

The first egg of Jerdon's courser *Rhinoptilus bitorquatus* and a review of the early records of this species

ALAN G. KNOX

University Museums, King's College, University of Aberdeen, Aberdeen AB24 3SW, United Kingdom (e-mail: a.g.knox@abdn.ac.uk).

ABSTRACT: For most of the twentieth century, Jerdon's courser (*Rhinoptilus bitorquatus*) was thought to be extinct until it was rediscovered in 1986. Since then, despite much research, the bird remains poorly known. A Critically Endangered southern Indian endemic, recorded from a restricted area of about 50 square kilometres, its nocturnal habits, infrequent vocalizations, scrub-jungle habitat and low population size make it difficult to observe. Almost nothing is known about its breeding or ecology. Its nest has never been seen by an ornithologist. The first known egg of the species was recently discovered in a collection at the University of Aberdeen and its identity confirmed by DNA analysis. It had been collected by Ernest Gilbert Meaton, a veterinary surgeon at the Kolar Gold Fields, east of Bangalore. He probably obtained it in 1917, within 100 km of Kolar. Meaton's egg collection was purchased by George Falconer Rose, a successful expatriate Scot working in Calcutta, and given to Aberdeen Grammar School in 1919. In the 1970s, the school gave the collection to the University of Aberdeen, where the egg was discovered in 2008. This paper collates and reviews the early records of Jerdon's courser and examines the provenance of the egg. The type specimen of the courser now appears to be lost, but five other specimens exist in collections.

KEY WORDS : University of Aberdeen Museums – Ernest Gilbert Meaton – George Falconer Rose – Kolar Gold Fields – Eastern Ghats – DNA.

INTRODUCTION

Jerdon's courser, *Rhinoptilus bitorquatus* (Figure 1), is one of the rarest living birds in the world and is categorized as Critically Endangered (Birdlife International 2010). The species is nocturnal and cursorial, living in scrub jungle where it is rarely seen, and it is known only from a very restricted area of the Eastern Ghats in southern India (Figure 2). The species was first discovered by Thomas Caverhill Jerdon (1811–1872) sometime before or during 1844. There were only a few records up to 1900, after which it was considered likely to be extinct until being dramatically rediscovered in 1986 (Bhushan 1986a, 1986b). Since then the species has been the subject of intensive but frustrating research. The bird is elusive and the nest has never been seen by an ornithologist. Many of the recent records have been obtained through the use of tracking strips to detect footprints of passing birds, automatic camera traps and tape surveys, following the identification of the species' call in 2002 (Jeganathan *et al.* 2002; Jeganathan and Wotton 2004; Chavan and Barber 2012). These surveys found a very small population with an extremely limited range in southern Andhra Pradesh (Anonymous 2010). Knox and Piertney (2013) recently reported the discovery of the first known authenticated egg of the species in any collection; I examine here the early records of the species and the provenance of the newly discovered egg.

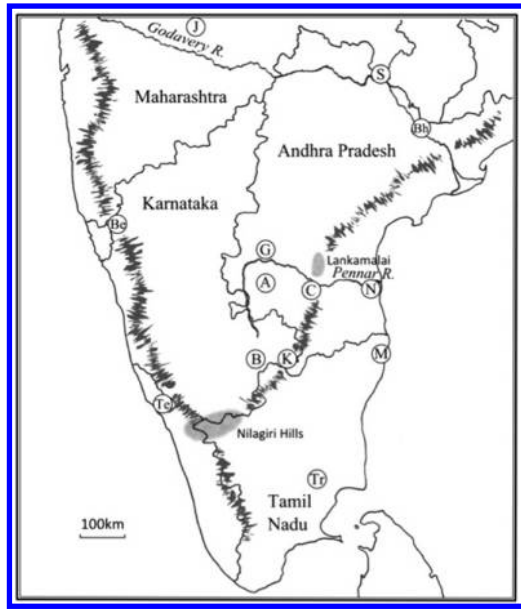
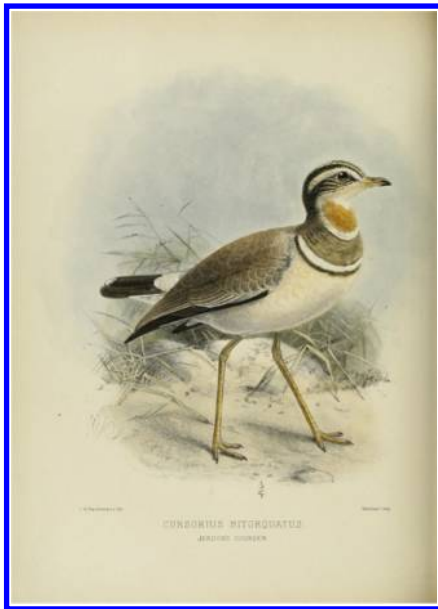


Figure 1. Jerdon's courser (*Rhinoptilus bitorquatus*) (hand-coloured lithograph by J. G. Keulemans from Seebohm (1888: plate 13): reduced).

Figure 2. Map of Southern India showing places mentioned in text (identified here using historical spelling). Irregular shading, the Western and Eastern Ghats, with the Deccan Plateau between. A, Anantpur; B, Bangalore; Be, Belgaum; Bh, Bhadrachalam; C, Cuddapah; G, Gooty; J, Jalnah; K, Kolar Gold Fields; M, Madras; N, Nellore; S, Sironcha; Te, Tellicherry; Tr, Trichinopoly. Jerdon's courser is currently known to occupy only a small area in the Lankamalai hills.

THE HISTORIC RECORDS OF JERDON'S COURSER

There were very few records of the courser prior to its presumed extinction sometime after 1900. As details of these records have often been misquoted, they are reviewed here in some detail.

Thomas Jerdon reported that the first coursers were “procured by myself, from the hilly country above the Eastern Ghâts, off Nellore, and in Cuddapa” (Figure 2) (Jerdon 1862–1864).¹ There are multiple ambiguities in this statement. It is unclear how many specimens of the courser Jerdon “procured”. Jerdon used the word “procure” when referring to birds he personally shot, as well as to birds obtained from markets and, although he killed many birds himself, he also relied on others to supply him with specimens, including the Yánadis, described as “a remarkable aboriginal tribe” inhabiting the “wilder parts of the country between Madras and Nellore. By their means Dr. Jerdon discovered many new species” (Elliot 1874).² While this could be read as meaning that he collected these new species personally, but with the assistance of the Yánadis, elsewhere Jerdon reported another Eastern Ghats endemic which he discovered, the yellow-throated bulbul (*Pycnonotus xantholaemus*), “which was brought to me from the Eastern range of Ghauts dividing Cuddapah from the Nellore district, by some excellent hill Shikarees [hunters] to whom I am indebted for more than one novelty” (Jerdon 1843–1847: plate 35).

The centre of southern India is an extensive elevated plateau, edged by the Eastern and Western Ghats (“steps”), which rise fairly abruptly from the narrow coastal plains on either

side (Figure 2). The source of Jerdon's specimens, "the hilly country above the Eastern Ghâts, off Nellore, and in Cuddapah" has generally been interpreted as just two locations above the Eastern Ghats: "off Nellore" and "in Cuddapah", but this seems questionable. Examination of the text of a number of Jerdon's publications (Jerdon 1839–1840, 1843–1847, 1844, 1846, 1862–1864, 1867) did not reveal any explicitly comparable phrasing that might assist in the statement's interpretation, although, when referring to "above" the Eastern or Western Ghats, Jerdon undoubtedly means on the inland (and elevated) side of the hill ranges, rather than the highest points of the hills.³

It was not possible to locate a comparable use of "off", as in "off Nellore" elsewhere in Jerdon's texts⁴, but this appears to mean inland from the town of Nellore, and "in Cuddapah" to mean within the adjacent Cuddapah district. From his other writings, including, for example, the unambiguous "got it from the southern Ghâts of Nellore" (Jerdon 1862–1864: 1 (1862): 186) and "top of the Eastern Ghâts inland from Nellore" (Jerdon 1862–1864: 3 (1864): 642), it is possible "the hilly country above the Eastern Ghâts, off Nellore, and in Cuddapah" may refer to three localities rather than two, and that Jerdon may have collected three (or more) specimens of his courser. "Off Nellore" most probably refers to the Veliconda range (Birdlife International 2001).

