The taxonomic history of Black-shouldered Peafowl; with Darwin's help downgraded from species to variation

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The taxonomic history of Black-shouldered Peafowl; with Darwin's help downgraded from species to variation

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Summary.—In the 19th century the black-shouldered variety of Indian Peafowl *Pavo cristatus* was erroneously viewed by many as a separate species, named *P. nigripennis*. Others had doubts about its taxonomic status, but Darwin presented firm evidence for it being a variety under domestication, which treatment is now well established and accepted. It being a colour variation rather than a wild species was important for Darwin to prove, as otherwise it could undermine his theory of slow modification by natural selection in the wild.

'I cannot consider it a domesticated variety, because the differences in both sexes appear to be constant, and to descend to the progeny' (Sclater 1860: 222).

'The black-shouldered peacock is a variety, the case is the most remarkable ever recorded of the abrupt appearance of a new form, which so closely resembles a true species that it has deceived one of the most experienced of living ornithologists' (Darwin 1868: 292).

Colour aberrations, especially melanism, have always confused ornithologists. In the past, when nothing was known concerning plumage pigmentation and mutations, aberrant-coloured birds were often described as new taxa. A well-known example is the melanistic aberration of Indian Peafowl *Pavo cristatus* named Black-shouldered Peafowl (van Grouw 2017) or Black-winged or Japanned Peafowl ('japanned' meaning 'covered with a hard black varnish'). Due to its consistent colour differences compared to Indian Peafowl, this variety was believed to be a species and named *Pavo nigripennis* P. L. Sclater, 1860.

Indian Peafowl, also known as Common Peafowl or Blue Peafowl, is native to the Indian Subcontinent but commonly bred in captivity almost worldwide (Fig. 1). Males of the black-shouldered variety differ mainly in having the wings and shoulders blackish, whilst the rest of the plumage is hardly affected (Fig. 2A). Black-shouldered females, however, are overall pale cream-coloured with distinct dark mottling on the upperparts (Fig. 2B).

The black-shouldered variety results from a recessive mutation with the symbol *bs* (Somes & Burger 1991). A pair of wild-type Indian Peafowl can have black-shouldered offspring if both parents possess the recessive mutation in their genome. From two black-shouldered birds, however, one cannot breed a wild-type Indian Peafowl; they will produce only black-shouldered offspring. The mutation affects the distribution and deposition of otherwise unaffected melanin pigment in the plumage (van Grouw 2017), resulting in males being slightly darker than normal, but females being notably paler. Sexual dimorphism in Black-shouldered Peafowl is thus even more extreme than in wild-type Indian Peafowl.

Darwin was interested in these peafowl as, in his opinion, the sudden appearance of Black-shouldered Peafowl among Indian Peafowl must have occurred via domestication,

