ORNITHOLOGICAL NOTES ON THE ARISTOTELIAN *HISTORY OF ANIMALS*

W. Geoffrey ARNOTT, Leeds

Whoever wrote the ornithological sections of the *History of Animals* – whether it was just Aristotle himself, his team of researchers, Aristotle's successors after his death, or (most plausibly) a combination of all three[1], there is one general fact about those passages: most of the authorial statements about what had been seen are accurate, at times remarkably so, but at the same time several interpretations based on the observations have been demonstrated as faulty by modern ornithological research. In this paper, written just before André Hurst's 65th birthday in honour of his scholarly achievements, five passages that have for some time been known to testify both to the excellence of the Aristotelian (or [Aristotelian]) observations and to an intelligent but incorrect interpretation of what had been seen will first be discussed, before two new examples are presented of unexpectedly accurate visual observations that have not hitherto been noticed by classicists.

(1) Aristotle *HA* 518b35-519a3 περὶ δὲ τὰ πτερωτὰ τῶν ζώων, οἷον τοὺς ὄρνιθας, κατὰ μὲν τὰς ἡλικίας οὐδὲν μεταβάλλει, πλὴν γέρανος· αὕτη δ' οὖσα τεφρὰ μελάντερα γηράσκουσα τὰ πτερὰ ἴσχει. (With regard to feathered creatures, such as birds, none changes through age, except the Common Crane. This is ash-grey, but as it ages its feathers turn darker): cf. *GA*785^{a}22, Plin. *nat*. 10,80. The claim that the feathers of this Crane (*Grus grus*) blacken with age simply misreads the fact that

---

[1] Books 1-9 of the *History of Animals* are now generally considered to be the work of Aristotle, based on his own research and that of his team, but presented more in the form of notes not always well organised. In the nineteenth century, however, the authenticity of books 7-9 was challenged on grounds that now seem implausible. Book 10, however, is omitted in many Greek manuscripts of the work, and those that include it seem to derive it from only one extant manuscript (Vaticanus 262); the predominant view is that originally it was not part of the History. Thompson's allegation in his translation (1910) at 603^{a}30 (see his n.1) that there are traces of an alien hand in parts of book 8 is less than convincing. See also (e.g.) Balme 1985, 1.191-206 (on book 10) and 2002, 1-3 (books 1-9 = Aristotle), and French 1994, 44 (collaborative effort).

the worn feathers of this species are distinctly darker than its fresh plumage after a moult[2].

(2) 600a10-16 φωλοῦσι δὲ πολλοὶ καὶ τῶν ὀρνίθων ... ἀλλ' οἱ μὲν πλησίον ὄντες τοιούτων τόπων ἐν οἷς διαμένουσι, καὶ ἱκτῖνοι καὶ χελιδόνες, ἀποχωροῦσιν ἐνταῦθα, οἱ δὲ πορρωτέρω ὄντες τῶν τοιούτων οὐκ ἐκτοπίζουσιν ἀλλὰ κρύπτουσιν ἑαυτούς. ἤδη γὰρ ὠμμέναι πολλαὶ χελιδόνες εἰσὶν ἐν ἀγγείοις ἐψιλωμέναι πάμπαν. (Many of the birds too hide . . . but some that are near to the kind of places where they always live (both Kites and Hirundines) go off there, but other birds that are farther off from such places don't migrate but hide themselves. In the past many Hirundines have been seen in receptacles completely bare of their feathers.) This passage is in fact less incorrect when considered in the light of modern ornithological knowledge than it first appeared to non-ornithologists. The term χελιδών covers all five Greek species of Hirundine: Barn Swallow (*Hirundo rustica*), Red-rumped Swallow (*H. daurica*), Crag Martin (*Ptyoprogne rupestris*), House Martin (*Delichon urbica*) and Sand Martin (*Riparia riparia*). Four of these are totally migratory, but Crag Martins overwinter in Acarnania, the Peloponnese and some islands (Crete, Rhodes, Lesbos), either having bred there or arrived there for the winter after only a short-distance migration[3]. Moreover, a few Barn Swallows and House Martins are recorded each year as aberrantly overwintering in southern and western Europe as far north even as Britain and Ireland. Hence *HA*'s view that some χελιδόνες overwinter is not the egregious error that has sometimes been supposed, and Gilbert White's often dismissed claim that "though most of the swallow kind may migrate, … some do stay behind and hide with us during the winter" (letter XII to Pennant[4]) is in fact accurate. The remark cited above about Hirundines having been seen in a receptacle (the Greek word

