

Science update

Recent news from the world of science

David Burges

'Evolution' in reverse

THE THEORY of evolution is today accepted as proven, and for many of its protagonists the position of God as Almighty Creator has been eliminated. A classic instance of evolution mentioned in many texts on the subject, and seminal in the development of Charles Darwin's theory of evolution by natural selection, is the case of the group of finches, found in the Galapagos Islands, that now bear his name. As Darwin travelled around the islands in 1835 he observed that the finches, small birds with dull grey plumage, showed variations, particularly in beak size, from island to island. Upon returning to England, Darwin was astonished when the Zoological Society's taxidermist, John Gould, identified no fewer than *thirteen* different species among his Galapagos specimens.¹

But this raises the question of what constitutes a species and what the boundaries are between different species. The generally accepted definition of a species is of a group whose members can interbreed and produce fertile offspring, and are isolated from other such groups. In practice, animals and plants from different species do frequently interbreed, the resulting offspring being referred to as hybrids, which are deemed to be sterile. Familiar examples are the mule and the hinny, the offspring of a horse and donkey. Yet a few cases of hinnies (offspring of a male horse and



A bay on one of the Galapagos islands.

female donkey) bearing young have been reported,² suggesting that the barriers between closely related species are often more imagined than real.

So are Darwin's finches indeed separate species, which have evolved from a common ancestral species through being isolated on different islands, as Darwin claimed? Field workers in the Galapagos have reported many examples of finches of 'different' species successfully mating and producing fertile 'hybrids',³ suggesting that the species distinctions are largely illusory.

Now scientists are lamenting that environmental pressures in the islands, particularly due to increased tourism and the introduction of alien species such as rats and goats, are forcing evolution into reverse, collapsing recently formed 'species' back

into a single one!⁴ They seem unaware that these observations undermine the very idea of natural selection as a process for producing new species. The supposed 'new species' in this case can surely be viewed as genetic variations within a single species, imparted by the Creator to allow the offspring to adapt to varying environmental conditions and food supplies. Yet another of the classical examples of evolu-

1. Blackmore and Page, *Evolution the Great Debate*, Lion Publishing, 1989, p. 72.
2. Richard Milton, *Shattering the Myths of Darwinism*, US Edition, 1997, pp. 144-5.
3. *Ibid.*, p. 149.
4. Bob Holmes, "When evolution runs backwards", *New Scientist*, 20 May 2006, p. 18; Henry Nicholls, "Trouble in Darwin's paradise", *New Scientist*, 14 Oct. 2006, p. 8.

tion is collapsing like a pricked balloon!

Spider with an amazing brain

THE extraordinary 'mental' abilities of insects are constantly causing surprises to scientists studying their behaviour. The honeybee, with its complex 'waggle dance' for communicating to other bees the distance and direction of nectar sources, is a well-known example.⁵ Jumping spiders of the *Portia* genus, found across Africa, Asia and Australia, are becoming the objects of much study by animal cognition researchers because of the remarkable powers they demonstrate to observe, plan and execute strategies for capturing their prey, other spiders.⁶

Unlike most jumping spiders, which prey on insects, *Portia* uses deception and mimicry to catch and eat other spiders, up to twice its own size. The mimicry is of two kinds. First, its appearance—ragged, hairy and drab—resembles a fragment of leaf litter, providing camouflage against other jumping spiders that have good vision. This way it can get very close and kill the other spider. Second, it shows a kind of behavioural mimicry; *Portia* enters a spider's web and creeps up on its victim almost imperceptibly. It then taps out a rhythm on the web to imitate a captured insect. Then, when the resident spider approaches to investigate, *Portia* moves in for the kill.

If it has encountered the species of the resident spider before, it knows what rhythm to use, itself a remarkable ability; but when it encounters a new species it tries different tapping signals by trial and error. Should one signal elicit a response from

the victim, *Portia* will focus on that. One species, *Portia fimbriata*, has been observed to perform vibratory behaviour for three days until the victim eventually decided to investigate.

But the feature that is exciting most interest is *Portia's* ability to plot and memorise a path through twigs and branches to its victim. From a safe distance of about half a metre away, it sits scanning its intended victim for up to an hour, systematically building up an image of the scene. It then has to work out the best route to take, and rely on memory to follow the correct path to its prey. *Portia* may take several hours to reach the right spot, losing sight of its prey for long periods. This is a task which would be very difficult for a rat or monkey, yet *Portia* spiders succeed more often than not. Laboratory tests with wire mazes have confirmed their extraordinary ability to plan and execute complicated stratagems in order to achieve a kill.

