reviews

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Darwin

An exhibition at the American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024, until 29 May 2006. Admission \$21 for adults.

www.amnh.org

Rating: ★★★☆

Charles Darwin took a Bible with him on HMS *Beagle* and planned to become a clergyman, but he came back a scientist. The young Darwin was mad about beetles and geology, but he was an indifferent student who thought entering the clergy would give him a quiet life in which he could pursue his study of the natural world.

His five year expedition to South America and the Galapagos islands would never have happened if his persuasive relative Josiah Wedgwood had not convinced his father that 22 year old Charles, a recent university graduate with no clear purpose in mind, should accept the job of scientist aboard HMS *Beagle*. The *Beagle's* assignment was to produce better maps for British ships.

Darwin went out carrying a pistol in addition to his Bible, and shared a small cabin with two other men. Both a good self promoter and a careful scientist, he sent back massive, carefully collected specimens of the new plants, birds, insects, and mammals he had seen, together with detailed descriptions, to his mentor J S Henslow. He must have held his breath before word came that his first shipment of specimens, sent two years earlier, had been received.

This exhibition includes some of the previously unknown species that Darwin

encountered—two large and lumbering Galapagos tortoises, four horned frogs, a sleepy green iguana, carnivorous plants, and orchids. There are also many of Darwin's own specimens and notes, including some original manuscript pages of *The Origin of Species*, short films, and computer interactions. A reconstruction of Darwin's study at Down House south east of London shows where he worked on his many published papers.

When Darwin began his studies, most people thought that animals and plants were unchanged from their creation a few thousand years before. This exhibition shows how he developed his theory of evolution—a theory he kept secret for 21 years—to explain the vast diversity of life on the planet and the way that changes evolve. He pursued geology, his early interest, while in South America. In rocks in Scotland he had seen layers that suggested a great upheaval. After an earthquake in Chile he saw a seabed of mussels that had been moved eight feet up out of water. He found fossilised trees high in the Andes and wondered if such a change might have happened slowly over the ages, just as the mussels had been pushed up.

His painstaking collection of specimens, especially from the Galapagos islands, showed that isolated populations differed from their parent mainland population and from related populations on other islands, differences that could only have occurred by species adapting to different situations. Birds in some areas showed no fear because they had no natural enemies, while the same birds elsewhere were wary. Also in the Galapagos islands, he collected what he thought were different species of finches from different islands. Only later did he realise that they were all the same species but had developed differently in response to the different conditions on the isolated islands.

He read the work of Malthus, who had noticed that species produce many more offspring than can survive. But not all offspring are identical. Those with some superior trait may have a survival advantage.

As Darwin returned from his five year voyage he was already thinking of his theory of evolution. But it was so revolutionary that although he wrote a draft of what became *The Origin of Species*, he never published it. Emma Wedgwood, whom he married soon after his return, was a religious woman who was distressed by his belief that natural selection over billions of years, not a divine creator operating in a few thousand years, had created the world.

DARWIN HEIRLOOMS TRUST

Darwin kept his theory secret for 21 years

Perhaps even more troubling was his fear of the reaction to his theory by fellow scientists and especially by the public. Only when Alfred Russel Wallace, a young naturalist, approached him and proposed a similar idea did he write his famous book. He and Wallace presented their ideas jointly.

This exhibition occurs at a time when some American parents and school boards are debating whether "intelligent design" should be taught alongside evolution. The final section of the show presents well known scientists talking about the importance of Darwin's theory and their personal feelings about whether scientists can hold religious beliefs. (Francis Collins, head of the human genome project, says yes.) This section also includes an explanation of why evolutionary theory can be tested but intelligent design cannot, since it assumes creation by a supernatural being.

Finally, the exhibition reveals evolution at work all around us—a video of *E coli* multiplying with inevitable genetic mutations and an explanation of how random mutations in a virus such as HIV lead to drug resistance.