The documented early records of the species are as follows.⁵

1. Jerdon, Eastern Ghâts, 1842–1844

A specimen collected by Jerdon in "the Eastern Ghâts of the peninsula of India", was presented to the Asiatic Society in 1844 and, four years later described as a new species, *Macrotarsius rhinoptilus*, by Edward Blyth (1810–1873), the Curator of the Society's Zoological Museum in Calcutta (Blyth 1848, 1849). The range given by Blyth (simply, "the Eastern Ghâts") is compatible with the suggestion that Jerdon procured birds from three locations. Blyth (1849) recorded only a single bird presented to the Society museum. Here again there is an ambiguity, this time in the description, where Blyth (1848) gave the total length of the bird as nine and a half or ten inches. Throughout the remainder of the account (including another six measurements), there is no indication that he had more than one bird available. It is probable that the length measurement indicates uncertainty due to the way the skin had been prepared, rather than suggesting that he had two otherwise identical birds before him.

Jerdon travelled widely across India during his career (see Table 1 and Figure 2). His main period of residence within striking distance of the known range of Jerdon's courser was from 1842 until early 1847. He was placed in charge of the Government Dispensary at Madras early in 1842, and arrived at his posting as Civil Surgeon at Nellore in the middle of that year. He stayed there, collecting in and from the surrounding areas until October 1843 when he was transferred to Fort St George in Madras as Garrison Assistant-Surgeon, a post he held until February 1847 when he was appointed as Civil Surgeon at Tellicherry, in southwestern India⁶ (Elliot 1874). Jerdon did not mention the courser in his *Catalogue* (Jerdon 1839–1840) or its first supplement (Jerdon 1841; for date of publication see Dickinson *et al.* 2004; Pittie and Dickinson 2013). Little can be read into its omission from the second supplement (Jerdon 1846; for date of publication see Pittie and Dickinson 2013), as the publication of this was never completed. We can therefore infer that his first bird was likely to have been collected between 1842 (after the first supplement, and following his transfer into the area) and 1844 (when it was given to Blyth for the Asiatic Society's museum).

Table 1. Chronology of career and life of Thomas Caverhill Jerdon (mainly from Elliott 1874; see also Mathew⁵).

Year	age	dates and events
1811		12 October: born in County Durham
1828	17	entered University of Edinburgh, literature student; attended Professor Robert Jamieson's lectures on natural history, where, incidentally, he would have met William MacGillivray, then assisting Jamieson and superintending his museum
1829	18	matriculates at Edinburgh University where medical student to 1832–1833
1834	23	to London, "prosecuted his medical studies for upwards of a twelvemonth"
1835	24	11 September: appointed assistant surgeon, East India Company, Fort St George
1836	25	21 February: arrived in Madras, starts probationary course at General Hospital; following this despatched to Ganjam, where made observations on birds of Eastern Ghats
1837	26	1 March: posted to 2nd Light Cavalry; joined regiment at Trichinopoly, marched to Jalnah; visited different parts of the Table Land
1839	28	met Adolphe Delessert in the Nilagiris; spent about four years with his regiment, then obtained leave of absence to visit the Nilagiri Hills
1841	30	July: married at the Nilagiri Hills
1842	31	about January: appointed Civil Surgeon of Nellore; placed in charge of the Government Dispensary at Madras in meantime, and does not arrive at Nellore until mid-1842
1843	32	3 November: in the introduction to <i>Illustrations</i> he gave his address as Nellore
1844	33	25 October: transferred to Fort St George as Garrison Assistant-Surgeon
1847	36	12 February: after "about three and a half years" appointed Civil Surgeon of Tellicherry, on western side of the Presidency
1851	40	3 June: resigned his civil charge to seek promotion to Surgeon
1852	41	29 February: appointed Surgeon, 4th Light Cavalry, then in the Saugor and Nerbudda territory
1857	46	from April–May: on active duty during mutiny of Bengal Army
1858	47	after peace restored in July 1858, went to Darjeeling on sick leave for a twelvemonth; then appointed to the 11th Native Infantry in Burma
1860	49	appointed Surgeon-Major
1861	50	August: Major Jerdon to join Captain E. Smyth on proposed mission to Tibet, as naturalist, but these plans were frustrated; transferred permanently to Government of India to prepare manuals on vertebrates of India; for 5–6 years explores northern and northwestern India in particular
1862	51	appointed temporary Curator of Asiatic Society museum following Blyth's departure; first volume of <i>Birds</i> published
1864	53	attended Punjab Exhibition in Lahore
1866	55	resident in Darjeeling for most of year
1867	56	resident in Darjeeling for most of year; <i>Mammals</i> published, though printed the year before
1868	57	28 February: retired from service; visited Assam and Khasi Hills; while at Gowahatty suffered severe attack of fever; appointed to honorary position of Deputy Inspector-General of Hospitals in Madras
1870	59	June: arrived in England
1872	60	12 June: died Upper Norwood, Surrey

Following a financial crisis, the collection of the Asiatic Society was transferred to the Indian Museum, Calcutta⁷, in 1866 (Asiatic Society 1868a, 1868b, 1869). The specimens that Blyth had obtained had all been mounted for exhibition to the public, and remained so until 1872 when the curator, Dr John Anderson (1833–1900), "went carefully through them, and removed ... all the types and typical specimens described by Blyth", which were dismounted and stored separately (Sclater 1892). Many had already been seriously damaged by insects and exposure to light. Sclater (1892) included a list of the types in the collection but, unhelpfully, Blyth's *Macrotarsius bitorquatus* was not among them, nor did it appear on his list of missing types. It is possible that Anderson overlooked the courser when he was removing the types, or that it had been lost prior to 1872, but it is curious that Sclater also

overlooked it when preparing his list of missing types. The species was not included in a recent list of type specimens in the museum (Sakthivel *et al.* 2011) and there is still no trace of the specimen.⁸ While Blyth's type seems to have been lost, there appears to be no pressing need to designate a neotype.

2. Jerdon, "Madras", "1846"

A second specimen collected by Jerdon was acquired by Hugh Edwin Strickland (1811–1853), and is now in the Museum of Zoology at Cambridge University (UMZC 16/Gla/5/b/1) (Salvin 1882).⁹ The specimen bears a label written by Alfred Newton at Cambridge¹⁰ indicating the locality as Madras and the date as 1846. "A parcel of bird and animal skins, collected in Southern India by T. C. Jerdon, Esq. the distinguished Naturalist" was offered for sale in Stevens Sale Rooms on 16 August 1850¹¹ and it is quite possible that Strickland obtained his specimen then. If he had obtained it before 1848 when it was named by Blyth it is likely that the competitive Strickland would have described it himself, which he did not do. The generic name *Rhinoptilus* (for *R. chalcopertus* and *R. bitorquatus*) appeared for the first time in a paper Strickland read before the Zoological Society of London in November 1850 (Strickland 1852). While the bird was almost certainly collected within the Madras Presidency (which covered much of southern peninsular India), it would not have been taken at or near Madras itself. In 1846 Jerdon was still based in Fort St George in Madras and possibly obtained the bird from his shikaris, most probably inland from Nellore or in Cuddapah.