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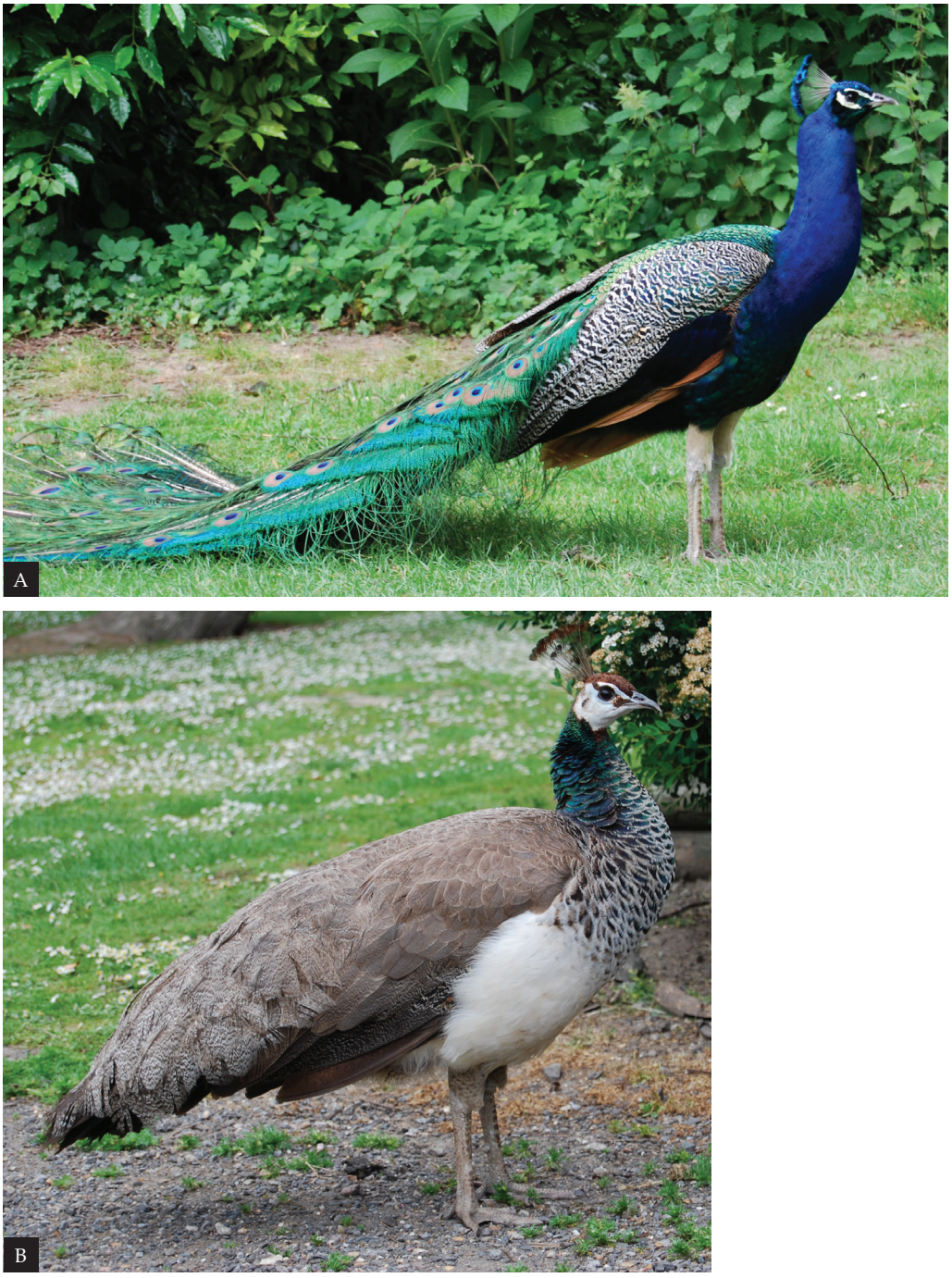

Figure 1. Normal-coloured Indian Peafowl *Pavo cristatus*, male (A) and female (B), Whipsnade Zoo, England, 18 June 2010 (Hein van Grouw)

as he thought species in the wild evolve slowly by natural selection through small modifications. Darwin was therefore keen to prove that *Pavo nigripennis* was a variety rather than a species.