---

[2] For discussions of the [Eurasian] Crane by classical scholars see primarily Keller 1913, 2, 184-193; Gossen/Steier 1922, 1571-1578; Thompson 1936², 68-75; André 1967, 89; Capponi 1979, 279-286; Arnott 1988, 212; 1993b, 132-133. 141; Dunbar 1985, 451 and Hünemörder 1999, 6, 788-789. For the feather changes see especially Witherby 4, 1943, 453; *BWP* 1980, 2, 625.

[3] For discussions of the Greek Hirundines by classical scholars see primarily Keller 1913, 2, 114-118; Gossen 1921, 768-777; Thompson 1936², 314-325; André 1967, 92-94; Arnott 1988, 212; 1993a, 201-202; 1993b, 133; Pollard 1977, 30-33; Capponi 1979, 292-299; Dunbar 1995, 455. 601-602 and Hünemörder 2001, 11, 270. Modern ornithological information about the five Greek species (including aberrant overwintering by Barn Swallows and House Martins) is provided by (e.g.) Krüper 1860, 271-284; *BWP* 1988, 5, 235-248. 254-300; H-A 1977, 222-224; cf. also Witherby 1943, 2, 230-231. 236-237. 240. On Crag Martins overwintering in Lesbos see also Brooks 1998, 172.

[4] Gilbert White's book has been reprinted a vast number of times since its original publication in 1789 (by his brother Benjamin White and Son, Fleet Street) with different

ἀγγεῖον is a receptacle able to take dry or wet stores) denuded of feathers (and so presumably dead) was based in all probability by perhaps just one man's report to Aristotle's team of researchers one spring on Lesbos or at Assos that he had then seen a receptacle full of dead Hirundines denuded of feathers. Such a winter or spring sighting of dead Hirundines in an ἀγγεῖον would not seem remarkable to a modern ornithologist, although it would not be inferred from the sighting that these dead Hirundines had necessarily been overwintering in Greece, as the Aristotelian report assumes. It is now known that Hirundines preparing to migrate south each autumn assemble in large numbers for roosting, usually in the reeds surrounding lakes and pools, but also occasionally in less expected places. If a sudden sharp autumn frost then comes in the night of such a roost, vast numbers of the birds are simply frozen to death, and their bodies would possibly not be discovered until the warmth of the following spring made the roosting place more accessible[5]. Thus an accurate ancient observation was accordingly in all probability incorrectly interpreted in the passage of *HA*.

(3) 615a35 ὁ δ' ἔποψ τὴν νεοττείαν μάλιστα ποιεῖται ἐκ τῆς ἀνθρωπίνης κόπρου. (The Hoopoe makes its nest mainly out of human dung); cf. Ael.*NA*3.26. The allegation that nests of the [Eurasian] Hoopoe (*Upupa epops*) were full of dung was believed until quite recently[6], but in fact it appears to be based on a misinterpretation of the fact that if a potential predator approaches the nest, the female is able to discharge faecal material with a range of 24 to 36 centimetres, and both the female and the nestlings squirt out an evil-smelling fluid in the direction of that predator[7].

(4) 632b14-18 τῶν δὲ ὀρνέων πολλὰ μεταβάλλουσι κατὰ τὰς ὥρας καὶ τὸ χρῶμα καὶ τὴν φωνήν, οἷον ὁ κόττυφος ἀντὶ μέλανος ξανθός, καὶ τὴν φωνὴν ἴσχει ἀλλοίαν· ἐν μὲν γὰρ τῷ θέρει ᾄδει, τοῦ δὲ χειμῶνος παταγεῖ καὶ φθέγγεται θορυβῶδες. (Many of the birds change both colour and voice according to the season; thus the Blackbird becomes brown instead of black, and it has a different voice, for in summer it

---

paginations, and this makes it advisable to give references to it by naming his recipient and original letter number.

