HEIR OF THE DOG: CANINE INFLUENCES ON CHARLES DARWIN'S THEORIES OF NATURAL SELECTION

A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAI'I IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

IN

HISTORY

MAY 2005

By
David Allan Feller

Thesis Committee:

Peter Hoffenberg, Chairperson
Richard Rapson
Matthew Louzon

Acknowledgements

I would like to express my thanks and appreciation first and foremost to my wife, Janice P. Kim, without whose love and support my exodus from the practice of law would not have been possible. Fortunately, she turned me over to the care of outstanding individuals in the University of Hawaii at Manoa Department of History, including foremost my Committee Chairperson, Prof. Peter Hoffenberg, Committee Members Profs. Richard Rapson and Matthew Louzon, and Graduate Chairperson Prof. Margot Henriksen. Their generosity and encouragement has made my return to academia not only possible, but also enjoyable.

This work also benefited from the great kindness of the staff at the Darwin Correspondence Project, Cambridge University, and in particular editor Dr. Paul White. When a stranger without appreciable credentials appeared at their door, they gave him the benefit of the doubt and their own incredible expertise. You guys were inspiring.

Finally, to my friend and editor, Kelli Nakamura, the ice cream's on me.

Illustrations

Figure

Table of Contents

Introduction

> if we choose to let conjecture run wild
> then <our> animals our fellow brethren
> in pain, disease death & suffering
> <&famine>; our slaves in the most
> laborious work, our companion in our
> amusements, they may partake, from our
> origin in <there> one common ancestor
> we may be all netted together. . .
>
> *Charles Darwin*[1]

In Alfred Parson's 1883 print of "The Study at Down," Charles Darwin's desk is located next to a fireplace and a small basket.[2] The basket is the bed of Darwin's beloved pet Fox Terrier, Polly, and the dog's proximity to Darwin's place of work is no coincidence. Dogs were always close in Darwin's thoughts as he worked on his theories of natural selection, and his archives contain many materials and references to dogs. This observation would not surprise Darwin's friends or family, as most of them recognized and shared Darwin's lifelong love of dogs. As family pets, companions in sport, or subjects of naturalist observation, dogs were a critical element of Darwin's life

---

[1] Paul Barrett, et al, eds., *Charles Darwin's Notebooks 1836-1844, Geology, Transmutation of Species, Metaphysical* Inquiries (Cambridge: Cambridge University Press, 1987), 228.

[2] *The Autobiography of Charles Darwin and Selected Letters,* ed. Francis Darwin (Mineola: Dover Publications, Inc., 1958), 70, reprinted from *Century Magazine*, January 1883. A copy of the print is included as Figure 1.

Figure 1

Alfred Parson's "The Study at Down"

THE STUDY AT DOWN.*

and affected both his personal life and his professional outlook.

Surprisingly little attention has been given to the influence of dogs in Darwin's work. For years scholars have recognized the importance of Darwin's study of domesticated species in evolutionary theory, and within Darwin's notebooks his research on dogs was more expansive, and perhaps of greater complexity, than his consideration of any other species.[3] This is only natural, for unlike Darwin's pigeon breeding and orchid cultivation, his consideration of dogs was not merely scientific: he had a personal and social relationship with dogs that preceded their usefulness as subjects of objective study. Darwin likely saw in dogs aspects of the human character, but Darwin's familiarity with dogs also allowed him to identify characteristics in the dog which approximated those found in man.[4] This distinction is one of intent, for in the

---

[3] James Secord, "Darwin and the Breeders: A Social History," in *The Darwinian Heritage*, ed. David Kohn (Princeton: Princeton University Press, 1985), 519. Secord examines the cultural aspects of Darwin's connections with (mainly) pigeon breeders.

[4] For a discussion of issues involving anthropomorphism and the mischaracterization of human analogies in science, see Sandra D. Mitchell, "Anthropomorphism: Cross-species modeling" in *Thinking with Animals,* ed. R. Daston and G. Mitman (New York: Columbia University Press, 2004).

former the dog is given elevated status--being more like the advanced man--but by the latter distinction Darwin utilized the dog in his writings to successfully place man in his emerging theory of evolution. If man had to be an animal, how much better to be like the dog!

The problem was then, as now, the socially precipitous notion that in the theory of evolution man evolved from some lower life forms, and might continue to evolve. Creationists in the nineteenth century were as adamant as they are today that man and monkey are not so related. This resistance impeded the popularity of Darwin's theories. For example, creationist Orestes Brownson objected mightily to *Descent of Man's* connection of man with ape, but found that "the dog is certainly far ahead of the monkey in moral qualities, in affection for his master and fidelity to him, and so is the horse when kindly treated."[5] To place man in an evolutionary trajectory with

[5] Orestes A. Brownson, "Darwin's Descent of Man," *Brownson's Quarterly Review*, July 1873, archived at http://orestesbrownson.com/darwin.html>. A similar view of the dog's superiority to apes was offered in discussion at the 1860 meeting of the British Association for the Advancement of Science held in Oxford June 26-July 3, 1860. *The Correspondence of Charles Darwin*, eds. F. H. Burkhardt, St. Smith, et al. Vols. VIII (Cambridge: Cambridge University Press, 1983-2004), 592. "However highly organized the Quadrumana might be, they were very inferior in intellectual qualities to the dog, the elephant and other animals."

other animals was thus laden with such theological and cultural implications that it could negatively affect Darwin's professional credibility as a naturalist.