The exhibition—which will travel to Boston, Chicago, Toronto, and the Natural History Museum in London—is exhaustive, careful, and logical. If it has a failing, it is that it makes the theory of evolution seem so simple and clear, rather than the utterly revolutionary, astounding thunderclap that it was.

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Items reviewed are rated on a 4 star scale
(4=excellent)

DEANIS FINN/AMNH

A test for intelligent design?

The Story of God

BBC 1, 4 to 18 December at 7 pm

Rating: ★★★☆

While the latest exhibition at the American Museum of Natural History in New York explores evolution (*BMJ* 2005;331:1379), several hundred miles away at the start of the US Bible belt some of those who reject Darwin's theory are building a museum of creation. So far creationists have raised \$25m (£14m; €21m) towards the project, which is nearing completion in Petersburg, Kentucky, and which claims to show that the world came into being exactly as told in the book of Genesis. It would not be so worrying if the museum, which bizarrely displays mankind side by side with dinosaurs and includes a tableau titled "Adam names the animals," was intended as a bit of theme-park style fun. But, as UK fertility expert and television presenter Robert Winston tells us in the third and final episode of *The Story of God*, this is serious stuff.

Lord Winston, like the subject of his series, is omniscient and omnipresent in each episode, popping up all over the globe to discuss animism, polytheism, and monotheism in their multiple incarnations. While he takes religion to task for its extremist tendencies (sacrifices, massacres, and suicide bombings), he also acknowledges the real need many people seem to have for its succour. A practising Jew, Winston sees no contradiction between his belief in God and his adherence to scientific principle. Science and religion are united by the principle of uncertainty, he explains.

In the third episode he skilfully and sensitively explores the tensions that have emerged in our post-Enlightenment world as science has increasingly pushed religion to the margins. God has retreated, he says, to become "a god of the gaps," the little spaces that are left after Galileo, Newton, Darwin, and others encroached on what used to be safe religious territory and offered new scientific explanations for natural phenomena. But now religion is fighting back, and scientists, including doctors, are being forced on the defensive.

It was this that took Winston to the United States, and to the Creation Museum. "I admit I was dismayed by what I saw," he says. "The fact that it was being done with such sincerity made it all the worse." Equally worryingly, he tells us that 45% of Ameri-

Comfortable with uncertainty: Robert Winston

cans believe that if Genesis says one thing and if the scientific textbooks say another, Genesis must be right.

Lord Winston has cornered the market in communicating matters of scientific complexity to a lay audience. In this series his scope was broader, and he rose admirably to the challenge. But as he found in Kentucky, it is hard to argue with those who are intent on the literal interpretation of mythological narratives. Citing how comfortable scientists are with the principle of uncertainty, he asks, "Why does faith have to be built on absolute certainty. Isn't faith built in spite of instead of because of it?"

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The Arts in Medical Education: A Practical Guide

Elaine Powley, Roger Higson

Radcliffe, £40, pp 160
ISBN 1 85775 626 6

Rating: ★★★☆

The older I get the more in awe I become of the achievements of scientific medicine. I also have personal reasons to be grateful, as my little Gracie had an atrial septal defect (ASD) and only a few years ago she would have been condemned to a life of progressive disability. But, thanks to the incredible skill and care from Dr Frank Casey and his team at the Royal Hospital for Sick Children in Belfast, she is now as healthy and happy and cheeky as any other 7 year old.

Her ASD was closed by angiography; a simple statement, but just imagine for a moment the number of different advanced technologies employed to make the diagnosis and perform the procedure. Fibre optics, ultrasonics, materials science, and a myriad

others—all these disciplines meshed unerringly together, all products of centuries of methodical experiment laced with occasional flashes of genius, knowledge that has been painstakingly earned, often at the cost of persecution and prejudice. And all to help one little child.

These miracles are now commonplace and so we take them for granted and complain when science doesn't have all the answers. Of course, it is totally our fault for expecting that it should. For most of the patients I see every day in the surgery, cold science and cool reason have only a minor part to play. Science needs a problem to solve; often we do not actually know what the problem is, who actually has the problem, or if any problem actually exists. No clinical textbook is of any use for these indecipherables and imponderables.

