

protests against Roman dogma and power, and many of those who did so lost their liberty or life (see page 7 of the second edition of *The Protesters*).

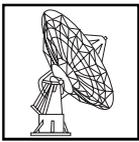
Our brother seems to have lost sight of the fact that to be successful a false prophet must look like a true one. The present pope may be personally genuine, we just do not know. But what cannot be denied is that he and his church do not teach truth. If the political power which they so ardently seek is given to them again, will they act in the future as they have acted in the

past, that is, as a dragon in lamb's clothing?

In the late nineteenth century the Protestant writer Grattan Guinness asked the cardinal inquisitor of Rome what the future held. The reply was, "*Semper aedem*" (we never change).

I would point out that I have Irish blood relations who are pious Catholics and whose lives, in relative terms, are good lives. Nonetheless, what they believe is not God's Truth, and they remain in thrall to Rome and its priests.

Tom McCarthy
Newport



Science

EDITOR: David Burges, 4 Old Farm Close, Histon, Cambridge, CB4 9HA.
Tel. 01223 232123; e-mail: dburges@alethia.freemove.co.uk

Science and the Creator

The birds make their nests

David Burges

"The trees of the LORD are full of sap, the cedars of Lebanon which He planted, where the birds make their nests; the stork has her home in the fir trees" (Ps. 104:16,17, NKJV).

AS WORSHIPPERS of the living God, it seems only right that we should appreciate the beauties and wonders of His Creation around us. In particular, many of us derive great pleasure from observing birds, whether the common varieties that visit our gardens or the less familiar species found in the countryside, in the mountains or by the sea. It is clear that this fascination was shared by some of the inspired writers of the Scriptures, including the psalmist quoted above, and especially Jeremiah, whose prophecy contains at least eighteen references to birds.¹

"The birds of the air have nests"

The Lord Jesus, too, drew some of his lessons from the birds and their behaviour, including their building of nests: "The foxes have holes, and the birds of the air have nests; but the Son of man hath not where to lay his head" (Mt. 8:20; Lk. 9:58). There are several references to nests in Scripture, including the prohibition in the Law against taking both a mother bird and her eggs or young from the nest for food (Deut. 22:6).

Perhaps we give little consideration to the materials that birds utilise in their nest construction. It might be thought that any types of twigs and leaves would do. Recent research² has been revealing, however, that birds deserve the title of nature's apothecaries, and that many species actually fumigate their nests with specific plants in order to protect their offspring and assist in their survival. Birds' plumage offers an attractive environment to a wide variety of microbes and blood-sucking parasites, which can take refuge in the nest and infect the vulnerable chicks when they hatch. Defences against such organisms are therefore vital.

It has been known for a long time that birds add fresh green foliage to their nests, and there

1. 4:13,25; 5:27; 7:33; 8:7(×4); 9:10; 12:4,9(×2); 15:3; 16:4; 17:11; 19:7; 34:20; 48:28,40; 49:16,22; 50:39. This list was compiled and sent to the author by a Sunday School scholar, following a passing remark made during a Sunday evening Bible address.
2. "Kills all known germs", Bryant Furlow, *New Scientist*, 22 Jan. 2000, pp. 36-9.

have been competing theories to explain this behaviour, which is observed in all types of habitat, from rainforest to desert climates. One researcher, Peter Wimberger of the University of Puget Sound, Washington State, in the USA, noticed that birds of prey replenished the greenery in their nests at specific times, just when their eggs were incubating and soon after hatching. He wondered whether the parent birds were making use of the volatile chemicals emitted by many types of plant leaf to combat dangerous organisms. He reasoned that this type of behaviour would be more likely in species which reused nests from the previous year than in those that built a fresh nest each year.

A survey of forty-nine species of birds of prey revealed that nearly eighty per cent of nest reusers, such as the bald eagle and common buzzard, added fresh green leaves to their nests. In contrast, of birds building new nests each year, such as the tawny owl, barely forty per cent used green leaves at all. Further research has revealed a similar pattern in songbirds.

Scientists in India have found that house sparrows furnish their nests throughout the breeding season with the leaves of the margosa or neem tree. These contain a chemical called sitosterol, a naturally occurring insect repellent which also disrupts the egg-laying of ticks and other parasites. Other scientists have studied European starlings, which reuse their nests and refresh them each spring with fresh leaves. Some researchers believe that this behaviour forms part of the courtship display, but it has been found that the preferred leaves come, not necessarily from common species, but from plants which have higher concentrations of chemical compounds that provide a defence against ticks, mites and lice.

Protecting the feathers

Birds depend upon the marvellous design of their feathers to provide both lift for flight and insulation from cold and heat. However, as mentioned above, bird plumage harbours a diverse community of bacteria and fungi. Experiments have shown that chicken feathers in test tubes inoculated with bacteria from wild bird feathers rapidly fall to pieces, as bacterial enzymes attack the keratin from which they are made. Clearly these organisms present a major challenge to birds' survival, and birds adopt a range of strategies to combat them. Thus it is believed that preening, dust-bathing, sunning and possibly

annual moulting may all play a part in maintaining healthy plumage.

Even more unusual activities have been observed. Birds often pick up and groom their feathers with ants, which are known to secrete natural antibiotics, while others have been seen using millipedes, marigold leaves, gardeners' mothballs and discarded pieces of citrus fruit, all of which contain known antibacterial agents. It thus seems that birds possess an uncanny ability to detect and use a wide variety of naturally occurring chemicals in order to protect themselves and their young.

How do birds 'know'?

The most interesting question is how birds came to have or to acquire this ability. How can a bird know that the chemicals produced by certain leaves will repel invading pests and so choose the right ones to protect its young? Evolutionists must attribute it to random, chance mutations bringing about genes which supposedly code for this behaviour and so provide a selective advantage. But this is simply wishful thinking, with no supporting evidence. Clearly, before this ability 'evolved', many birds would have been perilously defenceless against the onslaught of such organisms.

Rather, as the Scriptures make clear, it is God Who has given all creatures their attributes and 'programmed' their behaviour. Thus, in His answer to Job, the Almighty shows that the failure of the ostrich to make a nest at all is "because God hath deprived her of wisdom, neither hath He imparted to her understanding" (Job 39:13-17). On the other hand, the hawk, with its soaring flight, and the eagle, with its lofty nest and amazing powers of sight, by implication, fly by God's wisdom (vv. 26-30).

All creatures in the living world, including ourselves, are subject to attack by agencies of disease and decay: "For we know that the whole creation groaneth and travaileth in pain together until now" (Rom. 8:22). At the same time the Creator has provided a careful balance in the form of an amazing range of defence mechanisms to ensure survival, as in the case of birds' use of chemicals. In all these things we can see the unmistakable signs of the finger of God and of His supreme wisdom, giving us confidence in the future, when "the creation itself also will be delivered from the bondage of corruption into the glorious liberty of the children of God" (v. 21, NKJV).