Darwin needed to position man as a citizen of nature at large and thus subject to his theory of evolution without drawing solely or necessarily upon man's apparently simian roots. The importance of this issue had philosophical consequences as Darwin was convinced that nature functioned according to laws of natural selection as a part of God's design. If man were not subject to those natural laws, was Man in fact created by God? Darwin expressed this question through natural pictures: "Man in *savage* state may be called, species. In domesticated <species> races. --If all men were dead then monkeys make men.--Men makes angels-."[6]

Thus, the authentic nature of the human species was in issue in Darwin's mind as he worked toward the publication of *Origin of the Species* (1859). Fortunately there was a bridge between man and nature with which Darwin was familiar, and which Victorian society recognized as being

---

[6] Barrett, *Charles Darwin's Notebooks 1836-1844*, 213.

an expression of nature's best work: the dog. Darwin had at his disposal three substantial sources of information to obtain a detailed scientific examination of the dog. First, he had his own rich family history. Throughout his childhood and adult life, Darwin always kept dogs as companions and housemates and through these personal relationships, Darwin could extensively observe their character.

Second, Darwin could draw on the sporting world of Victorian England to demonstrate many aspect of his theory of natural selection. Hunting for birds, hare, and fox provided Darwin with a functioning laboratory that demonstrated the interaction between prey and predator and the process of environmental adaptation.

Finally, at the center of both the domestic and sporting dog worlds, Darwin could call upon dog owners and breeders who at the time were mutually interested in the emerging scientific community, as they hoped that science could help unlock some of the mysteries of creating the solid breed stock they sought in their own whelping boxes.

In Darwin's research, the dog provided an element essential to his theory perhaps unavailable to him from any other source, for while man's physical character might

appear more easily derived from ape-like predecessors, Darwin had little chance to observe more than their physical characteristics.[7] This did not solve the inherent dilemma in applying evolutionary theory to man: if the theory of natural selection was correct, then a species at each evolutionary stage would be more adapted to the environment than the previous generation. The problem with man was that this did not appear to be the case. There was seemingly much variation in the species, so adaptation seemed to be scarce and random. There was also the problem of man's growing dominance over the environment in spite of other physical inferiority to stronger, better adapted animals. Thus, the modification of physical characteristics by evolution would be insufficient reason to identify man as a product of natural selection.

If intelligence and moral character were heritable qualities, however, then man's survivability could be justified under natural selection. To establish the heritability of these characteristics, Darwin merely drew

[7] See Robert Richards, in "Darwin on Mind, Morals and Emotion," *The Cambridge Companion to Darwin*, ed. J. Hodge and G. Radick (Cambridge: Cambridge University Press, 2003), 92, 96. Richards argues that, although Darwin needed to establish some continuity between the minds of men and animals, natural theologians of the period considered no animal a proper subject of comparison due to the absence of moral judgment.

upon his observations of the dog. The dog's cooperation with man in his everyday life, and survival in domestic society, offered Darwin a parallel example of intellectual adaptation which, if responsible for the development of man, would allow inclusion of man in the natural selection process without rendering him a wholly material being.

This essay examines the role of the dog in Darwin's early research in hopes of amplifying an important source of his later conclusions found in better-known works such as *Origin of the Species* (1859) and *The Expression of Emotion in Man and Animals* (1872). By focusing on Darwin's early correspondence and research notes, canine influences on these seminal works may be revealed, and perhaps offer an additional interpretation of Darwin's ultimate conclusions about natural selection and the descent of man.

Little historical attention has been paid to the dog's role in Darwin's scientific work. One reason that dogs have not been a focal point for Darwinian scholars is that the major portion of the primary sources of historical data have only been recently accessible. Darwin's notebooks, recording his thoughts and development of natural selection theory between 1836 and 1844, were not fully recovered until 1948, and their transcription remained scattered and

incomplete up into the 1970's. A compendium of the available notebooks, transcribed and annotated, was not published until 1987, in great part the product of modern computer technology.[8] It is easy to conclude that any deeper understanding of Darwin's consideration of canine matters has been awaiting these materials revealing Darwin's thoughts.