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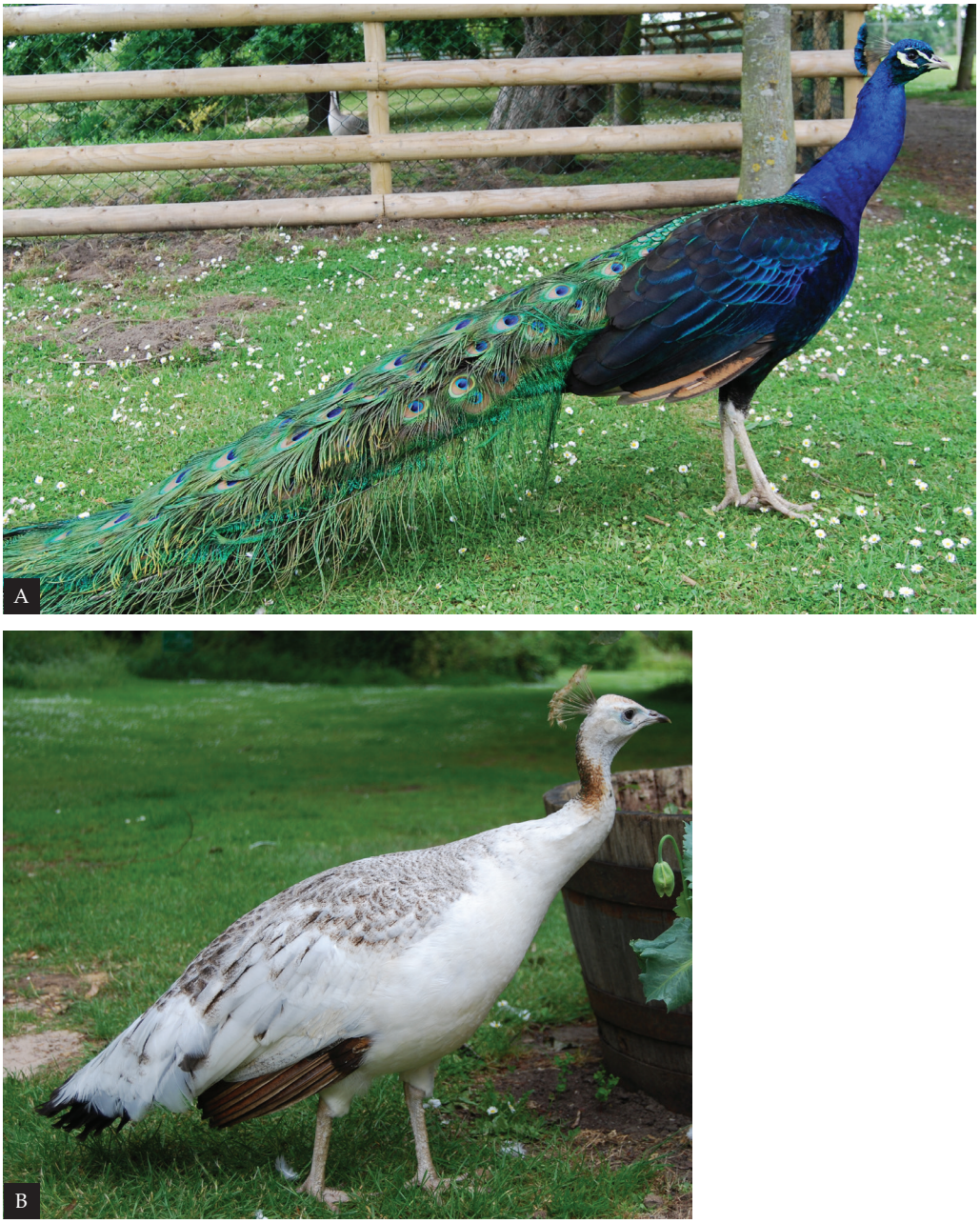

Figure 2. Black-shouldered Indian Peafowl *Pavo cristatus*, male (A) and female (B), Whipsnade Zoo, England, 18 June 2010; other than parts of the wing and shoulders, the black-shouldered mutation does not change male appearance, but it has a major effect on female plumage (Hein van Grouw)

Who was first? Confusing ancestry

Coenraad Jacob Temminck (1778–1858), founder and first director of the State Museum of Natural History (RMNH, now the Naturalis Biodiversity Center) in Leiden, thought Black-shouldered Peafowl was a wild species. He had studied two males: one he received alive from Batavia (modern-day Jakarta) and the other in a menagerie in

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Figure 3. Black-shouldered Peafowl specimen from Temminck's collection, which was used as a model by Jean-Gabriel Prêtre (1768–1849) for his illustration (see Fig. 4), and is held at the Naturalis Biodiversity Center, RMNH.AVES.225015 (© Naturalis Biodiversity Center, Leiden)

Figure 4. Watercolour of Black-shouldered Peacock specimen RMNH.AVES.225015 from Temminck's collection, painted by Prêtre but never printed (© Naturalis Biodiversity Center). Temminck intended to publish an illustrated two-volume work in folio format on Galliformes, entitled *Histoire naturelle générale des gallinacés*. It was never published as it became financially impossible to produce such a luxury edition with the ending of Napoleon's reign (Brouwer 1953: 43).

