reaper" gene. A second gene, DAF-16—a transcription factor—turned out to be important, too. This gene needed to be present in the worms for the life extension to take place. Kenyon's team nicknamed this one "sweet sixteen."

There followed an explosion of anti-aging science. Anton vividly recounts the excitement in the various labs in the early 2000s and the intensity of the scientists' search. (One of them speaks of death as a "systems failure," a glitch to be ironed out.) Kenyon's worm discoveries were followed by work on yeast, flies, and mice. "Suddenly," writes Anton, "researchers had the molecular tools to actually dissect the processes of decay." Different wonder genes were isolated for many different species. If there was a common thread, it was insulin. Aging, like weight gain, appears to be a metabolic process—which confirms work done in the 1930s showing that mice put on a highly restricted diet would live longer (the trade-off was that they often became sterile). The thinking behind resveratrol was that it would have the same effect on the body as caloric restriction without causing constant hunger. The discoveries initiated a gold rush for anti-aging pharmaceuticals. Anton notes that today there are



THE SIXTIES: RECOLLECTIONS OF THE DECADE FROM HARPER'S MAGAZINE Introduction by Eugene J. McCarthy

Relive the decade that changed our lives—Vietnam, Oswald, Cassius Clay, Castro's Cuba, civil rights, pot, the 1968 election...

From a heart-wrenching war that tore America apart to the political turmoil that destroyed our illusions of innocence. From the music and art that made us think and feel in new ways to the activism and experimentation that changed American society forever. *The Sixties* reviews that decade of change, focusing on politics, the civil rights movement, youth culture, and much more from the unique and far-sighted perspective of the nation's oldest monthly magazine. It includes profiles, interviews, commentaries, and essays by some of the best writers of the '60s era, including **George Plimpton, Walker Percy, Joe McGinnis, David Halberstam, Richard Hofstadter, C. Vann Woodward, Priscilla Johnson McMillan, Sara Davidson, and Louis Lomax.** Introduction by **Senator Eugene J. McCarthy**, presidential peace candidate of 1968.

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probably a dozen companies chasing the cure—and nearly 1,400 clinical trials under way.

For most of human history, immortality has been a spiritual concept—a narrative of numberless incarnations,” as Adam Gollner puts it. It is something that occurs—if you believe in it—“after death.” Taken to its logical conclusion, belief in an immortal soul should make us want to die younger, if anything, to reach eternity sooner. The note Baudelaire wrote before his failed 1845 suicide attempt read: “I’m killing myself because I believe I am immortal.”

Plenty of people still have faith, or say that they do, in immortality in this sense. Gollner cites data from various sociological surveys suggesting that more than 50 percent of people in Europe believe in life after death, rising to 70 percent in Canada, 80 percent in the United States, and nearly 100 percent in parts of the Middle East. But alongside this old story of the soul’s immortality, we cleave to an even more impossible belief in the immortality of the body. A dedication to true physical immortality is a minority pursuit, but Gollner meets some of these “immortalists” at a “2068” party in southern California designed to celebrate the end of aging:

Some were standing on the lawn, admiring the ocean sunset and sipping resveratrol-asragalose shakes. Others milled around the open-concept kitchen, picking at shrimp rings and supplement bowls while debating the merits of various telomerase activators.

The more extreme immortalists—such as Aubrey de Grey, a Cambridge-based guru—claim it is possible to re-engineer the body to prevent aging altogether. De Grey (whose abundant graying beard makes him look far older than his fifty years) is the co-founder of SENS, Strategies for Engineered Negligible Senescence. In addition to curing cancer, his program aims to eliminate the causes of death by sweeping unwanted cells from the body. De Grey talks of this, says Gollner, as the “most important mission humanity ever faced.” To

“cope with the responsibility, he drank many pints of beer every day.”

Most of us know enough to mistrust this quackish end of physical immortalism, yet almost all of us buy into a milder version. In *Counterclockwise: My Year of Hypnosis, Hormones, Dark Chocolate, and Other Adventures in the World of Anti-Aging*, Lauren Kessler remarks, only half jokingly, that “at the end of this book, I want to be able to report to you that I am younger than I am right now.” Kessler is not, she informs us, one of those “kooks who arrange to freeze their bodies in cryogenically controlled coffins.” Her quest is about “high-level wellness” and being able to “pass for mid-to-late-forties” when you are over fifty. Judged by “biomarkers” rather than age, you might be sixty but have the liver of a fifty-year-old, the skin of a forty-year-old, and the blood pressure of a teenager. It used to be that aging was a time bomb—a self-destruct program that resides in our DNA,” as Kessler puts it—over which you had no control. But Kessler takes hope from the new anti-aging orthodoxy that lifestyle accounts for nearly 70 percent of how fast we age. “That means, to a great extent, secondary aging is within our control. Control. I like that word.”

Kessler’s “quest” is to investigate the “wild Wild West” of the anti-aging business and report back on what works and what doesn’t, using herself as a guinea pig. Kessler—who won’t reveal her age, though it is over fifty—rules out a full-body lift but tries Retin-A and intense pulsed light to reverse some of the “plum-to-prune” effect of aging on the skin. She flirts with caloric restriction but becomes too desperate for pizza. She tries spirulina and optimism (“optimists have stronger immune systems than pessimists”). But in the end, the biggest secret of longevity for Kessler, the “sweaty truth,” turns out to be exercise. It builds muscle and strength and increases aerobic capacity; it also stimulates the growth of mitochondria, which appear to play a role in the regulation of aging.