Since publication of the notebooks, scholarship has proceeded. Darwin's broad consideration of species, however, left a long queue of subjects to study. Most recently, studies regarding specific species have begun to emerge, notably Daniel Pauly's *Darwin's Fishes: An Encyclopedia of Ichthyology, Ecology, and Evolution* (2004).[9] However, most scholars lack the expertise to combine seemingly disparate fields of study--the scientific understanding of a particular species and Darwinian evolution--in a cohesive historical narrative.

Another reason for the heretofore-minimized role of the dog in the history of Darwin's work is the lack of

---

[8] Barrett, *Charles Darwin's Notebooks 1836-1844,* 1.

[9] Daniel Pauly, *Darwin's Fishes : An Encyclopedia of Ichthyology, Ecology, and Evolution* (Cambridge: Cambridge University Press, 2004).

emphasis placed on dogs in Darwin's Autobiography. References in the autobiography leave the impression that Darwin himself enjoyed the company of dogs, but he had not consciously attributed significant importance to their role in his development of natural selection theory. The narration in his autobiography, undertaken at the request of his son Francis Darwin, may not have been intended by Darwin to be comprehensive; Darwin's recall and intent may not have placed dogs squarely in his view plane. Then too, Francis Darwin edited those notes in compiling *The Autobiography*, and his interpretation may not have given the dog its due. Whatever the reason, if Darwin in his own writings (prior to the notebooks) did not credit the dog's role in his work to any great degree, subsequent writers could arguably be expected to follow his lead.

Yet another possibility for the absence of considerable historical review of the dog in Darwin's work is the comparative lack of historical emphasis on animals until recent years. As noted historian of animal issues Harriet Ritvo has observed, historians tend to value in the past in what they value in the present. Much like the increases in gender studies and labor history since World War II, the contemporary emphasis on environmental issues

makes the study of animals in history seem an obvious topic, but that has not always been the case.[10]

All of this is not to say that dogs in Darwin's history have been ignored. Darwin's biographers have discussed "the dog issue," albeit not as an important element in Darwin's scientific career. Janet Browne's two volumes, *Charles Darwin: Voyaging*, and *Charles Darwin: The Power of Place*, reference Darwin's interest in dogs.[11] The former volume, which concentrates on Darwin's life prior to 1858, contains the most material. Browne discusses Darwin's confessed love of dogs and his propensity for "robbing their love from their masters."[12] Browne also describes how Darwin's affection for dogs developed into his great interest in hunting, but the discussion is focused only on personal and cultural aspects of the sport. The hunting reflected country life in and around Shrewsbury, and helped solidify for Darwin's family ties with the Wedgewoods and others prominent families,

---

[10] Harriet Ritvo, "History and Animal Studies," in *Society and Animals* vol. 10, 4(2002), 403.

[11] Janet Browne, *Charles Darwin: Voyaging* (Princeton: Princeton University Press, 1995); Janet Browne, *Charles Darwin: The Power of Place* (Princeton: Princeton University Press, 2002).

[12] Ibid., 95.

many of whom, such as cousin William Fox, would later contribute to Darwin's consideration of naturalist questions.

Adrian Desmond's and James Moore's *Darwin: The Life of a Tormented Evolutionist* (1991) provides a similar image of Darwin's early dog experiences.[13] Their discussion of Darwin's hunting exercises and love of dogs is perhaps more vivid, and recognizes a strong relationship between field sports and Darwin's emphasis on domestic breeding as a foundation of his natural selection work. Desmond and Moore cite Darwin's relationship with William Yarrell and other gentry sportsmen as providing valuable background on the contemporary state of domestic breeding. "Yarrell was a gun-and-dog man himself," and his "esoteric lore about dogs" presented Darwin with a wealth of information about breeding, genetics, and the development of domestic stock.[14] Darwin's own Uncle Josiah Wedgewood, who encouraged Darwin's hunting interests, was also a "scientifically absorbed industrialist" whose influence over Darwin might

---

[13] Adrian Desmond and James Moore, *Darwin, the Life of a tormented Evolutionist* (New York: W. W. Norton Co., 1991).

[14] Ibid., 240.

well have brought another scientific perspective to the hunt.[15]

Overall, Browne's discussion of Darwin's early "dog years" describes his endeavors as a happy distraction while he struggled to identify his role as a student of natural history.[16] Since his withdrawal from medicine coincided with his greater interest in shooting pheasant and grouse with his Pointer, the issue may be raised whether Darwin's interest in the field fueled his growing interest in naturalist studies to the detriment of medicine. While hunting certainly provided social opportunities, the entire practice offered scientific opportunities, as well. Trophy hunting at its base is but another form of collecting. Why is Darwin's beetle collecting cited as an early scientific activity, but not the close observation of dogs and birds in their natural environment? Perhaps Darwin's father's dismissal of his son's sporting activities as an action that could bring "disgrace to yourself and all your family"

---

[15] Neil Mckendrick, "The Role of Science in the Industrial Revolution, A Study of Josiah Wedgewood as a Scientist and Industrial Chemist," in *Changing Perspectives in the History of Science*, ed. Mikulus Teich and Robert Young (Boston: Reidel Publishing Co., 1973), 274.