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London (Temminck 1813: 32). His own bird died the year it arrived and was preserved in his collection (Temminck 1813: 32, 34; see Figs. 3–4). It was first catalogued as '660, Le paon sauvage, ou paon primitif *Pavo cristatus indicus*' (Temminck 1807: 145) but he subsequently replaced *indicus* with *primus*: 'Paon primitif or Paon sauvage *Pavo cristatus primus* Mihi [named by me]' (Temminck 1813: 26–59; 1815: 650–653). Both *primitif* (French) and *primus* (Latin) suggest Temminck thought that the bird represented the ancestral type of domestic peafowl; according to him, three domestic colour variations resulted from selective breeding of Black-shouldered Peafowl '*Pavo cristatus primus*': the blue variation (= Indian Peafowl), the pied, and the white (Temminck 1813: 35–46; 1815: 651–652).

The English ornithologist and physician John Latham (1740–1837) was less sure as to the status of Black-shouldered Peafowl: 'how far this is distinct, or a Variety only of the Common Sort [Indian Peafowl], we are not prepared to answer ... The above black-shouldered one seems to approach near to the Wild Species' (Latham 1823: 114–115).

For Robert Heron (1765–1854), member of parliament for Grimsby, the case was clear: 'The japanned breed [Black-shouldered Peafowl] are, I believe, a variety originating in England. In Lord Brownlow's numerous breed of common [Indian] Peafowl, white, and pied, the japanned suddenly, in my memory, appeared amongst them. The same thing happened in Sir J. Trevelyan's flock of entirely the common sort; also in a breed of common and pied given by Lady Chatman to Mr. Thornton: and in both cases to the extinction of the previously existing breed' (Heron 1835).

Despite Heron's remarks, Philip Lutley Sclater (1829–1913), the English ornithologist, and secretary of the Zoological Society of London for 42 years, believed Black-shouldered Peafowl was a species, not a variety. He wrote: 'I cannot consider it a domestic variety, because the differences in both sexes appear to be constant, and to descend to the progeny; and indeed, are not of that sort that would be induced by domestication' (Sclater 1860). Sclater therefore proposed the name *Pavo nigripennis* (Lat. *nigri* = black, *pennis* = wing), after the vernacular 'Black-shouldered Peacock' in Latham (1823: 114). At the time Sclater did not know where the species occurred in the wild, but he was convinced that its natural range would soon be discovered. Three years later, however, Sclater (1863: 123) was no wiser: 'I am still at a loss to know what was the original sedes of this [Black-shouldered] Peacock, which I cannot regard otherwise than as a very distinct species.'

Darwin's dilemma; species or variety?

Indian Peafowl has been bred for centuries in Europe for ornament. When the first birds arrived in Europe is unknown, but in many Dutch paintings from the 1600s (e.g., by Melchior d'Hondecoeter) peafowl are depicted in farmyard settings alongside domestic chickens, ducks and pigeons, suggesting they were also bred. That many were pied, with white feathers, underlines the idea that peafowl were already bred in captivity in the 17th century. One assumes that the same applied to Indian Peafowl in the UK. Darwin (1868: 290–292) stated that Indian Peafowl was a species that hardly varied under domestication, except the white and pied colour aberrations.

Heron (1835) had reported three distinct cases of Black-shouldered Peafowl suddenly appearing within groups of Indian Peafowl. Darwin was eager to demonstrate that this could only have occurred under domestication as, in his opinion, the evolution of wild species is a slow process. Darwin (1859: 302) stated in *On the origin of species*: 'For the development of a group of forms, all of which have descended from some one progenitor,

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must have been an extremely slow process; and the progenitors must have lived long ages before their modified descendants.'[1]