We doctors live on the cusp of the great beyond; science takes us only so far, but then the maps stop—"here be dragons," they say, the grey areas of intuition and imagination and feelings. Fortunately these are powerful weapons, and the role of art is to show us how best to employ them. I learnt more about the human mind from Dostoyevsky's *Crime and Punishment* than I did from any psychiatry textbook. We understand human frailty because we also are human and frail, and the art of medicine is to appreciate and respond to these frailties in the right way. Every one of us has suffered, so we can empathise with Van Gogh's self portrait—the artist and the observer and the shared

experience, the doctor and the patient and the mutual understanding.

In contrast to the hard earned truths of scientific medicine, this is all vague and uncertain; art is so nebulous that anyone claiming to be teaching it should probably be hunted down with wild dogs. Pinning it down in some kind of structured straitjacket is almost a contradiction.

But this is exactly what the authors of this book have tried to do. They have devised a teaching primer, "a practical manual for teachers in healthcare," covering, among other things, poetry, prose, music, the visual arts, and nice walks in the country. When I first read the title I had a brief vision of long lines of bluffers who could not get proper jobs using this to give phoney workshops to the gullible and vulnerable.

However, mea culpa, I was agreeably surprised. Even for someone like me who lives so far out in the wilds that cave paintings are considered rather art nouveau, this book was interesting and stimulating, and it does provide a plausible and manageable framework to teach something so intangible, which should prove useful to all medical educators (as long as they can keep the pseuds away). It also includes a dinky little CD to accompany the music section.

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PERSONAL VIEWS

How important are we really?

During a lull in the proceedings in the local out of hours service, a debate arose between me and another 50-something doctor as we awaited our call to action. The debate, if we can stretch the concept of the term, was based on how important we really are as doctors—or not.

I suspect that we both needed to be of a certain age and able to look back on a combined clinical experience of about 60 years. In essence, our debate had all the hallmarks of the raillery of grumpy old men. Nevertheless, it set me thinking. I recalled sitting in a doctor's mess one evening when a medical registrar stormed in after a particularly long outpatient session. She was incandescent with indignity. "That's it. I've had enough. I'm changing to anaesthetics," she spluttered. "Why don't they [patients] do what I tell them to do!"

I remembered having the same thought in 1978 when I started my training in general practice. I recollect the Gestalt-like feeling of having "found" the solution to the patient's problem. The joy of telling them what to do (the arrogance, oh the arrogance of youth!), counterbalanced by the disappointment that not only are they not cured but they didn't take your advice on what to do to help themselves. A young doctor can take only so much of this. Many contemplate training in surgery. (I did.)

If patients are not taking our advice, then what are they doing in between surgery visits? Presumably coping—and probably much better than we imagine, I suspect. The older I get the more I realise how notoriously good doctors are at underestimating people's ability to survive without their ministrations. I began wondering—and reached for my daughter's calculator. How much time do patients spend not seeing doctors?

Forgive my calculations. Harangue me if I'm wrong. But hopefully you'll get my drift. There are 8760 hours a year (525 600 minutes). Patients in the United Kingdom have access to doctors 24 hours a day. Most GP consultations last about 10 minutes.

Most hospital outpatient appointments last about 20 to 60 minutes for initial assessment and 15 minutes for follow-up, plus or minus 60 to 120 minutes waiting for investigations (which I shall ignore). A week in hospital is 168 hours, and so on and so on. What I calculated was:

- If patients see their GP once a year for 10 minutes they spend 99.999809741% of their year not seeing a doctor
- If patients have six 10 minute appointments a year the figure is 99.98858447%
- For patients seeing their doctor on alternate weeks over a year for 10 minutes at a time the figure is 99.95053272%
- Two weeks in hospital: 96.16438356%
- A new hospital referral: 99.96575342%.