[16] Browne, *Charles Darwin: Voyaging,* 64.

have inflected dogs and hunting with a minor role in Darwin's development.[17]

Other authors, without referring to Darwin, have at least alluded to the links between dog sports and science. John Mackenzie in *The Empire of Nature* (1988) identified the positive effect hunting had on Victorian natural science as a whole.[18] The cultural influence of hunting included messages of the human domination of nature and an analogy to British imperial efforts in the mid-1800s. This power over nature extended to science, where men like Darwin were confident that nature's secrets could be discerned through diligent observation. That confidence extended across class barriers; author and clergyman Charles Kingsley urged the introduction of natural history into school curriculums that finally occurred in the 1870 Education Act. Kingsley was also a hunter and found both scientific and moral value in the sport. According to Mackenzie, the hunting elite such as Kingsley espoused this doctrine: "If showmanship inspired interest and excitement,

---

[17] Ibid., 89.

[18] John MacKenzie, *The Empire of Nature* (Manchester: Manchester University Press, 1988).

if museums developed scientific observations as a rational recreation, then literature, contemporary iconography and juvenile training were designed to transmit the moral superstructure of the hunting and natural history ethos to the masses, above all the young."[19]

The extant literature may suggest, without completion, a logical chain of development. Darwin's special relationship with dogs led to his participation in the popular forms of hunting. Hunting had scientific characteristics, including the study of nature and inspiration for natural historians. Darwin's scientific work on nature's fundamental principals was influenced in its earliest stages by these connections. Dogs provided a critical the evolution of his ideas. In fact, Darwin's love of dogs situated him to learn early lessons that would serve as pillars for his later work. It may have been some of these lessons that distinguished Darwin from other evolutionists who had come before him. Darwin's intimate relationship with another advanced species provided him a source of highly detailed facts concerning the generation of species, and offered compelling reasons for Darwin to

[19] Ibid., 43.

look to domestic breeders as a reference on the mechanism of genetic management.

A close examination of Darwin's correspondence and notebooks from the years prior to 1844 may help to complete that circle and add some deeper understanding of his work. This analysis may also raise questions regarding Darwin's place in later discussions about the relationship between man and other animals.

Growing Up With Dogs

Charles Robert Darwin was born in the village of Shrewsbury, the County Seat of Shropshire, on 12 February 1809, junior to three sisters, Marianne, Caroline and Susan, and a brother, Erasmus.[20] Darwin came into the world at a time when England was experiencing substantial growth of interest in dogs in almost every quarter of society. The role of the dog was emphasized in many facets of English culture, most of which were observed by or participated in by Darwin.[21] No better evidence of the

---

[20] Browne, *Charles Darwin: Voyaging*, 6.

[21] The nineteenth century proved a watershed period for dogs in England, but the English interest in dogs was not new. "The most favored of all animals was the dog," in England from the Stuart period. Keith Thomas, *Man and the Natural World* (New York: Prometheus Books, 1983), 102-8.

importance of the dog in English life can be found than the formation of the Society for the Prevention of Cruelty to Animals in 1824 and the enlightened legislation of the period.[22] English society honored the dog and sought to protect the species. The importance of the dog in English life was further demonstrated in the diverse canine communities in Victorian England: gamekeepers with their hunting kennels; the emerging purebred dog fancy and the initiation of breeder's shows; the hunting upper class. Collectively, these interests exemplified the increasing and inter-class affection for pet dogs.[23]

Darwin's position as a son of Shropshire gentry allowed him access to all of these communities and their particular views of dogs. Reference to Darwin's earliest involvement with dogs comes in his own autobiography, edited by his son from personal documents:

> Once as a very little boy whilst at the day school, or before that time, I

---

[22] Harriet Ritvo, *Animal Estate* (Cambridge: Harvard University Press, 1987), 127.

[23] As Keith Thomas points out, the lower classes may also have regarded dogs as objects of separation as well as inclusion. Laws banning the "malicious wounding" of animals may have reflected attempts to curb class-based violence by lower classes who attacked the gentry's dogs and horses as symbols of their economic disenfranchisement. Thomas, *Man and Natural Society*, 184.

