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Oil on the waters of the Gulf of Mexico could alter gene expression in fish and other marine organisms for years to come.

ENERGY

Plumbing the depths

A chronicle of events preceding the Deepwater Horizon oil spill in the Gulf of Mexico has a thriller-like edge, finds **Amanda Mascarelli**.

Many people have wondered how the Deepwater Horizon oil spill of 2010 happened, given the technological know-how and industry back-up systems in place to prevent such a catastrophe. In *Run To Failure*, journalist Abraham Lustgarten explains how, in his view, the blowout was not only predictable, but inevitable. The book is one of the few that focus on the roots of the disaster — and is refreshingly different from the many looking mainly at the immediate tragedy and its aftermath.

Run to Failure reads like a thriller, complete with whistle-blowers and double agents. On the basis of meticulous investigative reporting during and after the spill, analysis of BP documents and e-mails, and interviews with current and former industry insiders, Lustgarten paints a picture of neglect, hollow proclamations about safety and environmental stewardship, and draconian cost-trimming going back two decades. That history, he believes, helped to pave the way to the disaster.

The Gulf of Mexico has long been seen

as the frontier of oil exploration. In the mid-1990s, most of the oil extracted in the region came from shallow waters. But deep-water wells are much more bountiful. To push into the depths, BP invested tens of billions of dollars in the Gulf, says Lustgarten, and sent in its most technologically advanced drilling rigs and resources. However, to subsidize its investment, Lustgarten alleges, BP made cuts elsewhere, including at its ageing US refineries and on the Alaska North Slope — which had been the source of much of BP's oil production since the 1970s, but where reserves were dwindling.

The oil industry as a whole has a patchy record on safety and the environment, and



Run To Failure: BP and the Making of the Deepwater Horizon Disaster

ABRAHAM LUSTGARTEN
W. W. Norton: 2012.
400 pp. \$27.95,
£19.99

Lustgarten reveals holes in BP's. He points to internal and government reports that he says corroborate his claims that BP's cuts led to spills, injuries and deaths. Before Deepwater Horizon, the company twice faced potential debarment from US government contracts, and was convicted of three federal crimes. An analysis by ProPublica, the investigative-journalism newsroom in New York for which Lustgarten reports, revealed that between 1990 and 2009, the US Occupational Safety and Health Administration recorded 518 violations at BP refineries — several times the numbers for comparable companies.

Lustgarten argues that a lax approach to safety permeated BP's actions in the Gulf. The company's spill-preparedness plan seemed to downplay the difficulties of drilling in deep waters, despite fears in the industry that the oil field's unusual geology and extreme pressures and temperatures posed exceptional challenges. In 2000, the

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US Minerals Management Service (renamed the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) after the spill), prepared an environmental impact study for Shell, which was also issued as an industry standard. The report warned that a blown-out well in the deep waters of the Gulf might be uncontrollable, and could take months to contain. And BP's senior vice-president for drilling operations in the Gulf resigned from the company months before the spill because he did not believe that BP was committed to safety, according to papers filed in a lawsuit last year.

A BOEMRE report found that Transocean (which owned the drilling rig) and Halliburton (which injected the well's cement casing) were partly culpable for the events that led to the disaster. Ultimately, however, the agency found that BP overrode standard industry practices and made judgement calls that led unintentionally to the blowout.

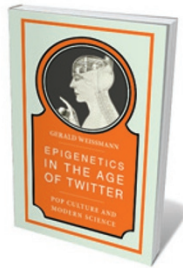
Lustgarten delves into the Gulf spill itself in only the last two chapters of his book, and handles subsequent events in a brief postscript. That has drawbacks as well as strengths. The environmental costs of the spill and the ongoing scientific inquiries are not explored. The jury is still out on the extent of the environmental damage; for example, it is unclear how marine organisms exposed to oil and dispersants during vulnerable embryonic and larval stages will be affected. Even trace levels of crude oil can alter gene expression in fish, and the widespread, unprecedented use of dispersants below the sea surface may have increased the oil's toxicity to marine organisms. Some scientists say that the full effects will not be understood for years.