Darwin (1868: 291) himself discovered two more examples of Black-shouldered Peafowl suddenly appearing among Indian Peafowl, one owned by John Henry Gurney Sr. (1819–90), English banker, ornithologist, and father of another ornithologist, John Henry Gurney Jr. The five occurrences seemed to contradict Sclater's belief that Black-shouldered Peafowl was a species. After Darwin heard of the Gurney case he wrote to Sclater: 'The Japanned Peacock ... appeared amongst M^r^ Gurney's birds. The chief point would be to know whether his birds appeared pure & whether any Japanned Peacocks lived anywhere near, so that there could have been a recent cross' (Darwin 1862a). Two days later Darwin wrote to Sclater again: 'When you see him [Gurney], will you ask him whether he can remember at the time when the *P. nigripennis* appeared he had any white or pied Birds. In two of the three cases mentioned by Sir R. Heron there were white & pied birds in the lot.— With four cases now recorded I would wager the *P. nigripennis* will prove a variety, ... It is a very curious case, Have you a white Peacock in the Gardens; if so do match a white & common for the chance of *P. nigripennis* appearing.— The effects of crossing are sometimes marvellous in bringing out old & lost characters or in producing new characters' (Darwin 1862b).

Whether and, if so, *how* Sclater responded is unknown, but in the first edition of *Variation under domestication* Darwin (1868: 290–291) presented these five cases and gave great credit to Heron for discovering that Black-shouldered Peafowl is a colour variation. However, just after *Variation under domestication* was published, the English diplomat and naturalist Robert Swinhoe (1836–77) reported that he had discovered the native range of Black-shouldered Peacock. Swinhoe (1868) wrote: 'In the aviary of the Prefect of Hainan I saw Sclater's Peacock, *Pavo nigripennis*, which the Prefect assured me came from Annam or Cochin China (proper). There is a pair of the same species at this moment [April 20, 1868] in a birdshop here [Hong Kong]; and I now believe *P. nigripennis* to be the species known as the "Bird of Confucius", the tail-feathers of which are worn in Mandarins' hats as tokens of merit. Chinese works state that the Peacock occurs in the west of China, bordering Cochin China. This identification will please Mr. Sclater.' 'Bird of Confucius' is apparently a mistranslation of the Chinese word for peacock (Bretschneider 1875: 92, note 140). Black-shouldered Peafowl being a wild species after all would have undermined Darwin's theory of natural selection. He must have contacted Swinhoe as he wrote in the second edition of his work: 'Mr. Swinhoe at one time believed, ('Ibis,' July, 1868) that this kind of peafowl [*Pavo nigripennis*] was found wild in Cochin China, but he has since informed me that he feels very doubtful on this head' (Darwin 1875: 306, footnote 33). Probably Swinhoe had confused Black-shouldered Peafowl with Indochinese Peafowl *Pavo muticus imperator*, which also has blackish wings and occurs from eastern Myanmar to Indochina, and in Yunnan in south-west China.

In the next edition of *Variation under domestication*, Darwin (1875: 305–307) added two more cases of black-shouldered birds spontaneously occurring among Indian Peafowl: 'Here, then, we have seven well authenticated cases in Great Britain of japanned birds, having suddenly appeared within recent times in flocks of the common peafowl.' As the sudden appearance of a new form went against Darwin's ideas of how species evolve—'I doubt whether species under nature ever undergo abrupt changes' (Darwin 1859: 454)—he was at pains to prove its status as a variety. Although Swinhoe (1868) may have briefly

[1] Darwin was incorrect about evolutionary speed being in general a 'slow process'. Nowadays, evolutionary speed is considered to be directly dependent on selection pressure.

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Figure 5. '*Pavo nigripennis*' in *A monograph of the Phasianidae or family of the pheasants* (Elliot 1872) drawn by Joseph Wolf (1820–99), lithograph by Joseph Smit (1836–1929) (Hein van Grouw, © Natural History Museum, London)

caused Darwin some doubt, he finally correctly concluded that black-shouldered birds represented no more than a variation under domestication. Incorrectly, though, due to the lack of knowledge of genetic processes, Darwin believed that this variation was possibly induced by the climate or some other cause 'such as reversion to a primordial and extinct condition of the species' (Darwin 1868: 291).