> acted cruelly, for I beat a puppy, I believe, simply from enjoying the sense of power; but the beating could not have been severe, for the puppy did not howl, of which I feel sure as the spot was near the house. This act lay heavily on my conscience, as is shown by my remembering the exact spot where the crime was committed. It probably lay all the heavier from my love of dogs being then, and for a long time afterwards, a passion. Dogs seemed to know this, for I was an adept in robbing their love from their masters.[24]

From the beginning of his youth, Darwin's love of dogs was shared by his family, all of whom seemed to enjoy and even to require living with dogs. During Darwin's day school years, the Darwin family had two dogs. One was Spark, a young female black & white terrier ostensibly the dog of Darwin's older brother, Erasmus. The other was Shelah, probably Spark's predecessor in the household, where she was known as "The Old Duchess."[25] Spark was obviously an important enough character in Darwin family life that the boys both found it difficult to be away from her when they were sent off to school. When Erasmus was

---

[24] *The Autobiography of Charles Darwin and Selected Letters*, ed. Francis Darwin (New York; Dover Publications, 1958), 7.

[25] Catherine Darwin to Charles Darwin, 26 October 1825. *The Correspondence of Charles Darwin*, vol. I, 20. See also Catherine Darwin to Charles Darwin, 15 January 1826. Ibid., vol. I, 27.

sent to Cambridge ahead of Charles, his letters most often included some reference or inquiry as to how Spark was doing in his absence. The final line of a letter to Darwin in early 1825 asks him to "Greet Spark."[26] Another letter two months later begs Darwin to "give my love to Doctrss. P. & tell her she must not have Spark."[27] This last message concerning the marriage of Darwin's eldest daughter Marianne to Henry Parker, M.D. in November 1824, displays Erasmus' possessiveness of the dog and illustrates that the family shared similar strong-some might say obsessive-affections for dogs; it is a strong affliction that keeps you from trusting your own sister not to steal your dog in your absence."

In spite of Erasmus' pleas, Catherine took Spark to Overton and the Parker's home. Although Spark was Erasmus' dog, both Catherine and Susan wrote to Darwin to break news of Spark's departure to the Parker residence when Darwin was sent to Edinburgh in 1825. Their December letter explained

---

[26] Erasmus Darwin to Charles Darwin, 10 January 1825. Ibid., vol. I, 11.

[27] Erasmus Darwin to Charles Darwin, 8 March 1825. Ibid, vol. I, 16.

> [B]ut now I must give you a piece of news about your favourite child, which I am afraid will prove a blow to you; i.e. that Spark is gone to Overton; at least till your return nest summer, as they were in want of a watch dog, and Czar is finally going, having bit another person---I am afraid this intelligence will be a shock to all your nerves, and will spoil a good many breakfasts, but all I can tell you for your comfort is that Dr. Parker is very fond of her, and means to take the feeding of her entirely in his own care, and there are a profusion of rats and mice about for her to kill; and if you wish, she shall come back here to meet you on your return, next summer dear Bobby.[28].

That news of the family dogs was sent to Darwin and not to Erasmus, Spark's "owner," is curious only in light of Darwin's demonstrable devotion to his brother. Darwin at least always maintained the appearance of honoring Erasmus' claim to Spark, and in fact instructed Susan to warn the Parkers not to become too attached to the dog: "Catherine mentions that Dr. Parker is very fond of Spark. I hope he will not forget that she is Erasmus', and that he returns at the end of April." [29] The Darwin family however,

---

[28] Catherine & Susan Darwin to Charles Darwin, 4 December 1825. *The Correspondence of Charles Darwin*, vol. I, 21.

[29] Charles Darwin to Susan Darwin, 29 January 1826. Ibid., vol. I, 28.

perhaps more than Darwin himself, understood Darwin's affection for the dogs, as both Spark and Shelah were generally referred to in letters to Darwin as "your favourite child" (Spark) and "your old favourite" (Shelah). And it was Darwin' departure for school, not Erasmus', which seemed to affect the dogs most: Shelah snubbed other family members following Darwin's departure for school, and Spark responded to Darwin's name even after being transferred to the Parker's home.

Most letters to Darwin from Shrewsbury contained reports of the family dogs and the latest developments in their lives, often ahead of news of newborn human members of the family.[30] There was never any such fear expressed about Darwin remembering the dogs, or they him. The only rival to Darwin's love of dogs seems to have been actual survival. As Janet Browne notes in *Charles Darwin: Voyaging*, Darwin's sisters used to chide him that he loved

---

[30] Caroline Darwin to Charles Darwin, 12-28 June 1832. Ibid., vol. I, 241. There was never any such fear expressed about Darwin remembering the dogs, or they him. The only rival to Darwin's love of dogs seems to have been actual survival. As Janet Browne notes in *Charles Darwin: Voyaging*, Darwin's sisters used to chide him that he loved only breakfast more than the family terriers.

only breakfast more than the family terriers.[31] This became a family joke. In a letter to Darwin from his sisters in early 1826, Catherine refers to Spark's health at Overton, and notes somewhat sarcastically, that Spark is in "high preservation, & so is your little nephew who of course you have a much stronger affection for." Caroline in fact joked with Darwin while he was on the *Beagle* that "I mention the number of children for fear like Erasmus that you should forget all about your nephews--."[32]

These exchanges underscore certain facts about Darwin Darwin's elementary incorporation of dogs into his life's work. The Darwin family kept dogs for at least three purposes common to the period: companionship, vermin hunting, and security. The Parkers "borrowing" of one of the two Darwin housedogs so that their house would not be without canine help was consistent with both the Darwin family and Shropshire gentry practice.[33] That Darwin was at

---

[31] Browne, *Charles Darwin: Voyaging,* 27.