3. Eyton, East India, "1850"

Thomas Campbell Eyton (1809–1880) also acquired one of the early specimens of the courser. In his *Catalogue*, the bird (no. 4208) was listed as "*Cursorius Macrotarsus*, Blyth", from East India (Eyton 1856). The skin passed from the Eyton collection to Henry Baker Tristram (1822–1906), "the Great Gun of Durham", and was in turn listed in the catalogue of his collection (Tristram 1889), where the date was given as 1850. It is likely that this was a third Jerdon specimen. By 1850 Jerdon had already been at Tellicherry for three years, and it is probable the bird would have been obtained some years previously, like the others, between 1842 and 1846. There were no other ornithologists regularly collecting birds in the Eastern Ghats at that period. Most likely, Eyton also obtained his bird at the Stevens' sale, and that it was dated from that event. The main part of the Tristram skin collection went to Liverpool where the specimen remains at the National Museums Liverpool (LivCM: T12836).¹² It carries no original collector's label.

No mention of further coursers collected by Jerdon has been traced. If he had more than three, that they no longer exist might be attributed to the "habitual carelessness" through which many of his specimens were lost or destroyed (Elliot 1874: 150) or to other causes. A batch of birds he sent to William Jardine about 1837 were so badly infested with moth that they had to be destroyed (Kinnear 1952), but this would pre-date the period during which he most likely collected his coursers. Following his death, Jerdon's remaining collections and drawings were sold at auction and dispersed.⁵

4. Blanford, east of Sironcha, May 1867

Three birds were seen (none collected) in May 1867 by William Thomas Blanford (1832–1905) in open forests about 15 miles (24 km) east of Sironcha¹³ (Blanford 1867, 1869, 1898), thus in the vicinity of Jinganur.

5. Blanford, near Bhadrachalam, 5 March 1871

A pair was seen by Blanford to the north of the Godavery [Godaver] river, near Bhadrachalam¹⁴, on 5 March 1871, one of which, a male, was obtained; on dissection it did not appear to be breeding (Blanford 1898; Knox and Walters 1994). This specimen was acquired by Henry Seebohm (1832–1895) and subsequently passed to the British Museum (Sharpe 1896: 725). It is in the collections of the Natural History Museum, London (NHM) (NHMUK 1896.7.1.51).

The first illustration of the species (by J. G. Keulemans) was published in Seebohm's monograph on the Charadriidae (Seebohm 1888) (see Figure 1, p. 76).

6. Blanford, near Bhadrachalam, 9 March 1871

Another pair was seen by Blanford to the north of the Godavery river, near Bhadrachalam, on 9 March 1871, one of which, again a male, was obtained; on dissection it also did not appear to be breeding (Blanford 1898, Knox and Walters 1994). This specimen was acquired by Allan Octavian Hume (1829–1912), from whom it passed to the British Museum (Sharpe 1896: 50 where date is given erroneously as 7 March). It, too, is in the collections of the NHM (NHMUK 1891.10.1.36).

7. Anonymous, 1895

An anonymous account in the defunct newspaper *The Asian* in 1895 reported the taking of two eggs of the courser (*vide* Baker 1929, Ali and Ripley 1969; see below).

8. Campbell, near Anantpur, June 1900

In June 1900, near Anantpur¹⁵, Howard Campbell (1859–1910) is reported to have seen pairs on two occasions, obtaining one male with enlarged testes (Baker 1929). No further information is available and the specimen has not been located. Ali and Ripley (1969) believed this to be the last authentic record before the species was considered extinct, although Ali (1977) had previously noted this one as only “presumably authentic”.

William Howard Campbell is less well known to ornithologists than some of the other people mentioned here. He was born in Londonderry, in what is now Northern Ireland, on 20 September 1859. He and his brothers were keen collectors of Irish moths and butterflies, and the collection in the family “museum” was said to be one of the best in the country. After graduating from the University of Edinburgh in 1880 (MA) and 1882 (BD), Campbell studied medicine for two years and was then ordained by the London Missionary Society (LMS) and left for Cuddapah in India, where he arrived late in 1884. While in India he continued to collect moths, many of which he sent back to the British Museum, including a number of new species. Further specimens ultimately ended up at the British Museum via other collectors, including Walter Rothschild. A man of considerable energy as well as devotion, Campbell wrote several religious books, revised a number of other texts and took a particular interest in the Telugu language. In 1901 he moved to the LMS training institution at Gooty¹⁶ but, two years later, his health deteriorated following an attack of sprue. He returned to Britain for the last time in September 1908 to escape the tropical climate but his health never recovered. In 1909, he was appointed head of the new United Theological College at Bangalore¹⁷, a position he was unable to take up. Seeking a better climate as his health worsened, he went to Switzerland, and then to the Italian Riviera where he died at Bordighera on 18 February 1910¹⁸ (Lovett 1899; Lawson c. 1925; Irwin and Prior 2004).

Campbell was an active member of the Bombay Natural History Society (BNHS) from 1901 when he moved to Gooty, until 1908. He spent a great deal of his time as a missionary with the poorest peoples, travelling and staying amongst them in remote locations. He journeyed through the forests and jungles, always on the look out for birds, insects and other wildlife. He was an avid collector of birds' eggs, as well as fossils and historic artefacts. He kept careful and copious notes, and published five short articles in the *Journal of the Bombay Natural History Society*, three on birds and two on moths. There is no first-hand account of his courser observations, only Baker's report 29 years later. While Campbell was regarded as "fairly reliable" (Ali 1977), the same cannot be said of Baker (Rasmussen and Anderton 2005: 2: 28–29). It would be helpful if the specimen or Campbell's notebooks could be located. Three of his butterfly cabinets were still in Gooty at the time of his death and perhaps some of his other material as well. The current whereabouts of his later collections are unknown, the only clues being that he presented various birds and reptiles to the BNHS museum in the early 1900s, and a statement by Baker, which suggests that the egg collection at least may have been dispersed after he died (Baker 1922: 178).¹⁹

After 1900, there were a few less satisfactory reports.

9. The species was included without comment in a list of the birds found in and about Madras, published in 1905 (Dewar 1905). Dewar's area of interest was a strip of coast about ten miles (16 km) wide from Chingleput in the south to the Pulicat lakes in the north, because "The Madras man who goes out for a day's shooting is not likely to go outside this area." Dewar readily acknowledged many records from other people and museums, and there is no such comment against the courser. It is likely, however, that the species found a place on his list based on Blanford (1898), whose numbering Dewar followed throughout his paper, and in which the range of the species is given as "... to the neighbourhood of Madras."

10. In the unpublished diaries of Thomas Reid Davys Bell (1863–1948)²⁰ there are repeated references to, and details of, the discovery of the nest of Jerdon's courser at Belgaum²¹, including the taking and preparation of two eggs (diary entries between 21 April and 6 May 1923). Originally from Ireland, Bell joined the Forest Service in India. He was mainly interested in Lepidoptera, but also collected eggs. Unfortunately, it is clear that, in the absence of an illustrated guide, Bell confused the Indian courser (*Cursorius coromandelicus*) with Jerdon's courser. The eggs which Bell took at Belgaum are now at the NHM (Tring) and are undoubtedly those of an Indian courser (Figure 3).

11. Baker and Inglis (1930) included a note that "There was an advertisement some time ago in a Calcutta paper of a collection of eggs for sale somewhere the Madras side and one of the eggs specially mentioned as being in it was of [Jerdon's] Courser" – C. M. I.)." This advertisement has not been traced.

12. The species was noted as "A rare bird found at Sironcha" by D'Abreu (1935). This paper is prefaced as "... a brief list of the birds of the Central Provinces which have been collected, observed, or I am otherwise aware of during a residence of over twenty years. Species which are probably to be found but which I have not yet observed or identified with certainty are enclosed in brackets". There is sufficient ambiguity in his introduction to suggest that D'Abreu was not reporting personal observations in relation to the courser, but had included the species on his list based on Blanford's records.

