

The x-change, Tuesday 8th September 2009

Speakers:

Dr Tamsin Gray, British Antarctic Survey

Dr Alex Murphy, University of Edinburgh

Dr Ted Nield, Geological Society of London

Dr Maria McNamara, University College Dublin

Professor John Lucas, Rothamsted Research

Host: Sue Nelson



The first speaker on the second x-change of the 2009 Festival was Antarctic Meteorologist, Dr Tamsin Gray. She told us about the workshops she's been running for children at the Festival: looking at the challenges faced by scientists living in Antarctica and designing Antarctic bases. Tamsin spends up to 18 months at a time in Antarctica, for ten months she is completely isolated with only 18 other people. The researchers are in darkness for more than three months and the doctor insists that they sit in front of light boxes every morning at 8.30am. Tamsin explained that they had to be careful not to get frostbite; she has had frost nip before, but they are learning how better to prevent it. She expressed how amazing it was to be one of the few people to have seen emperor penguin chicks in the wild. Tamsin also taught us how cold it needs to be for your tongue to stick to a metal pole and that hard cheeses like cheddar do not defrost well.

Next was Dr Alex Murphy, an expert in dark matter who explained that astronomers found that "nothing works as it should do" according to our current models, but that adding in dark matter would solve these problems. Alex told us that dark matter particles haven't been detected yet because detectors are not sensitive enough, but with technological advances being made, we should have the tools to detect dark matter within the next 2-5 years.

Dr Ted Nield discussed a matter that is perhaps at the heart of the Festival; the two cultures – scientific and literary minds. The audience happily got involved debating if this is still relevant and complaining that the literary types do not embrace science compared to scientists often taking an interest in the arts. Ted pointed out that the arts exist to be appealing and entertaining; science does not – we have to make it accessible. Ted ended on an interesting statistic: in the UK more people are members of badminton clubs than have a science degree! His message? Scientists: get out more.

Charles Lyell award lecturer Dr Maria McNamara told us about her unusual approach to palaeontology – she doesn't look for fossils, she makes them. The weird fossil record of birds often has skeletons with missing limbs and heads. Maria watches birds decay in the lab and found that her birds were not losing their wings – a mat of bacteria and fungi were forming around the bodies. Maria demonstrated this with the help of a volunteer from the audience – Susannah Fleming – and a roll of cling film. When wrapped up Maria asked Susannah how easy it would be for her wings to fall off. "Rather difficult" was the reply.

Professor John Lucas wrapped up the evening with the arms race between agriculture and pests. Although we are unlikely to win this war, we can get ahead of the pests through science, for example making plants produce aphid pheromones to repel insects. An audience member suggested that disposing of one pest would leave the niche open for another. John agreed that this was certainly possible and a reason the arms race continues.

In addition to our speakers, we again had lively two-minute segments from four *perspectives* students: Chris Jones imagined us all as insects to describe his work on pesticides. Karen Weynberg talked about marine viruses and their benefits in driving evolution. Carl Lewis managed to make Humber Estuary management entertaining with his human model of the estuary. And Natasha Fox encouraged us to come along to *perspectives* to see how PhD students are spending our money, including her work designing lasers.