[32] Caroline Darwin to Charles Darwin, 12-28 June 1832. Ibid., vol. I, 241.

[33] See generally, Daniel Pool, *What Jane Austen Ate and Charles Dickens Knew* (New York: Simon & Schuster, 1993), and its discussion of the lifestyle of midlands' gentry in the mid-nineteenth century.

the center of the family's dog affairs, and held closest to the dogs' hearts, is key in examining Darwin future dealings with dogs, and the value he was to extract from his canine relationships. Dogs and Darwin shared a world together as companion and constituent. Darwin's affection for dogs was hardly anomalous in the early 1800's in England. Dogs were credited with being more intelligent than other species, and more emotionally developed than all but one or two. The Reverend Francis Orpen Morris, a popular writer and illustrator on natural history in general and birds in particular, wrote in his *Bible Natural History*, "The first place among animals both for sagacity and nobleness of disposition, must probably be assigned to the elephant, most certainly the dog comes next in the scale of intelligence."[34]

While few were ready to adopt wholesale the notion that man himself was merely an animal, by the middle of the eighteenth century thinkers such as David Hume had conceded that animals had the power of "experimental reasoning," and natural history had diluted confidence in man-centered

[34] F. O. Morris, *Bible Natural History* (Manchester: J. Ainsworth, 1852). Morris especially lauded shepherd breeds as being faithful and productive.

world views.[35] Darwin read Hume's work, including the essay on *Human Understanding*, but whereas philosophical arguments were useful in bringing the discussion of where man fit in amongst the animals to a scientific audience, the man in the street had already significantly reduced the differences separating man and dog.[36] As Lord Byron famously put on the monument to his pet Newfoundland dog, dogs had "all the Virtues of man with none of the Vices."[37] Stories commending the intellectual and emotional virtues of dogs were a dominant characteristic of British literature.[38]

Dogs were considered to be the most intellectually gifted of the non-human species, and were extolled in literature of the time. One of Darwin's earlier influences, John Hunter, who was a noted surgeon and

---

[35] Thomas, *Man and the Natural World*), 125. Thomas's book contains an excellent overview of the rise of materialism and its perceptions of animals leading to the Georgian revolution in dogs.

[36] Darwin referred to his reading of Hume in the *M* Notebook, stating that it was "well worth reading." Barrett, *Charles Darwin's Notebooks, 1836-1844,* 559.

[37] Ritvo, *The Animal Estate*, 86.

[38] Ibid. 87. See also James Turner, *Reckoning With the Beast* (Baltimore: Johns Hopkins University Press, 1980), 19, in which Turner describes the growth in the public's interest in animals in the nineteenth century and the resulting increase in animal literature.

naturalist, categorized man and dog as "the more perfect animals" in his essay on natural history.[39] W. B. Daniel's popular volume *Rural Sports* (1807) presented a common view of the dog in its opening pages:

> Man deprived of this faithful Ally, would unsuccessfully resist the foes that on all sides surround him, seeking every opportunity to destroy his labour, attack his person, and encroach upon his property. His own vigilance cannot secure him against the rapacity of the one, nor his utmost exertions overcome the speed of the other. Some animal was essential to insure his safety, and where, amidst the various classes of them, could one be selected so well adapted for this purpose? Where has Zeal, Fidelity, Boldness, and Obedience, been so happily united as in the Dog? More tractable than Man, and more pliant than any animal, the Dog is not only speedily instructed, but even conforms himself to the movements and habits of those who govern him. [40]

---

[39] John Hunter, *Essays and Observations on Natural History, Anatomy, Physiology, Psychology, and Geology*, vols. 1-2, ed. Richard Owen (London: John Van Voorst, 1861. 1861), 37. *Essays and Observations* contains the posthumous papers of Dr. Hunter, some of which were in the collection of Erasmus Darwin during his studies at Edinburg. Erasmus Darwin to Charles Darwin, 8 March 1825, *The Correspondence of Charles Darwin*, vol. I, 16.

A copy of J. Hunter 1778 is in the Darwin Library at Down. Di Gregorio, *Charles Darwin's Marginalia*, vol. I (New York: Garland Publishing, Inc., 1990) 1.

[40] W. B. Daniel, *Rural Sports,* vols. 1-2 (London: Bunney and Gold, 1807).

