

No. 119: June 2019

VIEWPOINT

MAGAZINE OF THE BRITISH SOCIETY FOR THE HISTORY OF SCIENCE



Queering the Museum

Exploring LGBTQ+ lives and issues in the history of science, technology and medicine



ISSN: 1751-8261

Queer Birds: Avian Sex Reversal & the Origins of Modern Sexology

Ross Brooks explores how 'extraordinary' animals provided a means for late-18th- and 19th-century scientists to investigate the mysteries of sex in an era of prejudice and censorship.

Sex-variant bodies, minds, and behaviours have long been subject to a plethora of medical and scientific atrocities. Intersexualities, transformations of sex, and nonreproductive sexual behaviours – in humans and nonhumans alike – have been objects of segregation and forced physical and psychological interventions in efforts to configure the biological and medical sciences to adhere to prevailing gender and sexual norms.

Yet sex variations have also played pivotal roles in the history of biology, raising questions in scientific minds and prompting important new theories and discoveries. Scholarly interest in avian sex changes (or 'reversal') is a case in point. Individual birds of many sexually dimorphic species can develop sex characteristics more typical in the opposite sex. Such natural transformations are uncommon, but not so much so that anyone familiar with birds on a regular basis – country-dwellers, farmers, gamekeepers, hunters, ornithologists, and other naturalists to name a few – could be unaware of their occurrence.

In the age before genetics and endocrinology, sex-transformative birds provided key insights into puzzling sex-related phenomena. They allowed naturalists to discuss scientifically interesting but socially taboo subjects, such as same-sex sexual behaviour and the mutability of sex differences, with relative impunity. Combined with some rampant anthropomorphism, investigations into avian sex 'reversal' contributed to the development of innovative and historically significant concepts of human sexuality, for good or ill.

Extraordinary sex

Avian sex 'reversal' has been noted by naturalists since antiquity. In his *Historia animalium*, Aristotle bequeathed an astute description; he wrote of domestic hens that 'crow in imitation of the males and attempt to tread, and their crest and tail are raised so that one would not easily

recognise that they are females; in some there has even been an outgrowth of a sort of small spurs.' Of transformations in male birds, he wrote: 'There are also some birds that are effeminate from birth to the extent that they even submit to males attempting to tread them.'

Sex-transformative birds became an important *modus operandi* of modern biologists largely through a seminal paper titled 'An Account of an Extraordinary Pheasant' by the Scottish surgeon and naturalist John Hunter, published in the Royal Society's *Philosophical Transactions* in 1780. In the paper, Hunter described various examples of wild hen pheasants with male-typical plumage. He also described a peahen with a full-sized eye-feathered tail which was preserved in the collection at Ashton Lever's famous museum, or Holophusikon, in Leicester Square. In life, the bird had astonished its doting owner, Lady Tynte (of Halswell House in Goathurst, Somerset), by moulting and assuming male-typical plumage aged around eleven years. Hunter ascribed the phenomenon to the process of aging:

We find something similar taking place even in the human species: for that increase of hair observable on the faces of many women in advanced life, is an approach towards the beard, which is one of the most distinguishing secondary properties of man.

Hunter's study made two innovations that would shape modern medico-scientific approaches to sex differences, the emerging discipline of teratology, and the development of evolutionary theory. The first is the assertion that irregularities ('monstrosities') that were observable in anatomical structures throughout the natural world develop in relation to the fundamental principles which governed the growth of individuals according to the particular pattern of their species.

The second important innovation in

Hunter's paper on avian sex transformation – a foundation stone of Charles Darwin's theory of sexual selection – is his designation of 'secondary properties' (i.e. secondary sexual characteristics) to account for non-genital sex differences in those species which usually have two distinct sexes. The possibility that such differences could, in and of themselves, be collectively considered important objects of study and a means of better understanding the mysterious origins and evolution of sex was not comprehensively appreciated until Hunter's transformational birds led him to delineate a new scientific epithet.

Through the century following Hunter's authoritative interest in the subject, numerous naturalists and physicians made further descriptions of sex-transformative birds in leading works of natural history and medical science. Avian species in which sex changes were documented include peafowl, turkey, partridge, pigeon, bustard, duck, cuckoo, cotinga, chaffinch, redstart, starling, sparrowhawk, wood grouse, bunting, and kingfisher.