5 See (e.g.) Bannerman 1954, 3, 373-375.

6 For example, still in Witherby 1943, 2, 267, and Bannerman 1954, 4, 57.

7 For discussions of the [Eurasian] Hoopoe by classical scholars see primarily Oder 1888, 541-556; Keller 1913, 2, 60-63; Dawson 1925, 31-39. 593-594; Thompson 1936², 95-100; Schuster 1958, 2108-2112; André 1967, 163; Pollard 1977, 45-46. 131-132. 164-16; Capponi 1979, 516-519; Dunbar 1995, 140-141. 154 and Hünemörder 2002, 510-511; cf. also Dawson 1925, 31-39. The true facts about Hoopoe nests were established by Sutter 1946, 72-81 and Stead 1950, 434-463 (especially 442-444); see also *BWP* 1985, 4, 794.

sings, but during winter it chatters and has a boisterous call.) Here we have two excellent pieces of observation, one correctly reported and correctly understood, the other based on an accurate observation that the European Blackbird (*Turdus merula*)[8] generally (I leave out of consideration here the alleged existence in Aristotle's time of albino Blackbirds on and around Mount Cyllene[9]) come in two different colours: some all black, some dark brown. That colour differentiation is then given an apparently plausible explanation, accepted by later classical writers (Ael.*NA*12.28, Plin. *nat*. 10,80), but that explanation is both inadequate and inaccurate because it is based on insufficient knowledge of the facts. Ancient writers did not know that (i) a fully adult male Blackbird is all black, while an adult female is dark umber brown all over; and that (ii) a young male blackbird has up to its first autumnal moult a dusky brown plumage resembling that of the adult female, and does not acquire the adult male's all-black plumage until its third moult[10]. The statements about the Blackbird's song and calls, however, is precise and accurate; we may compare, for instance, Aristophanes *Birds* 305-306, saying that Blackbirds chirp and run, Theocritus' epigram (4.9-10 Gow = *Anthologia Palatina* 9.437.9-10), saying they sing in spring varied songs with clear voices. The Blackbird's song is sung by the male in the breeding season: "fluent and beautiful fluty notes … an easy continuous warble lasting from 2 to 8 seconds". In winter, however, Blackbirds have only a series of unmusical calls, with a chattering 'tchook tchook' predominant as a signal of mild alarm[11].

---

[8] For discussions of the [European] Blackbird by classical scholars see primarily Marx 1894, 1982-1983; Keller 1913, 2, 75-76; Thompson 1936², 174-176; Arnott 1964, 249-250 n.5; André 1967, 63. 103-104; Capponi 1979, 208. 334-337; Pollard 1977, 35-36 and Hünemörder 1996, 1, 630.

[9] The white blackbirds on and around Mount Cyllene in Arcadia (Arist.*HA*617ª11-18; cf. also [Arist.]*Mir*.831ᵇ14-17, Paus.8.17.3, Ael.*NH*2.47, 5.27 citing Sostratus, Ant.Lib.5, Prisc. *periheg*.415, St.Byz. s.v. Κυλλήνη, Eust.300.37-39 *ad Il*.2.603 and Plin. *nat*. 10,87) were almost certainly albinos; no European species of bird is more subject to albinism than the Blackbird (see especially Snow 1958, 23-24; Rollin 1959, 92-96; Simms 1978, 89-91; *BWP* 1988, 5, 949). It is surprising that the authoritative statement by A. Newton (one of the leading British ornithologists of his day) in Frazer's translation of Paus.8.17.3 published in 1898 (cf. also Rogers' edition of Aristophanes' *Birds*, 1906: p. xxx) has so often been ignored or opposed. Incidentally Varro *rust*.3,9,17 attests the existence of albino Blackbirds also in Italy, where they were caught and displayed as exhibits.

[10] On the plumage differentiations and phases see especially Witherby 1943, 2, 139-140; Snow 1958, 18-24; Simms 1978, 44-45. 84-89; *BWP* 1985, 4, 949-950 and Stephan 1999², 18-21.

[11] On the song and other calls of the Blackbird see especially Witherby 1943, 2, 137; Snow 1958, 50-58. 61-62; Simms 1978, 46-47, 49; *BWP* 1985, 4, 950. 957-961 and Stephan 1999², 43-60. The quotation is from Simms 1978, 49.

