Book

From the *Bible* to bioterrorism: anthrax through the ages

These days, a casual interest in biology is all it takes to make you a terrorist suspect—as Steve Kurtz, an artist who uses biotechnology in his work, has found out. Kurtz, an associate professor of art at Buffalo University, New York, USA, awoke on May 11 this year to find his wife of 20 years lying dead in the bed next to him, after having a heart attack in the night. When a police team arrived (in response to Kurtz's 911 distress call) they took one look at the biological equipment he uses in his art—including Petri dishes and a DNA sequencer—and called in the Terrorism Task Force. Kurtz is now awaiting the results of a Grand Jury hearing, which will determine whether or not his case will go to trial.

The law invoked to detain Kurtz was the US Patriot Act—an expansion of the 1989 Biological Weapons Anti-Terrorism Act—that was rushed through Congress just 1 month after the September 11 attacks on the USA, when fears of a biological attack were at a high. It grants federal investigators powers to detain anyone they think might be harbouring biological agents. The FBI can monitor phone calls, e-mails, library use, and even the medical records of anyone under suspicion. That such privacy limiting powers have been accepted by Congress is an indication of just how scared the US government is of bioterrorism. But is this threat really more worrying than that of conventional attacks?

In *Spores, Plagues and History: The Story of Anthrax*, Chris Holmes delights in informing us that we should be afraid: very afraid. He describes in gleeful detail the effects of biological agents, and makes much of advances in biotechnology to support an argument that just about anyone with basic laboratory skills can cause a worldwide emergency. But what shines through the scaremongering text is that there is little concrete evidence for this assertion. It is clear that the true potential of bioterrorism is a threat that has yet to emerge.

What sets biological weapons apart from conventional ones is that so much about them is unknown. By contrast with nuclear weapons, for instance, they can be carried across borders in secret, refined in tiny laboratories, and, with only limited funds, sufficiently amplified to be able to cause widespread harm. These attributes make them difficult to detect with conventional surveillance. As a result, it's impossible to quantify their threat. Caution, however, teaches us to expect the worst.

Holmes, a medical epidemiologist and novelist, begins his non-fiction volume by excitedly leading his audience though the newspaper coverage of the US anthrax attacks in October and November, 2001. Of the 22 cases identified, 11 were of inhalational anthrax, and five of these people died. Most victims were directly involved in handling mail and were exposed to spores contained in envelopes sent through the post. The inhalation anthrax cases were the first seen in the USA for 25 years, and sent shivers of fear through the country. But, as the US CDC stated at the time, the attack was mild compared with what could have happened. Health services had been dreading the use of multiple agents and transmission methods, or a drug-resistant organism. But neither of these scenarios occurred. And although shocked, the health services coped.

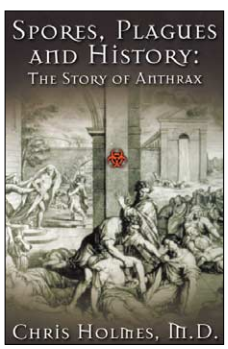
That so few cases of bioterrorism have been reported—Holmes cites just one more example: in Oregon, in 1984, followers of the Bhagwan Shree Rajneesh infected salad bars with salmonella—shows how difficult it is to exploit these agents for malicious purposes. But this fact doesn't seem to bother Holmes. He builds a case for anthrax's involvement in every historical plague "since the time of Moses". He claims that the fifth plague of Egypt described in the *Bible* could, quite plausibly, have been caused by anthrax because it primarily affected livestock; that the death of Alexander the Great may have been a case of inhalation anthrax; and that the Black Death, too, has been mistakenly pinned on *Yersinia pestis*.

Despite these fantastical deviations, Holmes' narrative is light, entertaining, and generally informative. He covers many anthrax-related topics with surprising depth and summarises historical events with clarity. Granted, he includes little that is new; there's nothing here that wasn't in *Germs*, an investigation by three *New York Times* reporters. But Holmes adds an upbeat spin, which makes the book pleasingly easy reading.

A particularly strong achievement, in terms of style, is the section on biological warfare since World War II. Holmes takes well publicised accounts of Japanese germ-warfare activities in China, and re-tells them using fiction-style narration, which creates a context for the facts that is sometimes missing from straight texts. It is easy to see why this heyday of aggressive biological research holds a fascination for bioterror fans. With the world at war, expansive empires such as Japan and Germany commandeered entire villages of people to use as guineapigs in weapons tests. A possible reason why so little progress has been made since then is that experimental subjects are fortunately more difficult to come by these days.

Perhaps the most interesting aspect of the book has little to do with its content. It was published well after Saddam Hussein's regime had been toppled, and in the midst of growing questions about the non-appearance of Iraq's weapons of mass destruction. It is interesting to read the certainty with which Holmes recalls the evidence for Saddam's biological weapons programme. He lists the agents under development, the diseases Saddam was intending to spread, and the trade relations that helped build this arsenal. It's a useful reminder that we really know very little about the potential threat, or lack of it, posed by states suspected of developing bioweapons.