If a patient were to spend 10% of a year seeing a doctor they would spend 876 hours a year with the doctor—that's 36.5 days or 1.30357142 months. Oh, the joys of the calculator! As readers will realise I'm neither a statistician nor a politician, but this wee foray into the world of arithmetic has allowed me to recognise some of the pleasure that

academicians derive from manipulating figures. Perhaps the numbers are meaningless, which could be (and often is) said of the statistics that are so frequently (mis)used by politicians and other animals. But look at the figures. Even I, a non-statistician, non-politician, can see clearly what I know to be true: most patients spend most of their time not seeing doctors. They obviously have better things to do.

The moment they leave our surgery they re-enter the real world, a world seldom seen or experienced by doctors, who are cursed to view the world from their medical (dis)advantage point. Few people are simply the sum of the problems they present to us. Our obsession with their problems and vulnerabilities blinds us to their strengths.

Most people cope perfectly well and have more skills, resilience, and strengths than most of us realise.

Let's be honest: we're less important than we like to think. We continue our never ending quest for pathology while conveniently forgetting that a surprisingly large number of cases we see in general practice, clinic, or hospital have little or no organic basis. Curative medicine is peripheral to most people's lives nowadays. However, the growth in preventive medicine threatens to label us all with chronic disease status. No longer are we healthy—now we're all "pre-ill," if you will. Furthermore, preventive medicine raises the spectre of eugenics: how

dreadful it is that people are allowed to eat what they want, drink as much as they like, smoke, have sex, and engage in risky behaviour ("Healthism and eugenics," *BMJ* 2005; 331:411).

The words of that noted neurotic Marcel Proust come to mind: "For each illness that doctors cure with medicine, they provoke ten in healthy people by inoculating them with the virus that is a thousand times more powerful than any microbe: the idea that one is ill" (*The Guermentes Way*).

Are we in danger of becoming specialists who know more and more about medicine and less and less about patients?

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If patients are not taking our advice, then what are they doing in between surgery visits?

Curative medicine is peripheral to most people's lives nowadays

Retraction

The Man Who Shocked the World: The Life and Legacy of Stanley Milgram

We are retracting this article by Raj Persaud (*BMJ* 2005;331:356) owing to unattributed use of text from other published sources.

Hit parade

bmj.com

These articles scored the most hits on the *BMJ*'s website in their first week of publication

NOVEMBER

- 1 **Clinical review: Influenza pandemics and avian flu**
BMJ 2005;331:1066-9
6634 hits
- 2 **Editorial: Metabolic syndrome**
BMJ 2005;331:1153-4
5350 hits
- 3 **Personal view: Is it time to ban dogs as household pets?**
BMJ 2005;331:1278
4758 hits
- 4 **Clinical review: Shoulder pain: diagnosis and management in primary care**
BMJ 2005;331:1124-8
4656 hits
- 5 **Editorial: Extended prescribing by UK nurses and pharmacists**
BMJ 2005;331:1154-5
4601 hits
- 6 **Filler: sword swallowing uncertainties**
BMJ 2005;331:1080
4258 hits
- 7 **Press: Why can't the *Daily Mail* eat humble pie over MMR?**
BMJ 2005;331:1148
4224 hits
- 8 **Editor's choice: Survival of the richest**
BMJ 2005;331 (5 November)
3690 hits
- 9 **Primary care: 10-minute consultation: Snoring**
BMJ 2005;331:1063
3317 hits
- 10 **Paper: Randomised controlled trial of animal facilitated therapy with dolphins in the treatment of depression**
BMJ 2005;331:1231
3231 hits

All articles cited are full text versions.

Osler's bedside library revisited—books for the 21st century

Medical education is, in many ways, incomplete. Although we are taught about the science of medicine, most medical school curriculums lack formal teaching on the humanity of medicine. Ethics, history, and philosophy are not taught formally in many schools. William Osler was one of the earliest to realise this, and in 1904 he proposed a bedside library for medical students that consisted of the Old and New Testaments, Shakespeare, Montaigne, Plutarch's *Lives*, Marcus Aurelius, Epicetus, Thomas Browne's *Religio Medici*, *Don Quixote*, Ralph Waldo Emerson, and Oliver Wendell Holmes's "breakfast table" series.