Daniels followed these laudatory statements with pages of anecdotes demonstrating the fine character points of dogs: stories relating brave canine rescues of endangered masters, long journeys undertaken by dogs to return to a lost homestead or a missing owner, acts of self-sacrifice and mutual affection. Such stories were commonly accepted by the reading public owing in great part to their ability to identify with them: the rise of the pet dog was in full swing, and most people experienced at least a glimmer of such behavior in their own dogs on occasion. By 1800, there were probably more than a million dogs in England, compared to a human population of about 8 million.[41] The dog was an indigenous element of everyday life for much of the population, and its popularity had led to the establishment of a thriving fancy. The first formal all-breed dog show was held at Newcastle in 1859.[42]

Darwin was no exception to this trend, and through living with and observing his own dogs, noted incidents of his own dogs' expressions of character and "sagacity." In

---

[41] "History of the British Dog," in *Countrysports and Country Life,* <http://www.countrysportsandcountrylife.com/sections/pedigree_dog/history_of_dog/history.htm, [accessed 3 December 2004].

[42] Ritvo, *Animal Estate*, 127.

July 1838 Darwin began his *M Notebook*, captioned "This Book Full of Metaphysics on Morals and Speculation on Expression," motivated by a conversation with his father Robert Darwin about the heritability of mental characteristics. Darwin had been considering the course of adaptation of species for several months, influenced in part by his reading of Erasmus Darwin's *Zoonomia* as described in the *B Notebook*.[43] In the *M Notebook* Darwin begins to make comparisons between his own physical expression of unconscious feelings and those of his dogs:

> Caroline tells me that Nina when brought from Shrewsbury to Clayton (though so fond of her & of servant of Richard & of Mary & her bed brought from Shrewsbury) yet for a fortnight continued wretchedly unhappy . . .After fortnight, continued to grow thin & did not seem quite happy, in five weeks was so thin, that she was sent back to Shrewsbury, then immediately fell into her old ways & became fat. What remarkable affection to a place. How like strong feelings of man . . .[44]

Darwin similarly observed his and his dog's physical expression of emotions. "When a man is in a passion he put

---

[43] Barrett, *Charles Darwin's Notebooks 1836-1844*, 170. The *B Notebook* appears to have been started in July 1837 and was the first of Darwin's notebooks to focus on "Transmutation of Species." Ibid., 167.

[44] Barrett, *Charles Darwin's Notebooks 1836-1844*, 532.

himself stiff, & walks hard._ He cannot avoid sending will of actions to muscles any more than prevent heart beat (sic.) remember how Pincher does just the same. I noticed this by perceiving myself skipping when wanting not to feel angry --Such efforts prevent anger, but observing eyes thus unconsciously discover struggle of feeling."[45] Because dogs were present throughout Darwin's life, they continued to inspire such observations and raise questions about the commonality of emotions between dog and man.

In 1872, when exchanging letters with noted feminist and animal rights activist Frances Powers Cobbe, Darwin discussed the idea of a dog's moral sense and used "the beloved & beautiful Polly" and her perceived expression of shame as an example of a troubled conscience. As Darwin explained, "when an honourable dog has committed an undiscovered offence," such as stealing food from the table, "Polly's frame of mind on such occasions is much the same as was mine," recalled Darwin, referring to a time in

[45] Ibid., 536.

his boyhood when he had disappointed his father, but trusted in his leniency.[46]

Polly was Darwin's constant companion in later life. Polly was a black and white terrier Darwin had acquired from his oldest daughter Henrietta when she married. Polly played a central role in Darwin's later discussion of the mental and emotional life of dogs, as well as a living example of his theory of pangenesis: she had a tuft of red hair on her back reminiscent of her father, a red bull terrier.[47]

For all of the other attributes of the dog, his love of and loyalty to man was the central theme of most anecdotal literature. This was reciprocated. If the dog was valued for his love of man, men who shared their lives with dogs were also more honorable. Indeed, contemporaries of Darwin wrote that the superiority of races could be measured to some extent by whether they had domesticated dogs. "[In] nations not yet emerged from the state of