(5) 633a11-14 μεταβάλλει δὲ καὶ ὁ κόκκυξ καὶ τὸ χρῶμα, καὶ τῇ φωνῇ οὐ σαφηνίζει, ὅταν μέλλῃ ἀφανίζεσθαι· ἀφανίζεται δ' ὑπὸ κύνα, φανερὸς δὲ γίνεται ἀπὸ τοῦ ἔαρος ἀρξάμενος μεχρὶ κυνὸς ἐποτολῆς. (When the Cuckoo is about to disappear, it changes its colour and doesn't have a distinct call. It disappears about the time of the dog-star, and becomes visible starting from spring up to the rising of the dog-star: i.e. about 20 July). This comment accurately reports a fact about the [Common] Cuckoo (*Cuculus canorus*)[12] which ornithologists know well: that most of the Cuckoos seen in spring are all grey, but those seen in July are often rusty or buff in colour. Yet this is not explained by any variation in an individual bird's plumage, but by a different series of facts. In spring it is the grey male Cuckoo that is easily visible when it calls, perching in the open on a telephone wire, fence post or tree branch that has not produced its leaves, but thereafter it is far less visible before migrating back south in August. Rufous-phase females and rufous-brown immatures, however, begin to show themselves in June and July well before their migration south[13].

(6) The five passages discussed above confirm the general need to accept the sharpness and accuracy of the eyes of those reporting ornithological data for the *History of Animals*, even if sometimes the interpretations of those data can now be considered faulty. Occasionally that visual sharpness goes far beyond what anyone could expect from the fourth century BC. At 597a4-6, for instance, where the migration of the Common Crane is being discussed: μεταβάλλουσι γὰρ ἐκ τῶν Σκυθικῶν πεδίων εἰς τὰ ἕλη τὰ ἄνω τῆς Αἰγύπτου ὅθεν ὁ Νεῖλος ῥεῖ. (They migrate from the Scythian plains to the marshes beyond Egypt from which the Nile flows)[14]. When those words were written the sources of neither the Blue nor the White Nile had been accurately discovered, and it must remain uncertain whether here the writer was referring to the Sudd, a marshy

---

[12] For discussions of the [Common] Cuckoo by classical scholars see primarily Gossen/Steier 1921, 2099-2103; Thompson 1936², 151-153; Pollard 1948, 362-365 and 1977, 43-45; André 1967, 58. 64; Capponi 1979, 167-176. 210 and Hünemörder 1999, 6, 882-883.

[13] On the plumage of male, female and immature Cuckoos see Witherby 1943, 2, 296-297. 299-301; Bannerman 1955, 4, 125-126; Löhrl 1979, 142-143; Wyllie 1981, 43-46; *BWP* 1985, 4, 402-403. 414-1. On the male Cuckoo's visibility in spring: see especially Wyllie 1981, 42-43 and *BWP* 1985, 4, 409.

[14] See also n.2. On the migration and wintering habitats of the [Eurasian] Crane see e.g. Meinertzhagen 1930, 2, 627-629; Libbert 1936, 297-337; Witherby 1943, 4, 453; Mackworth-Praed/Grant 1952, 1, 311; Moreau 1953, 337. 346-348; Cave/Macdonald 1955, 123; Bannerman 1962, 11, 66-79; *BWP* 1980, 2, 618-620; Johnsgard 1983, 227-230; Iapichino/Massa 1989, 61-62; Meine/Archibald 1996, 159-172; H-A 1997, 157 and H-B 1997, 240-41. On the Sudd see Holmes/Maxwell/Scoones 2004, 74-90; on the discovery that Lake Tana was the source of the Blue Nile, Bredin 2000, 130-167.

labyrinth in southern Sudan where the course of the White Nile becomes very uncertain, or to the Blue Nile's source at Lake Tana in Ethiopia. What I can confirm, however, is that I personally saw (in December 2002) a flock of wintering Common Cranes huddled together in marshy fields only a very few kilometres east of Lake Tana. Presumably the source of the information given in *HA*597[a]4-6 was ultimately some traveller[15] who had seen wintering Cranes at one of the two spots mentioned above.

