re:views

The clue's in the glue

High temperature superconductors are materials that can conduct electricity across huge distances without losing any energy. They have enormous potential in many areas of technology, but there is still controversy over what actually causes superconductivity. It occurs when electrons in the metal atoms pair up to form 'Cooper pairs'. But what is it that holds them together? A team led by Professor **Stephen Hayden** (Physics) observed evidence of what might be the 'glue' (*Nature,* 3 June 2004).

"Our results suggest that the glue may be due to the very weak magnetism of the electrons in the copper atoms of the superconductor. Thus the Cooper pairs are bound together by a sort of magnetic glue." **Stephen Hayden**

Something fishy in the plant world

Eating oily fish is encouraged as part of a healthy diet as they are rich in polyunsaturated fatty acids, such as omega-3. However, the benefits of these fatty acids have to be balanced against the possibility that the fish may be contaminated with heavy metals and dioxins. By adding three genes to the genome of thale cress, Dr **Baoxiu Qi** and Dr **Tom Fraser** (Biological Sciences), have taken the first steps towards producing a pure source of these fats. They produced plants with a substantial content of two fatty acids, both of which are sold as dietary supplements. Before exploitating these results it will be necessary to replicate the work in a crop plant such as linseed (*Nature Biotechnology,* 16 May 2004).

Upland greening

A unique assemblage of giant fossil trees has been found in 300-million-year-old rocks in Newfoundland, by Dr **Howard Falcon-Lang** (Earth Sciences). The fossilised trees represent the oldest upland forests ever documented. Because vegetation growing at high altitudes is rarely preserved as fossils, the formation of upland forests has long been the subject of great controversy. Knowing when this happened is important because forests accelerate the rate at which rock is weathered, which in turn removes huge amounts of carbon dioxide from the atmosphere. This causes global cooling – a reverse of the greenhouse effect (*Geology,* May 2004).

Howard Falcon-Lang

A fossilised tree, 300 million years old

"The timing of upland 'greening' has major implications for understanding global temperatures in the past, and will help refine models of present-day climate change." **Howard Falcon-Lang**

Those confounded vitamins

Eating large amounts of antioxidant vitamins (A, C and E) is unlikely to prevent heart disease or cancer. Dr **Debbie Lawlor** and colleagues in Social Medicine reviewed previous studies and undertook new research. They found that individuals who have diets rich in these vitamins are less likely to have lived in deprived social circumstances, less likely to have smoked, less likely to be obese, and more likely to be physically active. It is these factors, rather than the vitamins, that protect individuals from disease (*The Lancet,* 21 May 2004).

"People should eat a healthy diet with plenty of fruit and vegetables, but there is no evidence that taking vitamin supplements will prevent heart disease or cancer." **Debbie Lawlor**

Co-operation through diversity

The Prisoner's Dilemma is a game between two players in which each can either co-operate or defect, ie exploit the other's contribution. In game theory defection is the best response to any action by the opponent, so in a single game the solution is for each player to defect – despite the fact that if both co-operated they would both do better. Because of these properties, the Prisoner's Dilemma has become the standard paradigm for investigating the evolution of co-operation. Professors **John McNamara** (Mathematics) and **Alasdair Houston** (Biological Sciences) considered a situation where the game is played repeatedly. There was a maximum possible number of rounds, known to both players, and they only proceeded to the next round if both co-operated. Their model showed that in a population in which mutation maintained a diversity of personality types, high levels of co-operation evolved. Thus a diversity of personality types is of central importance to the evolution of co-operation (*Nature,* 15 April 2004).

and *re*:wards

Two scientists at the University of Bristol have achieved the distinction of being elected Fellows of the Royal Society. **Malcolm Brown,** Professor of Anatomy and Cognitive Neuroscience, is distinguished for his electrophysiological studies into the neural basis of learning and memory. **Stephen Halford,** Professor of Biochemistry, showed how restriction enzymes work. Understanding these enzymes has revolutionised the life sciences.

Three academics have also been honoured in the Queen's Birthday Honours list. **Joe McGeehan,** Professor of Communications Engineering and Director of the Centre of Communications Research, has been awarded a CBE. Dr **Vincent Smith,** Reader in Physics, has been awarded an MBE, and **Linda Ward,** Professor of Disability and Social Policy and Director of the Norah Fry Research Centre, has been awarded an OBE. ■