In common with Hunter, several naturalists slickly generalised the phenomenon of sex 'reversal' beyond avian subjects. The French zoologist Isidore Geoffroy Saint-Hilaire, for example, wrote:

In many women, after the cessation of the menses, the chin and upper lips become furnished with a true beard, a phenomenon, the relation of which, with the development of the plumage of our hen pheasant, cannot be denied.

Seeking to explain the phenomena, certain naturalists identified the ovary as essential in producing the observed effects. This was a pivotal moment in the history of biology as the ovaries had long remained mysterious entities and were mostly ignored; the uterus had been considered the defining organ of female physiology.

Writing about sex-transformative pheasant hens in 1784, the French phy-

sician and naturalist Pierre-Jean-Claude Mauduyt de la Varenne reported that his fellow physician, the renowned pioneer of comparative anatomy Félix Vicq-d'Azyr, had dissected several such birds, observing the oviduct which evidenced their sex but finding the ovaries completely obliterated. Such observations, intensely puzzling for the era, were largely neglected until the English naturalist William Yarrell broached the subject in 1827.

Yarrell insisted that the occasional development of male-typical characteristics was not restricted to aged female birds but could be produced by 'certain constitutional circumstances', essentially impairment of the ovaries, which could occur at any period of life or induced by artificial means. Extended to other species, including humans, Yarrell's savvy proto-endocrinology paved the way for a new era of sex physiology to emerge, with far-reaching consequences.

Both sexes

The pioneering investigations of Hunter and Yarrell impressed the minds of a new generation of naturalists, not least the young, *Beagle*-fresh Charles Darwin. Along with other natural sex-variant phenomena (such as neuter bees and the occasional appearance of horns in does), avian sex 'reversal' helped persuade Darwin that all the higher animals, including humans, were essentially 'hermaphrodite' (i.e. intersexed). The idea had previously been forwarded by the Scottish anatomist Robert Knox but had not received widespread acceptance. Darwin, however, was an early convert to the theory. Remarks in his notebooks, compiled through the late-1830s, evidence the profound impact of Yarrell's observations, as well as other related studies, on his developing biological thought. For example, Darwin wrote:

A capon will sit upon eggs, as well as, & often better than a female. – this is full of interest; for it shows latent instincts even in brain of male. – Every animal surely is hermaphrodite – (as is seen in the plumage of hybrid birds).

In another pertinent entry, among several, Darwin asserted that '[e]very man & woman is hermaphrodite'.

The perennial coexistence of female and male elements in each individual remained



Clockwise, from top-left: Lady Tynte's eye-feathered peahen, first published in John Latham's *A General Synopsis of Birds* in 1783; Hector, a hen-feathered cockerel, pictured in *The Sporting Magazine* in March 1833; a female silver pheasant which developed complete male-typical plumage late in life, from Saint-Hilaire's *Essais de zoologie Générale* (1841).

an important component of Darwin's evolutionism on a number of fronts. It was, for instance, vital to his theory of heredity. In *The Variation of Animals and Plants under Domestication* (1868), he discussed sex transformations in a section titled 'Latent Characters'. He wrote:

But I must explain what is meant by characters lying latent. The most obvious illustration is afforded by secondary sexual characters. In every female all the secondary male characters, and in every male all the secondary female characters, apparently exist in a latent state, ready to be evolved under certain conditions.

Supporting this momentous assertion, Darwin explicitly referred to the literature on female birds assuming male plumage, particularly when old or diseased or when operated on. He drew heavily on those

naturalists who had investigated the subject, including Saint-Hilaire and Yarrell. He further remarked that 'Aristotle was well aware of the change in mental disposition in old hens.' It was one of the rare instances that he referred, albeit obliquely, to same-sex sexual behaviour.

Following Darwin, a new breed of modernist sexologists, most notably Sigmund Freud, extended the principle of primordial intersexuality ever deeper into the realms of mind and behaviour, with profound implications for how we think about sex differences and sexuality to this day. •

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Ross's PhD, titled 'Evolution's Closet: The New Biology and Homosexuality in Britain, 1871-1967', is funded by the Wellcome Trust. You can follow him on Twitter @rossb_oxford.