(7) My final passage (609b23-25) concerns the Grey Heron: ὁ πελλὸς χαλεπῶς εὐνάζει καὶ ὀχεύει. κράζει γὰρ καὶ αἷμα, ὥς φασιν, ἀφίησιν ἐκ τῶν ὀφθαλμῶν ὀχεύων, καὶ τίκτει φαυλῶς καὶ ὀδυνηρῶς. (The Grey has difficulty in being mounted and mounting, for it screams and, as they say, drips blood from its eyes while mounting, and it gives birth badly and painfully). This is a masterly list of observations, not always correctly understood or interpreted by its author, which clearly describe Greece's commonest (and resident) Heron, the Grey Heron (*Ardea cinerea*)[16]. The claim that both sexes have difficulty in mating, when the male screams and drips blood from its eyes, and that the female gives birth painfully has often been dismissed as wild fantasy or exaggeration, but it is simply an uncomprehending description and distortion of reality. Lowe's book on the Grey Heron (73-74, 159) draws particular attention to a remarkable change of colour both on the beak and round the eye of some Grey Herons at the time of mating: the beak temporarily becomes bright red, as does the outer circle of the eye, caused by a surplus of endocrine secretions producing carotenoid pigments (cf. *BWP* 1, 308, 311: Lowe)[17]. This presumably was misunderstood by the author of *HA* as eye bleeding. Coition also always looks difficult, with the female perched on a branch, the male grasping his female's neck feathers and flapping his wings to maintain balance. When the male is courting his female, he calls loudly to her, and this, together with the later series of ear-splitting calls when one bird approaches the nest to relieve its mate[18], may explain the reference to screaming[19].

---

15 Aristotle names travellers as sources of information at *HA*499[a]; cf. French 1994, 151.

16 For discussions of Herons and Egrets by classical scholars see (e.g.) Sundevall 1863, 150-151; Aubert/Wimmer 1868, 1, 92; Boraston 1911, 216. 242; Keller, 1913, 2, 202-207; Gossen 1914, 515-516; 1935, 168 §175; Thompson 1936[2], 57. 102-104; André 1967, 33-34; Pollard 1977, 12. 68-69. 202 n. 36; Arnott 1979b, 192; Capponi 1979, 95-101. 227-228; Dunbar 1995, 599-600 and Hünemörder 2001, 10, 850-851.

17 Lowe 1954, 73-74. 118-130. 159; cf. *BWP* 19771, 1, 308. 311 and Fasola/Hafner 1984, 44.

18 On the mating of the Grey Heron and its loud calls see especially Witherby 1943, 3, 127-128 and *BWP* 1977, 1, 308. 311.

19 For a further example of previously unrecognised Aristotelian accuracy in the biological works, see now Brock 2004, 277-278.

Bibliography

André, J. (1967) – *Les noms des oiseaux en latin*, Paris.

Arnott, W.G. (1964) – "Notes on GAVIA and MERGUS in Latin Authors", *Classical Quarterly* 14, 249-262.

Arnott, W. G. (1979) – Review of J. Pollard, *Birds in Greek Lie and Myth*, *Journal of Hellenic Studies* 99, 192-193.

Arnott, W. G. (1988) – Review of A. H. Sommerstein, *The Comedies of Aristophanes*, volume 6: *Birds, Classical Review* 38, 211-213.

Arnott, W. G. (1993a) – "Longus, Natural History, and Realism", dans Tatum, J., *The Search for the Ancient Novel*, Baltimore, 199-215.

Arnott, W. G. (1993b) – "Some Bird Notes on Aristophanes' *Birds*", dans Jocelyn, H. D., *Tria Lustra: Essays Presented to John Pinsent* Liverpool, 127-134.

Aubert, H. / Wimmer, Fr. (1868) – *Aristoteles Thierkunde*, Leipzig.

Balme, D. M. (1985) – "Aristotle *Historia Animalium* Book X", dans *Aristoteles: Werk und Werkung* (= Festschrift for P Moraux), Berlin, 1.191-206.

Balme, D. M. (2002) – *Aristotle, Historia Animalium*, volume 1 Cambridge.

Bannerman, D. A. (1953-1963) – *The Birds of the British Isles*, Edinburgh/London.

Boraston, J. M. (1912) – "The Birds of Homer", *Journal of Hellenic Studies* 31, 216-250.

Bredin, M. (2000) – *The Pale Abyssinian: A Life of James Bruce, African Explorer and Adventurer*, London.

Brock, R. (2004) – "Aristotle on Sperm Competition in Birds", *Classical Quarterly* 54, 277-278.

Brooks, R. (1998) – *Birding on the Greek Island of Lesvos,* Fulmodeston/Norfolk.

BWP = Cramp S. (chief editor) (1977-1994) – *Handbook of the Birds of Europe the Middle East and North Africa: The Birds of the Western Palearctic*, Oxford.

Capponi, F. (1977) – *Ornithologia Latina*, Genova.

