It has been said that we know more about birds than about virtually any other group of animals. It may be surprising then to learn that there are aspects of bird biology where there is still a great deal left to discover. One of those that is ripe for discovery is covered by this volume: nests, eggs, and incubation. Our lack of knowledge on these subjects may seem paradoxical when we consider the almost unimaginable volume of research conducted by the poultry industry on two of these topics: eggs and incubation. But that paradox is easily explained when you realize that most poultry research has focussed on the domestic fowl and a handful of other domestic species, has been motivated by maximizing production for commercial purposes, and has focussed largely on mechanisms rather than on the evolutionary significance of particular phenomena. The risk of the poultry industry’s particular focus is analogous to the medical approach to reproduction: by concentrating almost entirely on humans, they create a narrow—and limited—view of the world.

This is not to take anything away from poultry researchers (or human reproductive biologists): their work provides a solid set of foundations from which other biologists can launch their research. As this book makes clear, the comparisons between different bird species, made with the benefit of both mechanistic and evolutionary perspectives, reveals the incredible range of inter-related adaptations with respect to nests, eggs, and incubation. Indeed, one might hope that results obtained from investigating the eggs and incubation of non-domesticated bird species in their natural environment might inspire poultry researchers.

It isn’t simply the comparison between different bird species that is revealing. Rather, it is the integration of different aspects of birds’ life cycles—the study of nests, eggs, and incubation together—that generates real insights into the biology of reproduction.

In startling contrast to what the poultry industry has achieved, ornithology has barely begun to scratch the surface of these topics, despite Charles Deeming’s almost single-handed efforts over the last 20 years. The reason for the ornithologists lagging behind is both intriguing and sad: for the last 40 years or more children have been actively discouraged from examining the nests and eggs of wild birds for fear of disturbing them. The intellectual cost is that we end up with a generation of biologists either indifferent to, or uninterested in, such topics, and with no sense of the wonder of nature that might have made them into biologists.

Deeming is a rara avis, a poultry biologist turned ornithologist, and this places him in the almost unique position of being able to view this field in its entirety, and with Jim Reynolds to bring together a set of authors capable of providing a series of up to date, informative and extremely valuable reviews.

It amazes me that so few ornithologists recognize that the single thing that makes birds distinct and utterly fascinating is that parent birds—of almost all species—incubate their eggs directly by their own body heat. The consequences of this behaviour are far reaching. As we now know, birds are the direct descendants of dinosaurs, and dinosaur eggs appear to have been deposited and incubated in the ground or in decomposing vegetation. We do not know when the switch from indirect to direct incubation occurred, but that switch was accompanied by a massive change in selection pressures that brought about dramatic changes in bird biology, including the construction of nests, the internal design and external colouration of eggshells, and the internal composition of eggs in terms of yolk and albumen. The diversity of breeding adaptations in birds is both extraordinary and inspiring. Through a collection of scholarly overviews this book provides an entrée into that world. It will inform those already working in this exciting area and hopefully encourage others who aren’t now working in this field to do so. This is an area of biology with enormous potential.

Tim Birkhead (Sheffield)
December 2014