All of this is achieved with a brain of minute size. It is estimated that *Portia* has only around 600,000 brain cells or neurons,

midway between the 250,000 of a housefly and 1 million of a honeybee. This compares with around 70 million neurons in a mouse and 100 billion in the human brain. Nevertheless, to the surprise of researchers, *Portia's* abilities seem to extend well beyond simple hard-wired reflexes, apparently demonstrating reasoning powers and memory characteristics of much more advanced animals. This makes it all the more unlikely that such aptitudes could have arisen by natural selection, and signals the involvement of the Creator Himself.

Warm flowers attract the bees

WE are all familiar with the beauty of brightly coloured flowers, commended by the Lord Jesus Christ as exceeding even Solomon in their glory (Mt.

5. See "[The Honeybee—an example of the Creator's genius](#)", *Testimony*, May 2001, p. 214.

6. John McCrone, "Smarter than the average bug", *New Scientist*, 27 May 2006, p. 37.

Bumble bee on Echinacea purpurea.



Picture: Tony Benson

6:28,29). Their practical function, of course, is to attract pollinating insects, especially bees. We may, however, be unaware that many flowers are warm, generating their own heat. These 'thermogenic' flowers, particularly the lotus, many species of arum lilies, magnolias, and cycads, are able to maintain their temperatures up to 35°C above the surroundings.⁷

For example, in Brazil, the flower of the arum lily *Philodendron selloum* is capable of warming to over 40°C at air temperatures close to freezing. Skunk cabbage, *Symplocarpus foetidus*, in northeastern USA and Canada, can maintain temperatures above 15°C when the air temperature drops to -15°C, and it often melts the snow around the plant.

These examples all belong to groups of seed plants with large, fleshy floral structures that are associated with beetle, bee or fly pollinators. Heat production is thought to enhance the production and dispersal of the floral scents that make the plants more attractive, and in some cases it may prevent freezing of the plant. In addition it seems to act as a reward for the pollinators. In thermogenic plants, the male pollen-producing stamens mature around a day before the female stigma.⁸ The warmth of the flower encourages insects, often beetles, to hang around in order to rub pollen collected from other flowers onto the ripe female parts. In the Amazon water lily, the reproductive chamber stays hot for at least a day, and the beetles even take advantage of the warm environment to mate themselves!

Recent laboratory research using bumblebees and artificial flowers with warmed nectar has shown that the bees prefer to

visit warm flowers, and can learn to associate petal colour with the blooms having the highest temperatures.⁹ Bees require a body temperature of 30°C in order to fly, and so on cold days seeking out flowers with warmer nectar gives them a significant saving in energy output.

Remarkably, it appears that small cone-shaped cells on the surface of eighty per cent of all flower species, whose function has been little understood until now, act as lenses to focus light into the parts of cells containing the colouring pigment, thus raising their temperature. So even the most familiar garden flowers have a passive ability to warm up. How wonderfully these features of plants are arranged to maximise their attractiveness to both insect and man, demonstrating the skill and foresight of the Great Creator!

Inheritance becomes even more complex

IT HAS been accepted for more than a hundred years that the patterns of inherited characteristics in all plants and animals are governed by a set of laws published in 1865 by an Austrian monk, Gregor Mendel. Mendel spent many years of painstaking research, breeding and cross-breeding hybrids from thirty thousand pea plants, to establish his laws, and they have become a cornerstone of modern biology.

They state, for instance, that the characteristics of offspring are dictated by the combination of so-called dominant and recessive factors (now called genes) inherited from the parents. Thus the height of garden peas is controlled by two forms of a gene, tall (T) and dwarf (t). A pea plant with two copies of

T, one from each parent, will be tall, and correspondingly one with two copies of t will be small. A plant with a copy of each (Tt), however, will actually be tall, because T is a dominant gene and t is recessive.

Since Mendel's time, scientists have been able to elucidate the mechanisms by which these factors operate. The genes are now known to be sections of the genetic material DNA which carry the code for the production of particular proteins in the cell. Currently, however, researchers are beginning to find cases where Mendel's laws are violated,¹⁰ and it is believed that in some cases a related type of molecule, RNA, is responsible. RNA acts as the messenger in the cell, copying active sections of DNA and carrying the coded information out of the cell nucleus to the region of the cell where proteins are manufactured.

