



## 50 Years Ago

*The Birds of Borneo.* By Bertram E. Smythies — This is a very unusual bird book. The main body of the work (about 460 pages) consists of a detailed systematic account of all the 549 species of birds that have been found in Borneo ... But it is the hundred pages that precede this excellent treatise that put this book in a class apart ... Lord Medway's chapter gives a fascinating account of the cave swiftlets, the saliva-built nests of which are the edible birds' nests of commerce, and which echo-navigate in the darkness of the caves where millions congregate to breed. [Mr. Tom] Harrison remarks that Governments "by some complicated zoogeography, claim the guano as a mineral and allow extraction (for fertilizer) under licence. Thus what comes out of the swiftlets' mouth as spit is succinctly dissociated from what comes out of the other end".

From *Nature* 4 March 1961

## 100 Years Ago

In the Prussian Diet of February 18, Prof. Kirchner ... is reported to have said that, during the last few weeks, three cases of plague had occurred in London, the infection being conveyed by ship-rats. This statement has been officially denied ... With regard to rat infection, three rats which had probably escaped from a ship were examined at the London Docks in November last, and two of them were found to be suffering from plague, but at present there is no evidence of the existence of a plague epizootic among rats in the London Docks area. The destruction of rats ... is still carried out at the London Docks, and careful precautions are being taken to prevent rats in ships from infected ports from escaping ashore, and possibly initiating an epizootic among the shore rats.

From *Nature* 2 March 1911

possibility, the Septembers of 2008 and 2009 instead saw successively higher sea-ice extent.

One interpretation of this apparent short-term recovery is that the spring ice cover needs further thinning for a tipping point to occur<sup>8</sup>. An alternative is that there is no true tipping point. Tietsche *et al.*<sup>4</sup> do not argue against the mainstream view that a seasonally ice-free Arctic Ocean is inevitable if greenhouse-gas concentrations continue to rise. The issue is how we get there — with or without a tipping point.

Tietsche and colleagues performed a series of reference simulation runs with a global climate model driven by the middle-of-the-road Intergovernmental Panel on Climate Change A1B greenhouse-gas emissions scenario for the twenty-first century. In these simulations, the September ice cover typically disappears by the year 2070 and beyond. The authors then performed perturbation runs, whereby every 20 years they artificially removed the entire sea-ice cover on 1 July. Instead of maintaining ice-free conditions, ice extent in September recovered to values typical of the reference runs within a couple of years, even in the later parts of the century.

The crux is winter. Initially, with ice-free summers, the ocean picks up a great deal of extra heat, delaying autumn ice growth. If there was a tipping point, this summer heat gain would lead to ice cover the following spring being thin enough to completely melt out over the following summer. Instead, so much ocean heat is lost during the darkness of the polar winter that enough ice grows to survive the next summer's melt.

Although the paper by Tietsche and colleagues<sup>4</sup> brings a more optimistic view of the Arctic's future, the troubling interpretation from other recent modelling studies is that periods of rapid twenty-first-century sea-ice loss, hastening the evolution to ice-free summers, don't need to be preceded by a critical threshold of sea-ice thickness, greenhouse-gas concentration or combination of factors that lie at the heart of the tipping-point argument<sup>5</sup>. As we move through the coming decades and the climate warms, the ice cover will simply become more vulnerable to triggers that cause rapid loss events. So although the tipping-point argument can perhaps be laid to rest, we may nevertheless be looking at ice-free summers only a few decades from now. ■

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### MOLECULAR BIOLOGY

## The expanding arena of DNA repair

**The protein Sae2 mediates the repair of double-strand breaks in DNA. It emerges that Sae2 activity is controlled by both its modification with acetyl groups and its degradation by the process of autophagy.** SEE ARTICLE P.74

CATHERINE J. POTENSKI & HANNAH L. KLEIN

Cells use myriad ways to regulate the complex processes involved in their function. To control protein activity and stability, for example, an oft-used mechanism is post-translational modification of the protein. On page 74 of this issue, Robert *et al.*<sup>1</sup> report one such modification that links the seemingly unrelated processes of DNA-damage repair and autophagy. Their observations simultaneously highlight the depth of cellular ingenuity and the immense

interconnectedness of biological pathways.

The authors began by examining the effect of a specific post-translational modification — protein acetylation, in which an acetyl group is added to a protein. They used the drug valproic acid (VPA) to inhibit histone deacetylase (HDAC) enzymes, thereby causing hyperacetylation of histone proteins and reduced HDAC activity<sup>2</sup>. This treatment had no effect on cells, but after exposure to various DNA-damaging agents, the apparently normal VPA-treated cells were unable to activate the typical response to DNA damage.