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Figure 6. 'Black-winged Peafowl', pl. 89 in *A monograph of the pheasants* (Beebe 1922); the first depiction of the chicks of this mutation. Juvenile plumage in both sexes is like that of the adult female and therefore nearly white (Hein van Grouw, © Natural History Museum, London)

Post-Darwin; variety it is

Despite Darwin's findings, Daniel Giraud Elliot (1835–1915), the American zoologist, was still unsure of the taxonomic status of Black-shouldered Peafowl. He mentioned both Sclater's (1860) and Darwin's (1868) opinions , and then stated: 'This practically exhausts the subject of variety *versus* true species, and we can only wait with patience until it can be ascertained whether or not the form now known as *P. nigripennis* exists in a wild state in those distant portions of Eastern Asia which yet remain to be visited and examined by some adventurous naturalist' (Elliot 1872; see Fig. 5).

William Robert Ogilvie-Grant (1863–1924), a Scottish ornithologist at the British Museum echoed Darwin's opinion of Black-shouldered Peafowl by writing 'there can be no doubt that it is merely a sport of Nature' (Ogilvie-Grant 1893: 370).

William Beebe (1877–1962), the American naturalist and expert on pheasants, also had no doubts. About the Black-shouldered Peafowl he wrote: 'Under this heading [mutation] I unqualifiedly place the variation which occurs now and then among captive birds, and to which, under the erroneous idea that it was a separate species, Sclater gave the name *Pavo nigripennis*. … The upholders of the specific theory were not to be blamed for thinking it a wild species until it was conclusively shown that it appeared adventitiously in broods from normally coloured *Pavo cristatus* parents' (Beebe 1922: 184; see Fig. 6).

Although already known among aviculturists familiar with peafowl, after Ogilvie-Grant the German ornithologist Erwin Stresemann (1889–1972) announced more broadly to the ornithological world that Black-shouldered Peafowl is a colour mutation of Indian

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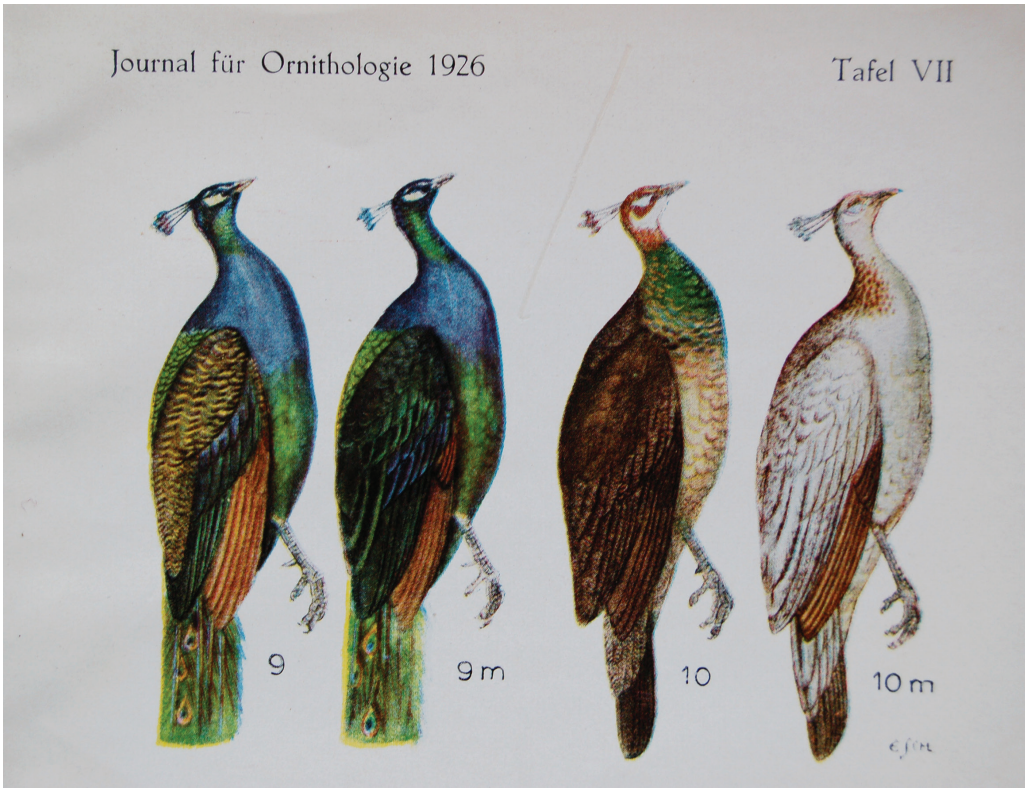