Ali and Ripley (1969) considered Campbell's 1900 sightings and specimen to be the last authentic records of Jerdon's courser and, for much of the twentieth century, the species was presumed to be extinct (for example, Fuller 1987). Likely habitat was surveyed on a number

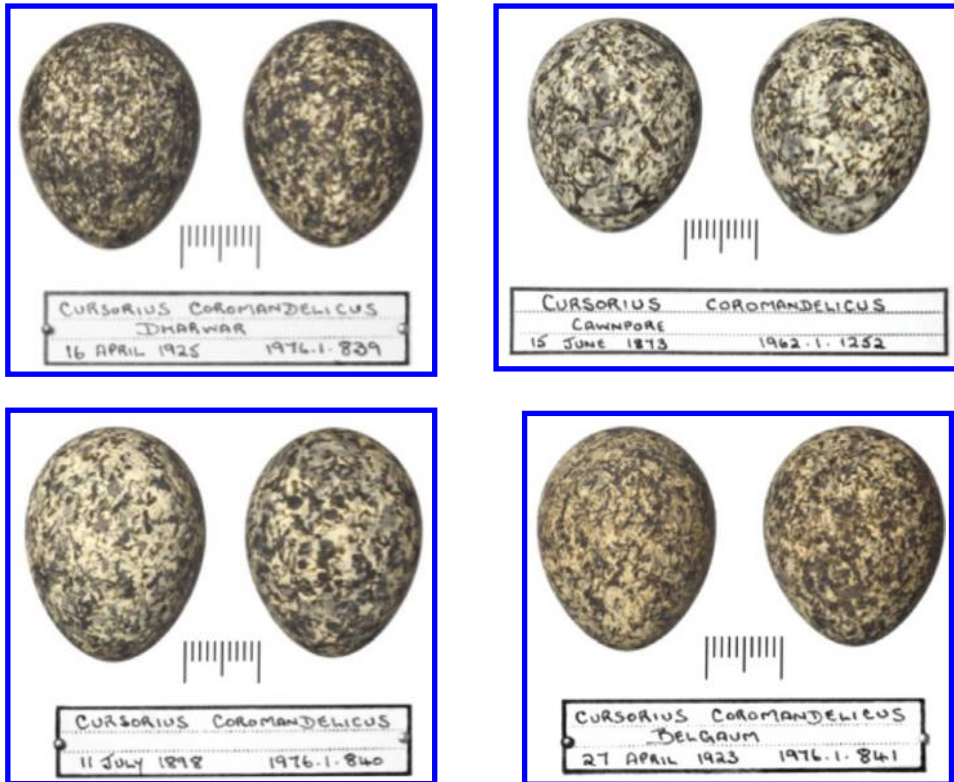


Figure 3. Eggs of the Indian courser (*Cursorius coromandelicus*), including the clutch collected by Thomas Reid Davys Bell in 1923 (bottom right; scale 10 mm) (photographs by Harry Taylor; © Natural History Museum).

of occasions without success (summarized by Bhushan 1986a, 1986b), perhaps because of the species' crepuscular and nocturnal habits, though the large size of the eye was specifically remarked upon by Blyth (1848). In 1985 Bharat Bhushan of the BNHS began another survey of the Penner River valley in southern Andhra Pradesh to look for the courser. Following promising reports from local bird trappers, attention was focused on the Lankamalai Hills, Cuddapah, where Aitanna, a trapper from Redipalli, had seen what appeared to have been Jerdon's coursers while trapping at night. Early in the morning of 13 January 1986, Aitanna again saw a courser in his torchlight. Before it could do anything, he ran forward and picked it up. He took the live bird home and sent urgent messages to Bhushan to come and confirm his identification. Bhushan, delayed in getting to Reddipalli by heavy rains, arrived on 15 January, excited to find the bird he had been looking for in Aitanna's hands. Dr Salim Ali, the leading figure in Indian ornithology, hurried to see the bird, but it died just hours before he got there on 19 January and the specimen is now preserved in the collection of the BHNS. Early the following morning, Bhushan and Aitanna saw a pair of Jerdon's coursers close to the place where Aitanna had caught his bird, the first field observation of the species by an ornithologist in 85 years (Bhushan 1986a, 1986b).

Following much national and international excitement at the rediscovery, the species has since been seen a number of times though it remains elusive. Its known distribution is very restricted and its habitat is threatened with development (Anonymous 2010). The future of

the species is thus far from secure and work is going on to try and prevent a second, more lasting, extinction (Jeganathan *et al.* 2008).

PREVIOUS ACCOUNTS OF EGGS

The Asian was a weekly newspaper established in 1878 and published in Calcutta, subtitled “Oriental Sportsman’s newspaper”.²² It specialized in sport and natural history. In 1895 it carried a short anonymous account of the discovery of a clutch of two eggs of Jerdon’s courser, described as bright yellow-stone, the ground colour almost obliterated by black, scrawly blotches and spots, laid on the ground in thin scrub jungle (Baker 1929; Ali and Ripley 1969). Ali (1977) thought that this record “need not be taken too seriously”, and Ali and Ripley (1969) commented “No authentic information available” in relation to eggs. It has not been possible to trace the original newspaper article, though Bhushan saw a copy in 1985 in the library of the Asiatic Society in Mumbai.²³

Apart from the vague reference to an egg in a collection for sale (Baker and Inglis 1930), the only other published reference to eggs was reported by Samant and Elangovan (1977) who noted that during their surveys,

a few shikaris described the nest and eggs of the Jerdon’s courser, which appear similar to the account in the newspaper – nest a scrape on the ground, amidst stony open ground: two egg clutch, eggs yellowish with many black blotches; similar to the Red[-]wattled Lapwing’s *Vanellus indicus* eggs, but a little smaller.

There are significant differences in these two descriptions of the eggs: although the ground colour is broadly similar – “bright yellow-stone” and “yellowish” – the 1895 account stated that the yellow is “almost obliterated by black scrawly blotches and spots”, whereas the 1977 report mentions “many black blotches; similar to the Red[-]wattled Lapwing”. This will be discussed further below.

THE DISCOVERY OF THE EGG OF JERDON’S COURSER

The first egg of Jerdon’s courser was discovered by chance while I was browsing through a collection of uncatalogued eggs in a store room at the Zoology Museum at the University of Aberdeen. It was labelled as belonging to Jerdon’s courser (*Rhinoptilus bitorquatus*) and it was noted that the egg was said to be unknown in *The fauna of British India ... Birds* (Blanford 1898). The egg was identified by comparison with the eggs of other coursers, in particular, the closely related bronze-winged courser (*R. chalconotus*), and likely confusion species from India. To confirm the identification, mtDNA was extracted from the egg, and compared with DNA from other coursers and a sample extracted from the toe-pad of Blanford’s male *R. bitorquatus* from Bhadrachalam on 5 March 1871 at the NHM at Tring (NHMUK 1896.7.1.51) (Knox and Pieltney 2013).

The egg (Figure 4) is short oval (Harrison 1975: 35) and non-glossy (apart from areas – including a partial fingerprint – smeared with some of the adhesive which had been used to gum a paper disk over the blowhole). The egg measures 35.5 × 26.5 mm, and weighs 0.76 g. It is pale sandy yellowish, with brown blotches, compact or elongated in form, occasionally scrawly, and varying in intensity from very dark, almost black, to faint and close to the background colour. The blotching is heaviest over the blunt end where the ground colour is almost completely obscured, becoming much lighter at the widest point, and almost unmarked at the pointed end (Knox and Pieltney 2013). (Figure 5 shows eggs of the bronze-winged courser *R. chalconotus* for comparison.)



Figure 4. Two views of the only known egg (35.5 × 26.5 mm) of Jerdon's courser (*Rhinoptilus bitorquatus*), collected by E. G. Meaton, probably in 1917 and most likely within 100 km of the Kolar Gold Fields, Karnakata, India (University of Aberdeen ABDUZ: 70169). Gloss on parts of the surface are from excess adhesive from the paper disc; note partial fingerprint in adhesive below the disc. (Photographs by Kim Downie, University of Aberdeen.)