Recent experiments with specially bred laboratory mice have demonstrated that offspring with two *recessive* genes for tail colour still show the colour due to the *dominant* gene, even though it is not present. This is being referred to as an 'epigenetic' effect (meaning 'above' or 'in addition to' genes). The sperm of the male mice has unexpectedly been found to contain RNA as well as DNA, and it is believed

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7. Roger S. Seymour, "Temperature Regulation by Thermogenic Flowers", Plant Physiology Online; <http://3e.plantphys.net/article.php?ch=e8id=126>.
 8. "Hot flowers", *New Scientist*, 14 Oct. 2006, p. 62.
 9. Mark Kinver, "Bees get a buzz from warm flowers", BBC On-Line News Sci/Tech Section, 6 Aug. 2006, citing work published in *Nature*.
 10. Rowan Hooper, "Mendel would turn in his grave", *New Scientist*, 27 May 2006, p. 16.

that in some way this affects the way the tail colour gene operates.

These epigenetic effects are undermining the 'selfish gene' concept propounded by Richard Dawkins, which has dominated thinking about inheritance for the past thirty years. That concept asserts that the fundamental unit of heredity is the gene alone, and that reproduction has the sole purpose of perpetuating the genes.

Yet studies have shown, for instance, that an initial exposure to two pesticides reduced sperm counts in *four* subsequent

generations of male rats, and that smoking in early life can affect the health, not only of the smoker, but of sons and grandsons as well. Some researchers are even using the terminology of the long-dismissed ideas of the eighteenth-century naturalist, Jean-Baptiste de Lamarck, that parents can pass on "acquired characteristics" to their offspring.¹¹

The truth is that, as each generation becomes convinced it has revealed the definitive description of how living things work, new facts emerge which demonstrate an even deeper

level of complexity. The works of the Creator are endlessly marvellous, and repeatedly illustrate the truth of the inspired words of Solomon, that "He hath made every thing beautiful in his time: also He hath set the world in their heart, so that no man can find out the work that God maketh from the beginning to the end" (Eccl. 3:11).

11. Rowan Hooper, "Inheriting a heresy", reporting on a discussion meeting, "Beyond the Selfish Gene: Evolution for the 21st Century", London, 15 Feb. 2006; *New Scientist*, 4 Mar. 2006, p. 37.

Belief matters

Ryan Mutter

Convincing people of the importance of right beliefs is a difficult thing in this age. One approach is to go to the book of Revelation and show that God will judge individuals and systems that depart from the Truth He has revealed.

HAVE YOU EVER experienced this? You are having a terrific conversation about the Truth with an interested friend. You show him a really great verse. He seems totally convinced of what you are saying. You start getting excited; you have visions of him being baptized. But then your hopes are dashed when he smiles and says, "But God doesn't really care about what you believe".

Convincing people that many of the beliefs they have been taught are not supported by the Bible has become easier because so few Christians actually know how to explain their faith from the pages of Scripture. Many churches simply do not emphasise that sort of thing. They are turning away from specific teachings and are instead saying that God does not care what we believe. So you can, for example, show someone that the reward of the righteous is on earth and not in heaven, and they thank you very nicely for sharing this, but they do not really care. They are

quick to turn to passages such as John 3:16: "For God so loved the world, that He gave His only begotten Son, that whosoever believeth in him should not perish, but have everlasting life". They claim that all that people need to do is to confess that Jesus died for them and they will be saved. Everything else is essentially irrelevant.

That teaching is, of course, a complete falsehood. It is also one of the most difficult errors of modern Christendom to overcome. Unfortunately it has kept a lot of people from learning the Truth. Is there anywhere we can go to show people that God actually cares about what we believe? The book of Revelation makes the point powerfully that what we believe matters. In fact the theme of 'belief matters' appears over and over again in the book. The point is made in a variety of ways to drive the lesson home.

Judgement on false teachers

When we think of the book of Revelation, what do we think of? A lot of people think of judgements. People in the world certainly pick up on that aspect of the Apocalypse, as indicated by the number of movies about the world coming to an end and so forth that have the word 'Apoca-