Figure 7. Pl. 7 in *Mutationsstudien XXIV* (Stresemann 1926, in *Journal für Ornithologie*), showing differences in plumage colour between Black-shouldered Peafowl (mutation) and Indian Peafowl *Pavo cristatus* (Hein van Grouw)

Peafowl (Stresemann 1926; see Fig. 7). The term 'mutation' was first introduced by Hugo de Vries (1848–1935), a Dutch botanist who developed the mutation theory of evolution[2], which was quickly rejected by the scientific community (de Vries 1901). Darwin (1881) informed Hugo de Vries in a letter: 'I am delighted to hear that you intend working on the causes of variation.—It is a grand subject, & if I were not so old, I would take it up experimentally.'

Stresemann (1926: 379, 382), in fact, was merely agreeing with Charles Finney Cox (1846–1912), an American microscope expert, who had stated that the black-shouldered colour variant of Indian Peafowl is a mutation in compliance with the concept 'mutation' of de Vries. Cox (1909: 74) wrote: 'In all points this case [of black-shouldered peacocks] agrees with the modern idea of a mutation.'

Finally, Jean Théodore Delacour (1890–1985), the very experienced French aviculturist, was also aware that Black-shouldered Peafowl was merely a variety. He reported: 'A more interesting form constitutes a regular mutation comparable to the Black-throated Golden and the Melanistic True Pheasants' (Delacour 1951). Being also a museum ornithologist, Delacour named the variety taxonomically—*Pavo cristatus* mut. *nigripennis*—following

[2] In contrast to Darwin, who believed that small heritable variation was the fuel of evolution, de Vries opined that mutation causes evolution and speciation. Mutations are random and directionless, while Darwin's variations are minor and directional. According to Darwin evolution is gradual ('slow') whereas de Vries thought that single-step large mutations, known as saltation, caused speciation. Although much of de Vries' mutation theory was quickly abandoned by the scientific community, the hypothesis of mutations as a crucial source of natural variation persisted.

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Hachisuka's (1926) proposal for naming mutations, which never gained widespread traction (see Appendix).

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References:

Beebe, W. 1922. *A monograph of the pheasants*, vol. 4. H. F. & G. Witherby, London.

Bretschneider, E. 1875. *Notes on Chinese mediaeval travellers to the West*. American Presbyterian Mission Press, Shanghai.

Brouwer, G. A. 1953. Historische gegevens over onze vroegere ornithologen en over de avifauna van Nederland. *Ardea* 41: 1–225.

Cox, C. F. 1909. Charles Darwin and the mutation theory. *Amer. Natur*. 43(506): 65–91.

Darwin, C. R. 1859. *On the origin of species by means of natural selection*. First edn. John Murray, London.

Darwin, C. R. 1862a. Letter to P. L. Sclater, 12 May 1862. Darwin Correspondence Project, letter no. 3543. https://www.darwinproject.ac.uk/letter/?docId=letters/DCP-LETT-3543.xml (accessed 1 September 2022).

Darwin, C. R. 1862b. Letter to P. L. Sclater, 14 May 1862. Darwin Correspondence Project, letter no. 3545. https://www.darwinproject.ac.uk/letter/?docId=letters/DCP-LETT-3545.xml (accessed 1 September 2022).

Darwin, C. R. 1868. *The variation of animals and plants under domestication*, vol. 1. First edn. John Murray, London.

Darwin, C. R. 1875. *The variation of animals and plants under domestication*, vol. 1. Second edn. John Murray, London.