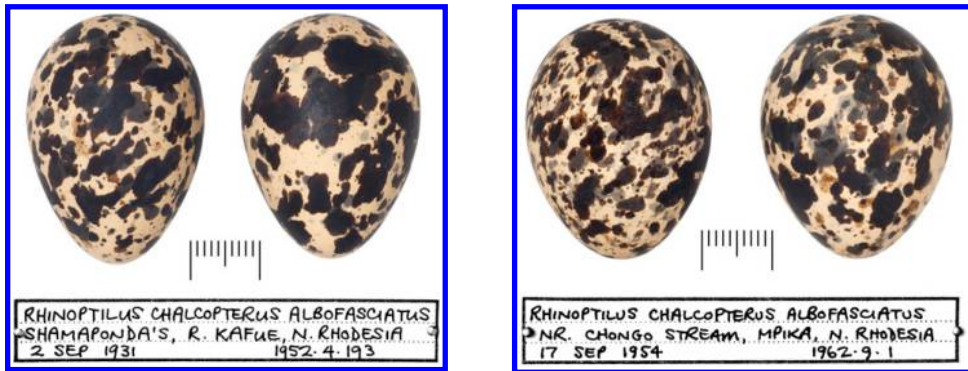


Figure 5. Eggs of the bronze-winged courser (*Rhinoptilus chalcopterus*) (scale 10 mm) (photographs by Harry Taylor; © Natural History Museum).

ERNEST GILBERT MEATON AND HIS EGG COLLECTION

The collection

The courser egg is part of a collection put together by Ernest Gilbert Meaton. The collection was purchased by George Falconer Rose and given to Aberdeen Grammar School in Scotland in 1919. The School transferred the collection to the Zoology Museum at the University of Aberdeen about 1978. A report of the collection when it was received by Aberdeen Grammar School stated that there were 320 eggs, and enumerated 281 eggs of 94 species, along with some unidentified eggs (H. F. M. S. 1919). The collection now contains 259 eggs, representing 91 “clutches” from 77 species, but the figures are not directly comparable as the 1919 publication listed only one clutch per species although a few duplicate clutches are now present and there is no evidence they were added later. When the collection was brought to the university, lack of space at that time led to the eggs being distributed in vacant compartments scattered through cabinets housing another collection. Some circular glass-topped boxes with neat labelling remain, dating from when the collection was received by Aberdeen Grammar School. Most clutches are unboxed and have labels written in ball-point ink, apparently since the collection was transferred to the

Zoology Museum; no original Meaton labelling has been identified, although annotations on some of the eggs are probably in his hand. The data with each egg or clutch are very limited. Most are marked with an English name, scientific name, Aberdeen Grammar School catalogue number, the name of the collector (E. G. Meaton), the person who presented the collection to the Grammar School (G. F. Rose) and the date of presentation (14 January 1919). Few have a collection locality and/or a date, or other comment, either on the label or on the shell. Most eggs have a neat circular paper disc affixed over a single blowhole in the side of the egg, though a number have a pair of end blowholes, again, usually covered with paper, though often less neatly.

The note (H. F. M. S. 1919), reporting the acquisition of the collection at Aberdeen Grammar School, recorded the donation:

An interesting and valuable addition to our collection of Eggs arrived in March, the gift of Mr. George F. Rose (1881–92)²⁴, Calcutta, consisting of 320 Indian eggs, purchased from Mr. E. G. Meaton, V. S. [Veterinary Surgeon], Oorgaum, K.G. F. [Kolar Gold Fields], who has taken great pains to secure accurate identifications, and claims that in this respect these specimens are more exact than the collections of the British Museum.

The courser egg is without locality or date, but a certain amount can be inferred from other sources and the background of the collector.

Ernest Gilbert Meaton 1886–1942

Ernest Meaton's parents were Robert Maton (later Meaton) (1839–1916) and Harriet Beck (1849–1930). Originally from Hampshire, England, Robert enlisted in the army in 1855 at Winchester and served in India for many years, retiring in Bangalore in 1880. Ernest Gilbert Meaton was born there on 29 December 1886, the fourth of six children.²⁵ Robert may have found work at the nearby Kolar Gold Fields²⁶, as R. Meaton is listed as a contractor there in 1905.²⁷ Little is recorded about Ernest's early life and his first marriage to Mary Josephine Prunty. They had three children in quick succession, all born at Oorgaum, Kolar Gold Fields: Ernest Paul in 1915, Anthony Gerald in 1916 and Bernard Cyril in 1917. Mary died of flu in early October 1918, at the age of 26.²⁸ In 1923, Meaton married Violet Walsh (Figure 6). They had one child, Peter Terence, born in 1925. Ernest Paul and Bernard Cyril both became mining engineers and travelled widely, and Bernard listed his occupation in 1945 as a band leader and mining engineer. Ernest and Violet Meaton played an active part in the social life of the Kolar Gold Fields community where Ernest was re-elected President of the Kolar Gold Fields Provincial Branch of the Anglo-Indian and Domiciled European Association in April 1926. He and his wife won a number of competitions in the local tennis club in the late 1920s and early 1930s. Tragedy struck the Meatons on 23 November 1942. Ahead of the rapid advance of the Japanese in south-east Asia, they had embarked with all their possessions on the liner SS *Tilawa*, en route from Bombay to Mombasa and Durban, when the Japanese submarine I-29 torpedoed the vessel about 1,000 km east of the Horn of Africa. The damaged *Tilawa* did not immediately sink and attempts were being made to re-board her when a second torpedo struck and the ship went down. Although many were rescued, Ernest and Violet Meaton were listed among the casualties.²⁹

Meaton was a veterinary surgeon but records of his qualifications or memberships of professional associations have not been traced either in Great Britain and Ireland or in India. Nothing is known about his interests in natural history, apart from his membership of the Bombay Natural History Society between 1915 and 1920. He does not appear to have



Figure 6. Ernest Gilbert Meaton (centre, standing) on the occasion of his marriage to Violet Walsh (centre, seated) in 1923 (photograph courtesy of Helen Rodda).



Figure 7. George Falconer Rose (detail from portrait by Alexander Christie, courtesy of Lorraine and Richard Pull).

contributed notes to any ornithological magazines or journals. He must, however, have been more than a novice in the study of birds, given the nature of his egg collection and the range of species represented, even if he perhaps encouraged others to find him nests or bring him eggs.

The Kolar Gold Fields

The Gold Fields are situated in south-east Karnataka State, about 100 km east of Bangalore, at an altitude of about 900 m. Huge quantities of gold were extracted from the mines run by John Taylor & Co., although conditions for the miners were dangerous and poor. The barren landscape transformed by the Europeans and Anglo-Indians became known as “Little England”, complete with its churches, cricket ground, golf course, social and tennis clubs. The streets and the well-tended gardens of lavish bungalows were luxuriously planted with trees and shrubs. The mines were among the richest in the world, and only closed in the early years of the twenty first century (Anonymous 1908; White 2010).

George Falconer Rose 1876–1940

Alexander MacGregor Rose was born in Tomintoul, Banffshire, in 1846. He studied at the Free Church College in Aberdeen, and was ordained in 1875 when he took over the parish at Evie and Rendall, Orkney. Unfortunate circumstances led to bankruptcy and, in disgrace, he abandoned his congregation and his young family and sailed for New York in 1879, where he made a new career as a journalist.³⁰ George Falconer Rose (Figure 7) had been born on 4 December 1876 at the manse at Evie and his brother, Alexander MacGregor Rose, was born there in 1878. The two boys and their deserted mother, Mary Falconer, returned to her father, George Falconer, a successful Aberdeen draper who became guardian of the children. When their grandfather died about 1890, the family moved in with Mary’s brother William and his family in Belgrave Terrace, Aberdeen. George Falconer Rose attended, and enjoyed, Aberdeen Grammar School from the age of four in 1881 until 1892, followed by Gordon’s

College in Aberdeen and a seven-year apprenticeship with James Abernethy & Co. as a marine engineer. George was an able student and his training led to varied short-term employment, including a spell as an engineer on the SS *Celtic Princess*. In 1901 he joined Andrew Yule & Co. in Calcutta, one of the largest trading merchants in southern Asia (Andrew Yule & Co. 1963; Russell 2004). His uncle, Alexander Falconer, was a business partner of company chairman Sir David Yule. Rose brought his engineering skills and forceful personality to Yule's jute business, and developed an international reputation, managing, designing and building jute mills for the company. He served on a number of industry bodies, and was a member of the Bengal Legislative Council in 1923–1924 and 1929–1930. Rose served in the Calcutta Scottish Volunteers from December 1914³¹ to 1932, rising from lieutenant to the rank of colonel. An active member of the Caledonian Society, he also helped found the Burns Club and the Jodhpur Club in Calcutta. He had a vigorous social and sporting life and role in charity fundraising. In 1919 he became a director of the newly incorporated Andrew Yule & Co. Ltd. Rose married Margaret Hale Hambley in 1912, but they had no children. Margaret supervised their home in Lee Road, Calcutta, and in 1925 won first prize for the best "A Class" garden in the Agri-Horticultural Society's Annual Flower Show. All was not peaceful, however, and they suffered a night-time burglary at the house in 1929, losing silverware and curios.