The reading tastes of people have changed over the years. From time to time other people, all from the West, have attempted to renew the list. We contacted 44 doctors (25 from India and 19 from North America and Europe) for their views on which books were essential reading to make doctors humane and complete. The doctors, who represented different specialties, included some with university attachments and some in private practice, Oslerphiles and others, and some renowned authors or editors. Thirty eight responded positively, and their lists contained from one to 38 books, giving a total of 442 books.

One respondent did not agree with Osler's list and thought it "largely irrelevant to this age and our society" but added that "the concept of doing some general reading every day should be presented to every professional." Another found "medical students ... as diverse as all humanity, and what excites, or bores, one will have the opposite effect on another." Four said that their lists were likely to be affected by mood and time and that were the exercise to be repeated the list would be entirely different.

The respondents chose their books in various ways. Some included only those from their own area of interest (disease and illness in literature), others only edifying literature or only autobiographies. One approach was to choose popular novels and biographies that "would [not] necessarily make a student more humane—but what a slice of life the reader would get." One chose only books "which every thinking person should read and reread: books on ecology, technology, etc, so as to change the world."

We learnt that one person would mourn the loss of her copy of *Alice in Wonderland*, that *Les Miserables* changed one respondent's

A 21st century version of Osler's bedside library?

ent's life, and that *The Citadel* influenced at least two people to become doctors. One respondent believed that "all books changed cognition, in greater or lesser degree." To our delight, six of the lists included a book written by one of the other respondents.

We agree with C P Snow, who believed that "there ought to be a literary component throughout ... medical education"

Books that appeared three times in the respondents' lists were *Moby Dick*, *Middlemarch*, *Pride and Prejudice*, *Don Quixote*, *Meditations* by Marcus Aurelius, *The Adventures of Sherlock Holmes*, *The Final Diagnosis* by Arthur Hailey, Richard Feynmann's *Surely You are Joking, Mr Feynmann*, and (only among the submissions from India) the *Ramayana* and *Mahabharata*. Other authors who appeared three times were George Orwell, Peter Medawar, Richard Asher, and Edward De Bono.

The figure shows our revised bedside library, which is based on the books or authors that appeared most often in the respondents' lists. (A fuller version of the list, including the number of lists in which books or authors appeared and some alternative titles, is on bmj.com, along with our own choices.)

We agree with C P Snow, who believed that "there ought to be a literary component throughout the course of medical education," because doctors "would have been wiser with the elements of a humanist education."

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We thank all the respondents. We also thank Mugdha Thakur and Anand Date for sending relevant literature.

We welcome submissions for the personal view section. These should be no more than 850 words and should be sent electronically via our website. For information on how to submit a personal view online, see <http://bmj.com/cgi/content/full/325/7360/DC1/1>

P+ The full list of books, including rankings, is on bmj.com

Comprehensive ophthalmology at the Last Chance Saloon

Let me let you into a secret. No one is in charge. No one knows what's going on.

I don't know how it is in your specialty, but in mine there is one man at the Department of Health who is supposed to know what's going on. He is a one man band in charge of "optical services." That's 7000 optometrists and 1000 consultant ophthalmologists. My 100 colleagues in paediatric ophthalmology rate a few civil service digits.

The government of the day thinks in soundbites and spin. The soundbite for ophthalmology is waiting lists, cataracts, and private practice. That's not to say that cataracts are not important. The reason cataract surgery is the most commonly performed surgical procedure in the NHS is that it is the commonest cause of blindness worldwide. Unlike in sub-Saharan Africa, in Newcastle corteges of blind people with their hands on the shoulder of the person in front are not a common sight. And waiting lists were a problem that the government paid good money to sort out. And it wasn't the independent sector that did it. Of 301 656 cataract operations done in the United Kingdom last year, only about 10 000 were done in independent sector treatment centres.