Darwin, C. R. 1881. Letter to H. M. de Vries, 18 October 1881. Darwin Correspondence Project, letter no. 13415F. https://www.darwinproject.ac.uk/letter/?docId=letters/DCP-LETT-13415F.xml (accessed 1 September 2022)

Delacour, J. 1951. *The pheasants of the world*. Country Life, London.

Elliot, D. G. 1872. *A monograph of the Phasianidae or family of the pheasants*, vol. 1. Privately published, New York.

van Grouw, H. 2017. The dark side of birds: melanism—facts and fiction. *Bull. Brit. Orn. Cl*. 137: 12–36.

van Grouw, H. 2021. What's in a name? Nomenclature for colour aberrations in birds reviewed. *Bull. Brit. Orn. Cl*. 141: 276–299.

Hachisuka, M. 1926. The nomenclatural problem of mutations. *Bull. Brit. Orn. Cl*. 47: 50–52.

Heron, R. 1835. [Notes on the habits of the pea-fowl]. *Proc. Zool. Soc. Lond*. 3: 54.

ICZN (International Commission for Zoological Nomenclature). 1999. *The international code of zoological nomenclature*. Fourth edn. International Trust for Zoological Nomenclature, London.

Latham, J. 1823. *A general history of birds*, vol. 8. Jacob & Johnson, Winchester.

Ogilvie-Grant, W. R. 1893. *Catalogue of the game birds in the British Museum*, vol. 22. Trustees of the Brit. Mus. (Nat. Hist.), London.

Sclater, P. L. 1860. On the Black-shouldered Peacock of Latham. *Proc. Zool. Soc. Lond*. 1860: 221–222.

Sclater, P. L. 1863. List of the species of Phasianidae, with remarks on their geographical distribution. *Proc. Zool. Soc. Lond*. 1863: 113–127.

Somes, R. G. & Burger, R. E. 1991. Plumage color inheritance of the Indian Blue Peafowl (*Pavo cristatus*): Blue, Black-shouldered, Cameo, and Oaten. *J. Heredity* 82: 64–68.

Stresemann, E. 1926. Uebersicht über die "Mutationsstudien" I–XXIV und ihre wichtigsten Ergebnisse. *J. Orn*. 74: 377–385.

Swinhoe, R. 1868. [Tour in Hainan]. *Ibis* (2)4: 353–354.

Temminck, C. J. 1807. *Catalogue systématique du cabinet d'ornithologie et de la collection de quadrumanes de Crd. Jb. Temminck. Avec une courte description des oiseaux non-décrits*. C. Sepp Jansz, Amsterdam.

Temminck, C. J. 1813. *Histoire naturelle générale des pigeons et des gallinacés*, vol. 2. J. C. Sepp & fils, Amsterdam & G. Dufour, Paris.

Temminck, C. J. 1815. *Histoire naturelle générale des pigeons et des gallinacés*, vol. 3. J. C. Sepp & fils, Amsterdam & G. Dufour, Paris.

de Vries, H. M. 1901. *Die Mutationstheorie. Versuche und Beobachtungen über die Entstehung von Arten im Pflanzenreich*, vol. 1. Veit & Comp., Leipzig.

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Appendix

Until the second half of the 20th century, insufficient knowledge of feather pigmentation and possible aberrations in birds resulted in the latter being routinely identified and mistakenly named as species (*cf.* van Grouw 2017, 2021). Hachisuka (1926), in his description of melanistic Common Pheasant *Phasianus colchicus*, which he correctly recognised as an aberration (mutation), highlighted the problem and noted that such cases would always prove misleading unless a definitive nomenclature was developed. He proposed that all mutations should be distinguished by the term 'mutation', abbreviated 'mut.', within the scientific name. The melanistic Common Pheasant was therefore named by Hachisuka (1926) *Phasianus colchicus* mut. *tenebrosus* (= dark), and he claimed that this was the first time a mutant form had been correctly described. Despite Hachisuka's proposal, the nomenclature of mutations has never been regulated by the *International code of zoological nomenclature* (ICZN 1999, and previous editions). However, even were the *Code* to accept this recommendation, the naming of the causative aberration would nevertheless have presented problems (see van Grouw 2021).

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