

Chinese 'dinobirds' and true bird fossils, and easy to follow diagrams and charts. If I have one gripe, it is that a number of the images of fossils are rather dark and do not do justice to the originals.

This book is bound to appeal not only to scientists, but also to anyone with an interest in dinosaurs, ornithology, evolution and natural history. Much of the content is available elsewhere only in the primary academic litera-

ture, so the book should prove an invaluable, compact source of information for university teachers. It is a coffee-table book rather than a textbook, but each chapter is selectively referenced, although a few more citations, particularly to some of the key Chinese specimens, would have enhanced the book's value as a reference source.

The exciting advances in this field certainly deserve to reach a wider public and profes-

sional educators, and this book does that superbly well. My attention was recently drawn to a current school textbook that stated there was little evidence to support the dinosaurian origin of birds and that they could equally well have evolved from pterosaurs. I can only hope that its author will read this book. ■

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Hidden talent

An exhibition in London explores the art of blending into the background.

David M. Wilkinson

Many moth species spend the day resting on tree trunks, where they can be remarkably difficult to spot. Their camouflage comprises a number of aspects, including matching the background colour (crypsis) and using disruptive patterns that make it harder to distinguish the moth's outline. Not surprisingly, such techniques have been used by the military to hide personnel and weapons. Their history is examined in an exhibition running at the Imperial War Museum in London until 18 November 2007, and in a well-illustrated book, *Camouflage* by Tim Newark (Thames & Hudson, 2007), that accompanies the exhibition.

The military turned to two main sources of expertise in developing camouflage: professional artists and biologists. Military camouflage was rarely used until the First World War, when specialist camouflage units set up by the French employed artists as 'camoufleurs'.

Artists have also contributed to the study of camouflage in nature. The American artist Abbott H. Thayer, best known for his paintings of idealized women and angels in the late nineteenth century, made several contributions to the subject, including the introduction of disruptive patterning. However, like many people with good ideas, his claims for their applications tended to be exaggerated. He famously argued, for example, that flamingos are cryptic against sunsets, whereas in reality their dark silhouettes are clearly visible. A better idea led to the painting of Second World War warships with bold disruptive designs.

Whereas Thayer believed that only artists had the necessary insight to understand camouflage, British zoologist and artist Hugh B. Cott — whose 1940 book *Adaptive Coloration in Animals* was the definitive text on animal coloration at the time — was equally convinced that science was key. Cott advised the British military on camouflage during the Second World War and was critical of the way artists dominated military camouflage. In turn,



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many artists and military officers considered Cott's recommendations impractical. The Germans apparently agreed with Cott's critics. While working in North Africa, Cott had fake tank shadows painted on the desert surface to fool enemy air reconnaissance. The Germans are reported to have amused themselves by dropping a fake wooden bomb on Cott's non-existent tanks.

The ideas of crypsis and disruption are illustrated in this nude photograph of photographer Lee Miller, taken by David Scherman. Her body has been covered with 'camouflage cream' the better to match the background. The vegetation and camouflage netting is designed to partly disrupt the easily recognizable human outline — and preserve a modicum of modesty. Miller's partner, the British surrealist painter Roland Penrose, taught camouflage techniques in the Second World War and used this photograph to enliven his lectures to the British Home Guard (a volunteer homeland defence force). Penrose also wrote a short instructional book that used examples of camouflage drawn from biology.

The idea of crypsis in biology seems simple but there are complications. Imagine Miller's naked body laid out on the white sands of a coral beach. Her natural skin tones would

stand out less than the dark camouflage cream used in the photograph. Any animal that closely matches the colour of one part of its environment may be restricted in other, differently coloured, places where its camouflage will fail. The evolutionary implications of this have formed part of my own research, especially regarding the conditions under which an organism should closely match one part of its environment, or when it should evolve more generalized camouflage. Moreover, disentangling the effects of disruptive patterns from simple crypsis still challenges experimentalists, as lots of organisms, including many moths, are both cryptic and disruptively patterned.

The importance of disruptive patterns has also troubled the military. After the Second World War, the British and US military largely abandoned the idea of disruptive battledress — whose value, they felt, was not supported by the evidence — for cheaper, plain uniforms. Vietnam changed this, as the experience of jungle warfare and an often well-camouflaged enemy convinced the Americans of the value of disruptive patterns.

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