But there is more to ophthalmology than cataracts. The health department knows little about services for children with eye disease, services for retinal detachment, corneal transplantation, uveitis, and all the rest. We're quite proud of these services. Ophthalmology has always been quietly in the forefront of medicine. Cataracts were couched by the ancient Egyptians. The first disease in humans in which a genetic linkage was identified was X linked retinitis pigmentosa. The 100th anniversary of the first successful organ transplantation is celebrated this year. You've guessed it: it was a cornea. Diabetic patients used to have their pituitaries removed for retinopathy—but went blind anyway. Lasers and vitrectomy surgery changed all that. The blind schools used to be thriving institutions.

Under the second wave of the independent sector treatment centres programme, primary care trusts will be forced to contract with the centres for thousands of cataract operations and other unspecified surgical procedures and thousands of outpatient appointments. The doctors staffing the centres, from Hungary and South Africa, will, it is hoped, be able to churn through these procedures and appointments free of the tiresome requirements for appraisal, revalidation, and continuing medical education. Optometrists, who have MPs and professional lobbyists among their number, tell the government they can see most of the patients traditionally seen in eye clinics for less money. I wonder.

The effects of these changes are already being felt. New and replacement consultant appointments are on hold, and those appointments that are advertised are for rolling, one year locum contracts. Primary care trusts are telling ophthalmic units to reduce their return outpatients by 50% to 70%. Where these patients will go—and what kind of care they will receive—is anybody's guess. And consultants, who find their units crumbling beneath their feet, have a choice. They can either hold out for retirement or join in with the chaos, banding together in chambers. Ultimately they will become alternative providers themselves and, like dentists before them, contract out of the NHS altogether. And when that happens, although the streets of Newcastle may not feature corteges of the blind, I wish you all luck in finding someone to fix your retinal detachment or your child's glaucoma.

Moorfields Eye Hospital is opening Debenham's style health boutiques (www.guardian.co.uk/uk_news/story/0,1590909,00.htm). Welcome to the brave new world of ophthalmology. I'm off to have my pituitary removed.

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Not a common sight in Newcastle upon Tyne

SOUNDINGS

Lanyards

How many have you got? I've got a tatty white one with my university ID on it, and a bright blue one with the NHS logo that came with my honorary contract. I have a green one from Cathay Pacific that I found in a bag with a pair of woolly socks and a fold-up toothbrush on a long-haul flight (apparently you can attach the toothbrush to the lanyard with a little clip, though I'm not sure why you'd want to). And I've got a whole cat's-cradle of conference ones (Bournemouth 2001, Blackpool 2003) sitting at the back of my knicker drawer waiting for the next clearout.

How do you wear yours? I've never been sufficiently well endowed to tuck it in my cleavage, and letting it hang loose like a garland brings out the dyspraxic in me. In busy clinics I've been known to place my swipe card, rather than the bell or the diaphragm, on a patient's bare chest. So now I tie it through a belt hook in a granny knot, though this is probably against the rules.

Ribbon development

What's your most outrageous one? Last week I was sent two, unsolicited, in the post, one maroon and one purple, with "widening participation" in bold capitals as the text repeat. At more than an inch thick, they are the widest I've ever seen. If I take underprivileged schoolchildren on campus tours, I am apparently required to wear one of these to ensure that they (and I) retain clear focus and orientation on the experience.

What do you hate most about them? The assumption of a greater allegiance to corporate values than you would otherwise have signed up to? The mugshot that makes you look like an identikit reconstruction of an escaped paedophile? Finding that you're sitting in a restaurant with it still round your neck? Or the knowledge that your employer has succumbed to a trend which, like luncheon vouchers and teambuilding awaydays, will in a short space of time be consigned to the scrap heap of passing organisational fads and fashions?

Trisha Greenhalgh *professor of primary health care, University College London*