Rose and his wife returned frequently to Scotland and in 1921 they purchased and later extended Tullich Lodge, a grand Scottish Baronial property overlooking the outskirts of Ballater, Aberdeenshire, considered to be one of the finest houses in Deeside. Not content with this, three years later, Rose also purchased the remote Auchernach, in Strathdon, Aberdeenshire, and commissioned a geological survey of the estate. The house had been built about 1810 by Lieutenant-General Nathaniel Forbes of the Honourable East India Company, and the walled garden with its slender clock tower is said to have been modelled on an Indian hill fort.³²

In 1932, at the age of 55, Rose retired from Andrew Yule & Co. Ltd as a Managing Director and returned to Scotland, visiting Canada and New Zealand in the same year. In Scotland, he immersed himself in estate life and gave talks on colonial India to the local school in Strathdon. He was President of the Aberdeen Branch of the Royal Scottish Forestry Society and a member of the Third Spalding Club. He died at Tullich Lodge on 24 February 1940 and was buried at Aberdeen's Springbank Cemetery. His personal wealth on his death was given as £51,564 in Great Britain and £45,488 abroad (Anonymous 1940). The house at Auchernach was pulled down in 1945. The clock tower still stands, but the walled garden fell into ruin.

Although he was a member of the Asiatic Society of Bengal between 1924 and 1934, there is no evidence that Rose was ever actively involved in natural history. There must have been more than a passing interest, however, given the purchase of Meaton's egg collection and its presentation to the school in 1919. He had previously donated a stuffed mongoose fighting a cobra, in 1915. The Meaton collection was followed in 1924 by a collection of Indian butterflies, which he bought for the school, and further gifts of moths and butterflies in 1927 and 1928. The 1924 collection arrived by sea at Dundee, presumably on a jute ship on company business, and was craned straight into a waiting car and driven to the school (Anonymous 1924). The other donations probably arrived the same way. The school museum was an eclectic mix of archaeology, anthropology, social history, portraiture, stamps and natural history, yet Rose donated only insects, eggs and birds, the last apparently being a stuffed golden eagle (*Aquila chrysaetos*) in 1930.

DISCUSSION

Of the clutches still present in the Meaton collection, 27 are dated: one from 1915, three from 1916, eighteen from 1917 and five from 1918. This broadly coincides with Meaton's membership of the Bombay Natural History Society (1915 to 1920). One of the undated clutches is annotated as having been identified by E. C. S. Baker. As Baker did not refer ever to having seen a Jerdon's courser egg, we can postulate that the courser egg was acquired after the collection was started rather than at the beginning and suggest that "about 1917" (which also seems to be the peak of Meaton's collecting activity) is the best estimate of when it was obtained.

Only 13 of the clutches have collection localities more precise than "India". Of these, one is given as Deccan, four are in Bangaldesh or northeastern India, six are Kolar District or Oorgaum (Kolar Gold Fields) and two place-names have not been traced. Of the species represented, almost all could have been taken within 100 km of the Kolar Gold Fields; the exceptions seem to be that one is Himalayan, two are more typical of the Western Ghats, one is almost certainly not from the Kolar Gold Fields, and another three may or may not be from the neighbourhood of the Kolar Gold Fields. The Deccan clutch, two eggs of the chestnut-bellied sandgrouse (*Pterocles exustus*), are the only eggs in the collection labelled as having been taken by another person, H. K. Clarke, in July 1918. Uniquely, the two blowholes on each egg have been covered with tiny spots of red sealing-wax. A small minority of the eggs Rose presented to Aberdeen Grammar School are not explicitly labelled as having been collected by Meaton, and it is possible that Rose or Meaton supplemented the collection with a few from other collectors. From an examination of the collection, Meaton's early egg-collecting technique was to use two blow-holes, and crude, often square, paper covers, later preferring a single blow-hole and circular paper covers. The very neat style of preparation of the courser egg suggests it was collected later in Meaton's short collecting career.

The Kolar Gold Fields are only 200 km SSW from where the courser was rediscovered in 1986, and 50 km SSE of the location of a recent unconfirmed record (Anonymous 2010: figure 2). The likelihood is that Meaton collected the egg within 100 km or so of the Kolar Gold Fields in 1917. It is not clear why he suddenly sold the egg collection into which he had put such energy over the previous few years, but the death of his first wife in October 1918, leaving him with three children under the age of four must have been a shock. Further, the war ended only weeks later, bringing change to many lives.

No direct connection has been discovered between Meaton and Rose, but there must be a strong possibility that the advertisement seen by Inglis (Baker and Inglis 1930) had been placed by Meaton. The end of the war was making it safer to ship goods safely back to Britain. Rose, advancing in his career and status, was just about to become a director of the company. With the war over, his thoughts were also turning back to his native Aberdeenshire where he would buy Tullich Lodge in 1921. As a member of the Former Pupils' Club, it can be suggested that he might have read the school magazine with its appeals for the museum, noticed Meaton's advertisement and saw an opportunity to start doing something useful at home. The acquisition of natural history and other items, and donating them to institutions at home, was part of a major tradition among expatriates in the colonies through the late nineteenth and early twentieth centuries in particular, leading to important collections of cultural and natural history materials in the museums of Britain and other imperial powers.

Meaton's specimen is the first confirmed egg of Jerdon's courser to have been seen by ornithologists. It closely matches the anecdotal descriptions provided by shikaris to Samant and Elangovan (1977). The account in *The Asian* in 1895, however, now seems less convincing. The habitat matches that expected for Jerdon's courser, but the description of the eggs – bright yellow-stone, the ground colour almost obliterated by black scrawly blotches and spots – does not match the Meaton egg. Whilst we can expect some individual variation in the markings of courser eggs, there must be some concern that the eggs reported in *The Asian* more closely resemble those of the Indian courser, where the scrawly blotches are more evenly distributed over the egg and often almost completely obscure the yellowish ground colour (Figure 3). Descriptions of the nest sites and breeding behaviour of congeneric *Rhinoptilus* species are given by Bhushan (1987) and Maclean (1996).

The discovery of an egg of Jerdon's courser provides a new tool in the conservation of the species and its natural habitat because it enhances confidence in the reports of nesting by shikaris in Samant and Elangovan (1977), and will assist in the identification of any putative nests found in the future. It also points to the possibility that the species' distribution may have extended further south than previously thought, and suggests areas for further surveys for this elusive bird.

ACKNOWLEDGEMENTS

Many people helped to put this story together. Stuart Piertney carried out the mtDNA analysis, which confirmed the identification. Samples of courser toe-pad were supplied by Mark Adams at the NHM, Tring. Douglas Russell and Michael Walters put their expertise with egg collections at my disposal; Michael Walters was first to notice Bell's references to Jerdon's courser in his notes. Bharat Bhushan, Rhys Green and Panchapakesan Jeganathan generously shared their knowledge of Jerdon's courser with me. The families of E. G. Meaton and G. F. Rose patiently helped with many questions with warm enthusiasm; I thank Chris Bateman, Tina Cotton, Carlanne Meaton, Sue Norris, Lorraine and Richard Pull, Cynthia and David Reeks, Helen Rodda and Sian Sumners for welcoming me into their family histories. Errol Fuller, Rhys Green, David Parkin, Nick Picozzi, Stuart Piertney and an anonymous referee provided comments on this paper.