Cave, F. O. / Macdonald, J. M. (1955) – *Birds of the Sudan*, Edinburgh/London.

Dawson, W. R. (1925) – "The Lore of the Hoopoe", *Ibis* 67, 31-39.

Dunbar, N. (1995) – *Aristophanes Birds*, Oxford.

Frazer, J. G. (1898) – *Pausanias's Description of Greece*, London.

French, R. (1994) – *Ancient Natural History*, London/New York.

Gossen, H. (1914) – 'Reiher' in *RE* IA.i: 515-516.

Gossen, H. (1935) – "Die Tiernamen in Älians 17 Büchern περὶ ζώων", *Quellen und Studien zur Geschichte der Naturwissenschaften und der Medizin* 4.3, 128-188.

Gossen, H. / Steier, A. (1921) – 'Kokkyx' in *RE* XI.i: 2099-2103.

H-A = Handrinos, G. / Akriotis, T. (1997) – *The Birds of Greece*, London.

H-B = Hagemeijer, W.J.M. / Blair, M. J. (1997) – *The EBBC Atlas of European Nesting Birds*, London.

Holmes, M. / Maxwell, G. / Scoones, T. (2004) – *Nile*, London.

Hünemörder, C. (1996-2002), entries in *NP* on 'Amsel', 'Kranich', 'Kuckuck', 'Reiher', 'Schwalbe' and 'Wiedehopf', respectively 1.63, 6.788-789, 882-883, 10.850-851, 11.270-272 and 12/2.510-511.

Iapichino, C. / Massa, B. (1989) – *The Birds of Sicily*, (British Ornithologists' Union Check-List no. 11, Tring, Herts.).

Keller, O. (1909-1913) – *Die antike Tierwelt*, Leipzig.

Krüper, Th. (1860) – "Die Schwalben Griechenlands", *Journal für Ornithologie*, 271-284.

Libbert, W. (1936) – "Der Zug des Kranichs (*Grus grus grus*)", *Journal für Ornithologie* 84, 297-337.

Löhrl, H. (1979) – "Untersuchungen am Kuckuck (*Cuculus canorus*)", *Journal für Ornithologie* 120, 139-173.

Lowe, F.A. (1954) – *The Heron*, London.

Mackworth-Praed, W. / Grant, C. H. B. (1952-1955) – *Birds of Eastern and North Eastern Africa*, London/New York/Toronto.

Marx, A. (1894) – 'Amsel' in *RE* I: 1892-1893.

Meine, C. D. / Archibald, G. W. (1996) – *The Cranes: Status Survey and Conservation Action Plan*, Gland.

Meinertzhagen, R. (1930) – *Nicoll's Birds of Egypt*, London.

Moreau, R.E. (1972) – *The Palaearctic-African Bird Migration Systems*, London/New York.

NP = *Der neue Pauly* (1996-2002), Stuttgart/Weimar.

Pollard, J. (1979) – *Birds in Greek Life and Myth*, London.

RE = Pauly, A. / Wissowa, G. / Kroll, W. (1893-1972) *Real-Encyclopädie der klassischen Altertumswissenschaft*, Stuttgart.

Rogers, B.B. (1906) – *Aristophanes The Birds*, London.

Rollin, N. (1959) – "White Plumage in Blackbirds", *Bulletin of the British Ornithological Club* 79, 92-96.

Simms, E. (1978) –*British Thrushes*, London.

Snow, D. W. (1958) – *A Study of Blackbirds*, London.

Stead, C. K. (1950) – "A study of the African Hoopoe", *Ibis* 92, 434-463.

Stephan, B. (1999[2]) – *Die Amsel: Turdus merula*, Hohenwarsleben.

Sundevall, C. J. (1863) – *Die Thierarten des Aristoteles*, Stockholm.

Sutter, E. (1946) – "Das Abwehrverhalten nestjunger Wiedehopfe", *Der Ornithologische Beobachter* 43, 72-81.

Thompson, D'A. W. (1910) – *The Works of Aristotle Translated into English, IV: Historia Animalium*, Oxford.

Thompson, D'A. W. (1936) – *A Glossary of Greek Birds*, Oxford.

White, G. (1789) – *The Natural History and Aniquities of Selbourne*, London.

Witherby, H. F. (and others) (1943-1944) – *The Handbook of British Birds*, (revised reprint) London.

Wyllie, I. (1981) – *The Cuckoo*, London.