Kessler is fun to read as she perkily pushes herself to become “biologically younger,” priding herself on being able to do a “one-leg-up, hands-on-hips

balance test” that one magazine says can only be done by those under thirty. There is something sadder going on here, though, something that is being suppressed. Kessler admits that the reason she so “passionately” wants to be younger is that she is part of a culture that labels old bad: “weak, sickly, sexless, boring, crabby.” She believes at some level that “to deny aging is to deny life,” and she is no fan of \$200 antiwrinkle creams. And yet every day she pops nine supplements and drinks three herbal teas—these are the lauds and the vespers of mainstream immortalism. Many of us have similarly deluded thoughts, at least when we’re in the gym or at the drugstore:

But slowly, over time, I am hoping (if the research is right) that I will become increasingly disease resistant and increasingly energetic, that my metabolism will fire up, that my arteries will become more supple, my heart stronger, my bad cholesterol lower, and that the seconds, maybe even the minutes, on my biological clock will begin to tick backwards.

It’s that word “research” again, the fig leaf with which we hide the nakedness of our yearning to be young. We act as if it were a reasonable thing to attempt to control death, to defy entropy, so long as we are doing it with medical terminology.

In fact, the research has yielded very little. The second half of Ted Anton’s book concerns “what happened when you took antisocial, difficult, brilliant scientists out of their labs, threw a ton of money at them and then expected them to perform anti-aging miracles.” Anton depicts the longevity scientists as emotional, sometimes foolish, and often unhinged, but he is also far too willing to buy into their grand claims, pronouncing that “[n]o other science field is like it, not global warming or energy or the origins of the universe” because “none of those may give us a few more minutes on earth.” But science has yet to deliver those minutes. The early promise of many of the supposed wonder genes and products has already fizzled out. The rival firms Elixir and Sirtris aggressively promoted their panaceas, but the miracles became less impressive when further

experiments were done. It turned out that to get enough resveratrol to see the benefits, you’d have to consume the equivalent of a thousand bottles of wine per day. That was one hitch. Another was that by 2010 there was evidence that resveratrol—whether in red wine or a pill—did not reliably “trigger sirtuins, as reported.” And even when it did—yet another hitch—sirtuins did not necessarily extend fruit-fly life. As for human life, forget it: none of the proteins has yet been demonstrated to bestow added longevity on mammals (though admittedly we have much longer life cycles than do roundworms, so it will take longer to know for sure). We are back at caloric restriction as one of the few scientifically plausible ways for humans to live longer. Or we *were* until last year, when a twenty-five-year study published in *Nature* found that rhesus macaques on a low-calorie diet lived no longer than the control group (though the dieting monkeys did have lower cholesterol before they died).

Gollner suggests that there is a dishonesty about this technological pursuit of longevity, which pretends to be more useful—more provable—than the old religious belief in an afterlife. We have a hunch that when the real deferral comes, it will be science that announces it—but this is in itself a form of faith. Gollner argues that “scientific immortalism isn’t scientific; it’s belief clothed in scientific garb.” At least the concept of an afterlife lent “dignity” to our “powerlessness” about death. There is nothing very dignified, conversely, about our scramble for youth. As Gollner points out:

we spend somewhere between \$80 billion and \$114 billion per year on anti-aging products and other modern medicines for immortality. And none of them work. All we can really do is eat our vegetables and exercise.

Perhaps, though, we ought to be grateful that none of them work. An effective anti-aging elixir is a dystopian prospect in a world of rising population and scarce resources; it could plunge billions into lives of poverty. Even at an individual level, to be given the gift of living forever—or just to 200—might not be such a joy. A

poll conducted by the Pew Research Center in August found that, on average, people did want to live longer, but only by a bit: the median ideal life span came in at ninety, just eleven

years longer than the current American life expectancy of 78.7. If a deferral of death ever became a real possibility, let’s hope we’d have enough sense to decline. ■

WINDS OF REVOLT

The poetry of Middle Eastern uprising

By Robyn Creswell

Discussed in this essay:

The Rule of Barbarism, by Abdellatif Laâbi, translated from the French by André Naffis-Sahely. Archipelago Books. 146 pages. \$12 (paper). archipelagobooks.com.
The Bottom of the Jar, by Abdellatif Laâbi, translated from the French by André Naffis-Sahely. Archipelago Books. 232 pages. \$17 (paper). archipelagobooks.com.



Toward the end of *The Bottom of the Jar*, a memoir of growing up in the city of Fez, the poet Abdellatif Laâbi recalls the moment of his political awakening. It is 1955 and the Moroccan independence movement has caught fire, spreading across

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the country and hastening the end of the French protectorate established in 1912. The official press blames the disturbances on outsiders and terrorists, but no one is fooled. Piecing together news reports with what they see and hear in the streets, Laâbi’s family find they are living through one of history’s turning points:

We discovered a country, with cities and diverse populations, a north and a