For their help in many ways I am grateful to Denise Anderson, Winifred Assan, Anne Barrett, Zaro Boev, Mike Brooke, Rachel Browning, Grant Buttars, Kirsteen Campbell, M. K. Chakrabarti, Martin Collinson, Meghan Constantinou, Simon Cook, Caroline Craig, Daisy Cunynghame, Neil Curtis, Mark Curthoys, Indraneil Das, Kaushik Deuti, Ed Dickinson, Katherine Dike, Jenny Downes, Kim Downie, Estela Dukan, Shona Elliot, June Ellner, Irene Ferguson, Clem Fisher, Elizabeth Frengel, Michelle Gait, Carol Garrard, Stewart Gilles, Martyn Gorman, Alison Harding, Martin Honey, Simon Jackson, Ronnie Johnson, Goulven Keineg, Surya Kiran, Melia Knecht, Brian Lockhart, Roy Lumb, Keith Mackay, Arthur McCombie, Bob McGowan, Clare McVeigh, John Mathew, Ursula Mitchel, Craig Murray, Les Noble, Ken Norris, Tony Parker, S. R. Pattabiraman, Lorraine Portch, Crispin Powell, Katherine Prior, Estella Yule Pryor, Robert Prys-Jones, Pam Rasmussen, Glenn Ratcliffe, Sarah Redmond, Asad Rhamani, David Richardson, Lesley Richmond, Angela Ross, George Sangster, Hellen Sharman, Marianne Smith, Helen Stevenson, Dairmuid Stokes, K. A. Subramanian, Harry Taylor, Ioan Thomas, Lisa van Biljon, Karen Virgo, Bridget White, Sophie Wilcox, Bill Williams, Richard Williams, Michael Wilson, Arnott Wilson, Holly Workman, Margot Wright, and anyone I may have inadvertently omitted.

NOTES

¹ Nellore, in Nellore District; Cuddapah District, both in the State of Andhra Pradesh.

² Madras (Chennai), Tamil Nadu State.

³ For example Jerdon (1862–1864: I: 266): “Mr. Elliot, however, mentions it as visiting Dharwar, above the Ghâts, during the rains only”; “in forests . . . above and below the Ghâts” (I: 280, 285, 295); “shot near Sirci, above Honore” (I: 470).

- ⁴ Apart from where he means “offshore”, which is inappropriate here.
- ⁵ J. Mathew, 2011, “To fashion a fauna for British India”. Unpublished doctoral thesis, Harvard University. Mathew provides an extensive discussion of many of the people and institutions named in this paper and their roles in the development of zoology in India.
- ⁶ Thalassery, Kerala State.
- ⁷ Kolkata, West Bengal.
- ⁸ Kaushik Deuti, pers. comm., 30 May 2012. The bird collections of the Indian Museum are now in the care of the Zoological Survey of India, Calcutta.
- ⁹ URL www.museum.zoo.cam.ac.uk (accessed 20 April 2012).
- ¹⁰ Michael Brooke, pers. comm., 11 April 2012.
- ¹¹ Advertisement in *The Athenaeum* no. 1189 (10 August 1850): 826.
- ¹² Tony Parker, pers. comm., 16 April 2012.
- ¹³ To the north of the Godaveri River, Gadchiroli District, Maharashtra State.
- ¹⁴ This village lies along the north side of the Godaveri River, Khammam District, Andhra Pradesh, about 150 km downstream from the Sironcha locality.
- ¹⁵ Not “west of”, as stated in Birdlife International (2001); in Anantapur District, Andhra Pradesh.
- ¹⁶ Anantapur District, Andhra Pradesh.
- ¹⁷ Bengaluru, Karnataka State.
- ¹⁸ London Missionary Society Papers, School of African and Oriental Studies, London: URL [http://squirrel.soas.ac.uk/dserve/CWM/LMS/20/05/06, Box 2](http://squirrel.soas.ac.uk/dserve/CWM/LMS/20/05/06_Box_2) (accessed 20 April 2012).
- ¹⁹ “... I have received three clutches from the collection of the late Rev. Howard Campbell”.
- ²⁰ Natural History Museum, London, Entomology Library: mss BEL A 68:68. Typescript by T. R. D. Bell, Unbroken sequence of diaries, includes personnel information in addition to collecting data for Lepidoptera and ornithology: List of named Indian Coleoptera.
- ²¹ Belagavi, Belagavi District, Karnataka.
- ²² Stewart Gilles, pers. comm., 8 March 2012.
- ²³ Bharat Bhushan, pers. comm., 10 March 2012.
- ²⁴ The dates Rose was a pupil of the school.
- ²⁵ Chris Bateman, pers. comm., 6 August 2008, 8 August 2008. Further details from other members of the Meaton family.
- ²⁶ Kolar District, Karnataka.
- ²⁷ URL <http://web.archive.org/web/20090730022213/http://geocities.com/Athens/2960/kgf1905.html> accessed 18 April 2012.
- ²⁸ Date from a photograph of her gravestone; Tina Reeks and Cynthia Reeks, pers. comm., 15 April 2012.
- ²⁹ Commonwealth War Graves Commission (URL www.cwgc.org, accessed 20 April 2012).
- ³⁰ University of Toronto Libraries (URL <http://rpo.library.utoronto.ca/poets/rose-alexander-macgregor>, accessed 25 April 2012).
- ³¹ Army List (URL <http://archive.org/stream/armylistoctvol31915grea#page/254/mode/2up>, where listed as G. F. Ross, accessed 25 April 2012).
- ³² Royal Commission on Ancient and Historical Monuments of Scotland (URL <http://canmore.rcahms.gov.uk>, accessed 25 April 2012).

REFERENCES

- ALI, S., 1977 President's letter: 'Mystery birds' of India – 2: Jerdon's courser. *Hornbill* (Bombay) October–December: 5–7.
- ALI, S. and RIPLEY, S. D., 1969 *Handbook of the birds of India and Pakistan*. Volume 3. Bombay & London.
- ANDREW YULE & CO., 1963 *Andrew Yule & Co. Ltd 1863–1963*. [Edinburgh].