By describing the maze of international treaties to halt proliferation of biological warheads, Holmes highlights (albeit fleetingly) a shocking fact: there is no mechanism to investigate weapons



Spores, Plagues and History: The Story of Anthrax

Chris Holmes. Durban House Publishing, 2003. Pp 227. $15·95. ISBN 1-930754-45-0.

programmes in countries under suspicion. International law is weak because when the 1975 Biological Weapons Convention (BWC) was constructed few thought that such weapons had any military utility. Although the treaty bans development, production, stockpiling, or acquiring biological agents for any non-peaceful purpose, it includes no facility for monitoring or enforcement. By contrast, the Chemical Weapons Convention, finalised in 1993, has more teeth, and funds more than 200 full-time inspectors to do spotchecks.

Holmes reveals that several countries that have signed and ratified the BWC are thought to be harbouring biological weapons programmes. Among them are Libya, North Korea, South Korea, Taiwan, China, Israel, India, Vietnam, and Russia. But with no means to investigate compliance with the convention, suspicions cannot be confirmed.

Moves to strengthen the BWC have long been underway. But in 2001, when amendments were due to be agreed, the US government "indicated that it was unable to support the proposed protocol", and pulled out of discussions. Since then, strengthening activities have been at a standstill as member states try to work out how to proceed.

Holmes' argument culminates not with the conclusion that international law should be strengthened, but that preparedness programmes are essential for protection. The USA has led the way in financing enhancements to national security. But one can't help but wonder how to combat a threat about which nothing is really known.

If Holmes' book teaches us one thing it is that we must stay on our toes. Bioterrorism may not have made an impact so far, but the lightning pace of biotechnological development means that its emergence is almost guaranteed. And unless national governments commit to enhancing legislative controls, we will have little protection when the threat becomes real.

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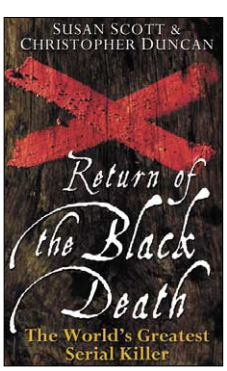
In brief



Return of the Black Death: The World's Greatest Serial Killer

Susan Scott, Christopher Duncan. John Wiley and Sons, 2004. Pp 318. $27·95. ISBN 0-470-09000-6.

Book Rethinking a killer's history

I only really enjoy a good horror novel when I can switch off the light knowing that the plot is mere fiction. *Return of the Black Death* offers everything my favourite genre might require: people buried alive, necrophilia, a truly horrendous massacre. And it can be found in the non-fiction section of bookshops.

Using documents of unimaginably diverse provenance, Susan Scott and Christopher Duncan assume the role of "plague detectives". But what is there to detect? Everyone knows the story: bubonic plague, rats, fleas, buboes, that sort of thing. Well, history teachers should start rewriting that lesson, as the first two-thirds of this not-insubstantial volume are devoted to debunking the idea that the Black Death was bubonic plague, instead suggesting that it was a viral infection.

The authors obviously enjoy a bit of academic-bashing: their bracketed snipes at those who espouse the bubonic plague theory are very amusing. Thanks on the one hand to its humour, accessible style, and gripping disgust-factor, and on the other to its thorough and varied sourcing, this book manages to belong in both the history text and easy-reading camps—a rare achievement.

So it is well written. But why should it concern us now? The clever (read worrying) link is that bioterrorists could theoretically manufacture a virus as lethal as that which once killed half the western world. With global travel and densely populated cities, the effects could be apocalyptic, but I'm not running for my gas mask yet. Scott and Duncan draw reassurance from the handling of the SARS epidemic, and recommend urgent measures for disease control teams. Government officials would do well to read this book. But probably not before bedtime.

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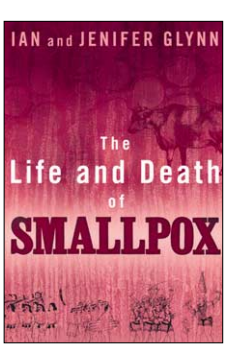

The Life and Death of Smallpox

Ian Glynn, Jenifer Glynn. Profile Books, 2004. Pp 288. £17·99. ISBN 1-86197-608-9.

Book Gone, but not forgotten

The story of smallpox, from ancient pestilence to eradication at the hands of WHO, is one of the most dramatic that medicine has to offer. Egyptian mummies and smallpox gods, the death of emperors and biological warfare—Ian and Jenifer Glynn offer us all this and more. They begin the tale with a cluttered account of reports of smallpox-like diseases in Asia as far back as 1000 BCE. They move swiftly through the centuries as physicians vainly try blood-letting, golden needles, and red material to treat "the most terrible of all the ministers of death".

Their writing flows more easily when the story coalesces into a single narrative thread—for example, when the folk remedy of inoculation gained wider support after the 1720s and humanity finally had something to offer in the way of self-defence. The centre of the book is devoted to technical improvements in vaccination in the 19th and 20th centuries. From there, the authors chart WHO's heroic efforts to eradicate the virus from endemic regions, through various near-disasters that foreshadow the current situation with poliomyelitis vaccination in Africa, to ultimate success with the last naturally occurring case in 1977. And of course, these being the times they are, the authors end their book with a chapter on the cheery prospect of bioterrorism.

The Glynns recount their tale with wit and an eye for the telling anecdote. Although at times the scattered nature of the material resists their attempts to create narrative, they leave us with a satisfying sense of historical progress having been made, a journey from ignorance to understanding.

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