Lustgarten also reflects little on the ramifications for public perception of the oil industry. But he does ask why the US government allowed BP to lead the push into deep-water oil exploration. He suggests that the US citizenry's voracious appetite for energy and complacent assumptions about government oversight make it partially culpable.

He ends by noting that little has changed since the disaster. BP's Alaska pipelines are still deteriorating, he suggests. And in the Gulf, drilling resumed in October 2010, after a five-month moratorium on new leases in deep water. US President Barack Obama pledged in his State of the Union address in January to open more than 75% of offshore oil and gas resources to exploration, and environmentalists say that the industry is not making enough progress on safety to merit public trust. It seems that history may well be destined to repeat itself. ■

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Books in brief



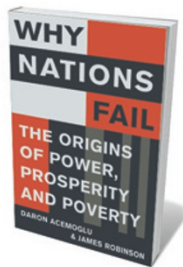
Epigenetics in the Age of Twitter: Pop Culture and Modern Science
Gerald Weissmann BELLEVUE 300 pp. \$18.95 (2012)

A crackle of erudite energy leaps from this lively commingling of art, culture and science. In 28 essays, biologist Gerald Weissmann explores the complex territory of modern biology and epigenetics in this era of social media. In each, Weissmann finds links between research and elements of history and pop culture, which play off each other to illuminating effect. So US politician Sarah Palin pops up in a discussion of 'Marie Antoinette syndrome', in which hair allegedly whitens overnight; and the 'melt-down' of the mythical Icarus meets the nuclear version at the Fukushima Daiichi power plant in Japan.



The Idea Factory: Bell Labs and the Great Age of American Innovation
Jon Gertner PENGUIN 432 pp. \$29.95 (2012)

Lasers, solar cells, prototype mobile phones: from the late 1930s to the mid-1970s, Bell Laboratories — the research arm of US telecommunications giant AT&T — was a powerhouse of innovation. The inventions and ideas emanating from pioneers such as Claude Shannon (information theory) and William Shockley (the transistor) have transformed society. Writer Jon Gertner interviewed employees and researched oral histories to tease out their stories and analyse the organizational ethos that made their achievements possible.



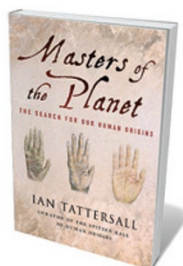
Why Nations Fail: The Origins of Power, Prosperity and Poverty
Daron Acemoglu and James Robinson CROWN/PROFILE 464 pp. \$30/£25 (2012)

Why is the average US citizen 40 times as prosperous as his or her counterpart in Mali? The cause of such inequity, say economists Daron Acemoglu and James Robinson, is politics. With 15 years of research under their belts, the authors argue that democratized economies and transparent, accountable and responsive governments are the roots of prosperity. Evidence from ancient Rome, the Soviet Union, Europe and the United States makes a compelling case for the power of inclusive institutions to fuel sustainable growth.



The Great Animal Orchestra: Finding the Origins of Music in the World's Wild Places
Bernie Krause LITTLE, BROWN/PROFILE 288 pp. \$26.99/£12.99 (2012)

Earth, says musician and sound recordist Bernie Krause, pulsates with the clicks, purrs and shrieks of creatures from the yellow-rumped warbler to the snapping shrimp (five times louder than the Grateful Dead, he tells us). Forty years travelling the world to record more than 15,000 species have given Krause a rare insight into the importance of 'biophony': the layered, organized soundscapes of nature. Its disappearance through habitat and species loss is as harmful for human culture and well-being, he says, as it is for ecosystems.



Masters of the Planet: The Search for Our Human Origins
Ian Tattersall PALGRAVE MACMILLAN 288 pp. £16.99 (2012)

In this succinct and masterful palaeo-chronicle, Ian Tattersall traces how *Homo sapiens* ended up as the world's sole hominin. Tattersall, co-curator of the Spitzer Hall of Human Origins at the American Museum of Natural History in New York, takes us from 6 million years ago in Africa's Rift Valley to the present day. On the way, he brilliantly describes humanity's cousins and rivals, from apes to the other hominins that competed with *H. sapiens* as, tens of thousands of years ago, our ancestors made the cognitive leap to symbolic thought.