- ANONYMOUS, 1908 *The imperial gazetteer of India*. Volume **15**. New edition. Oxford.
- ANONYMOUS, 1924 The school museum. Magnificent gift of Indian butterflies. *Aberdeen Grammar School magazine* **27**: 233.
- ANONYMOUS, 1940 Wills and estates. *Scotsman* 2 November: p. 9.
- ANONYMOUS, 2010 *A species recovery plan for Jerdon's courser* *Rhinoptilus bitorquatus*. Hyderabad.
- ASIATIC SOCIETY, 1868a Proceedings of the Asiatic Society of Bengal, for January 1868. *Proceedings of the Asiatic Society, Bengal* **1868**: 1–58.
- ASIATIC SOCIETY, 1868b Proceedings of the Asiatic Society of Bengal, for November 1868. *Proceedings of the Asiatic Society, Bengal* **1868**: 249–259.
- ASIATIC SOCIETY, 1869 Proceedings of the Asiatic Society of Bengal, for January 1869. *Proceedings of the Asiatic Society, Bengal* **1869**: 1–50.
- BAKER, H. R. and INGLIS, C. M., 1930 *The birds of southern India, including Madras, Malabar, Travancore, Cochin, Coorg and Mysore*. Madras.
- BAKER, E. C. S., 1922 *The fauna of British India, including Ceylon and Burma. Birds*. Volume **1**. Second edition. London.
- BAKER, E. C. S., 1929 *The fauna of British India, including Ceylon and Burma. Birds*. Volume **6**. Second edition. London.
- BHUSHAN, B., 1986a Rediscovery of the Jerdon's or double-banded courser *Cursorius bitorquatus* (Blyth). *Journal of the Bombay Natural History Society* **83**: 1–14.
- BHUSHAN, B., 1986b Rediscovery of Jerdon's or double-banded courser. *Hornbill* **1986** (1): 3–8.
- BHUSHAN, B., 1987 Photographic record of the Jerdon's or double-banded courser *Cursorius bitorquatus*. *Journal of the Bombay Natural History Society* **83** (Supplement): 159–162.
- BIRDLIFE INTERNATIONAL, 2001 *Threatened birds of Asia: the Birdlife International Red Data Book*. Cambridge.
- BIRDLIFE INTERNATIONAL, 2010 *Rhinoptilus bitorquatus*. *IUCN red list of threatened species*. Version 2011.2. (URL www.iucnredlist.org, accessed 2 April 2012).
- BLANFORD, W. T., 1867 [Letter.] *Ibis*, second series, 3: 461–464.
- BLANFORD, W. T., 1869 Ornithological notes, chiefly on some birds of central, western and southern India. *Journal of the Asiatic Society, Bengal* **38** (2): 164–191.
- BLANFORD, W. T., 1898 *The fauna of British India, including Ceylon and Burma. Birds*. Volume **4**. London.
- BLYTH, E., 1848 Report of the Curator Zoological Department. *Journal of the Asiatic Society, Bengal*. **17** (1): 247–255.
- BLYTH, E., 1849 *Catalogue of the birds in the Museum Asiatic Society*. Calcutta.
- CHAVAN, R. and BARBER, I., 2012 In search of the elusive Jerdon's courser: what future for one of the most endangered birds on earth? *BirdingASIA* **18**: 102–104.
- D'ABREU, E. A., 1935 A list of the birds of the Central Provinces. *Journal of the Bombay Natural History Society* **38**: 95–116.
- DEWAR, D., 1905 A list of the birds found in and about Madras. *Journal of the Bombay Natural History Society* **16**: 484–498.
- DICKINSON, E. C., BRUCE, M. D., GREGORY, S. M. S., PETERSON, A. P. and PITTIE, A., 2004 The dating of names proposed in the first supplement to Thomas Jerdon's *Catalogue of the birds of the peninsula of India*. *Bulletin of zoological nomenclature* **61**: 214–224.
- ELLIOT, W., 1874 Memoir of Dr. T. C. Jerdon. *History of the Berwickshire Naturalists' Club* **7**: 143–151.
- EYTON, T. C., 1856 *A catalogue of the species of birds in his possession*. Wellington.
- FULLER, E., 1987 *Extinct birds*. London.
- HARRISON, C., 1975 *A field guide to the nests, eggs and nestlings of European birds*. London.
- IRWIN, C. H. and PRIOR, K., 2004 Campbell, (William) Howard (1859–1910). *Oxford dictionary of national biography* (online edition doi 10.1093/ref:odnb/32274). Oxford.

- JEGANATHAN, P. and WOTTON, S. R., 2004 The first recordings of call of the Jerdon's courser *Rhinoptilus bitorquatus*. *Journal of the Bombay Natural History Society* **101**: 26–28.
- JEGANATHAN, P., GREEN, R. E., BOWDEN, C. G. R., NORRIS, K., PAIN, D. and RAHMANI, A. R., 2002 Use of tracking strips and automatic cameras for detecting critically endangered Jerdon's coursers *Rhinoptilus bitorquatus* in scrub jungle in Andhra Pradesh. *Oryx* **36**: 182–188.
- JEGANATHAN, P., RAHMANI, A. R., GREEN, R. E., NORRIS, K., VOGIATZAKIS, I. N., BOWDEN, C. and PAIN, D., 2008 Quantification of threats and suggested ameliorative measures for the conservation of the critically endangered Jerdon's courser *Rhinoptilus bitorquatus* and its habitat. *Journal of the Bombay Natural History Society* **105**: 73–83.
- JERDON, T. C., 1839–1840 Catalogue of the birds of the peninsula of India, arranged according to the modern system of classification; with brief notes on their habits and geographical distribution, and description of new, doubtful and imperfectly described species. *Madras journal of literature and science* **10**: 60–91, 234–269; — **11**: 1–38, 207–239; — **12**: 1–15, 193–227.
- JERDON, T. C., 1841 Supplement to the catalogue of birds of the peninsula of India. *Madras journal of literature and science* **13** (1): 156–174.
- JERDON, T. C., 1843–1847 *Illustrations of Indian ornithology containing 50 figures of new, unfigured and interesting birds, chiefly from the south of India*. Madras.
- JERDON, T. C., 1846 Second supplement to the catalogue of the birds of southern India. *Madras journal of literature and science* **13** (2): 116–144.
- JERDON, T. C., 1862–1864 *The birds of India*. 3 volumes. Calcutta.
- JERDON, T. C., 1867 *The mammals of India*. Roorkee.
- KINNEAR, N., 1952 The history of Indian mammalogy and ornithology. Part 2. Birds. *Journal of the Bombay Natural History Society* **51**: 104–110.
- KNOX, A. G. and PIERTNEY, S. B., 2013 The discovery of the egg of Jerdon's courser *Rhinoptilus bitorquatus* (Blyth 1848). *Journal of the Bombay Natural History Society* **109**: 149–152.
- KNOX, A. G. and WALTERS, M. P., 1994 *Extinct and endangered birds in the collections of The Natural History Museum*. (B. O. C. occasional publications 1.) Tring.
- LAWSON, M., c. 1925 *Howard Campbell*. London.
- LOVETT, R., 1899 *The history of the London Missionary Society 1795–1895*. London.
- MACLEAN, G. L., 1996 Family Glareolidae (coursers and pratincoles), pp 364–383 in DEL HOYO, J., ELLIOTT, A. and SARGITAL, J. (editors), *Handbook of the birds of the world*. Volume 3. Barcelona.
- PITTIE, A. and DICKINSON, E. C., 2013 The dating of the *Second supplement to Jerdon's Catalogue of the birds of the peninsula of India* in the *Madras journal of literature and science*, volume 13 number 31. *Zoological bibliography* **2**: 151–166.
- RASMUSSEN, P. C. and ANDERTON, J. C., 2005 *Birds of south Asia. The Ripley guide*. 2 volumes. Washington, D.C. & Barcelona.
- RUSSELL, I. F., 2004 Yule family (per. 1863–1928). *Oxford dictionary of national biography* (online edition doi 10.1093/ref:odnb/61112). Oxford.
- SAKTHIVEL, R., DUTTA, B. B. and VENKATARAMAN, K., 2011 Catalogue of type specimens (Aves) in the national zoological collection of the Zoological Survey of India. *Zoological Survey of India occasional paper* 330.
- SALVIN, O., 1882 *A catalogue of the collection of birds formed by the late Hugh Edwin Strickland, M. A.* Cambridge.
- SAMANT, J. S. and ELANGO VAN, V., 1997 *Avifauna of the Eastern Ghats with special reference to the Jerdon's courser Cursorius bitorquatus. Final report*. Bombay.
- SCLATER, W. L., 1892 On the Indian Museum and its collection of birds. *Ibis*, sixth series, **4**: 65–87.
- SEEBOHM, H., 1888 *The geographical distribution of the family Charadriidae, or the plovers, sandpipers, snipes, and their Allies*. London.
- SHARPE, R. B., 1896 *Catalogue of the birds in the British Museum*. Volume **24**. London.
- [SIMPSON], H. F. M., 1919 The museum. *Aberdeen Grammar School magazine* **22**: 137.

STRICKLAND, H. E., 1852 List of birds procured in Kordofan by Mr. J. Petherick. *Proceedings of the Zoological Society (London)* 1850: 214–221.

TRISTRAM, H. B., 1889 *Catalogue of a collection of birds belonging to H. B. Tristram, D. D., LL. D., F. R. S.* Durham.

WHITE, B., 2010 *Kolar Gold Fields*. Milton Keynes.

Received 27 February 2013. Accepted 27 May 2014.