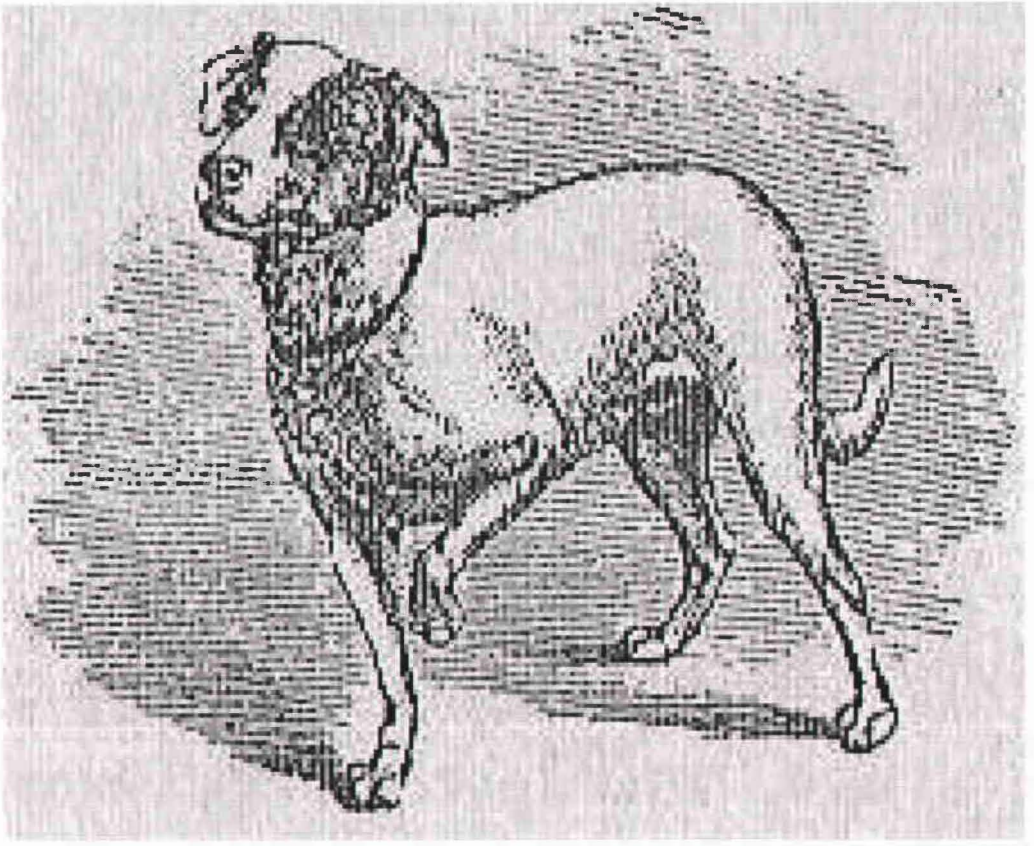
---

[46] Charles Darwin to F. P. Cobbe, 28 November 1872, Darwin Collection, Cambridge University Library.

[47] Browne, *Charles Darwin, the Power of Place*, 361. Polly's picture is included in Darwin's *The Expression of Emotion in Man and Animals*, 43. The illustration is described as "Small dog watching a cat on a table." Browne, *Charles Darwin: The Power of Place*, 361. That illustration is included herein at Figure 2.

Figure 2

Darwin's Terrier, Polly



barbarism . . . the uses of the dog are but little know."[48] Within the Darwin circle, affection for dogs was considered a sign of good character. Darwin's sister Catherine wrote to Darwin in 1826 describing an eligible young man during the opening of the pheasant season, referred to as Hunt Week:

> Mr. Gibbon, so handsome, & so conscious of it that he could not speak or turn his head with out thinking he was a study for a painter & model to a Sculptor, he told me a story of a young lady saved from being drowned by a Newfoundland dog--who dragged her to land--and added, "I always call that dog a gallant fellow." I give this as a specimen of the good taste of his conversation.[49]

Darwin' love of Spark--and perhaps some intimate knowledge of his sister and her husband--may have generated an unconscious fear for Spark's well-being. This was soon confirmed when the Parkers sent grave news not long after Darwin had admonished them that they must eventually return Spark to her true home: the dog had only been at the

---

[48] Bewick, *General History*, 325, cited in Ritvo, *The Animal Estate*, 20, n. 65.

[49] Catharine Darwin to Charles Darwin, 2 January 1826. *The Correspondence of Charles Darwin*, vol. I, 23.

Parker's home a day before she was lost, becoming bred to a strange dog.

> She made her escape before we were up but as soon as we knew of it, we sent a great many people after her, & offered a guinea reward to whoever could find her, the consequence of which was we had many little black white dogs brought to us, but no Spark---& for a whole fortnight we could learn nothing of her---when one day Dr. Parker met Dr. Wynne the Rector of Overton & Bangor who said that he had heard we lost a dog, & that, his servant had found a pretty little black & white one on the road about a fortnight ago, which he had no doubt was ours as it proved---I am sorry to say none of her puppies were born alive, there was but one born & that was dead. She did not suffer much pain but was restless & uneasy for two days before she died. The puppies were too large for her was the cause of her death.[50]

It took Mrs. Parker two letters to explain the circumstances of Spark's death, and Darwin's response was predictable, giving the Parker's a "scolding" of sufficient intensity that the Parkers expressed their fear that Darwin might not speak to them again. Catharine wrote, "I should be very sorry if our correspondence should stop here." Darwin's rebuke was probably all the more intense after

[50] Marianne Parker to Charles Darwin, 13 March 1826. Ibid., vol. I, 34.

having received a letter from Catherine Darwin in January extolling the condition of the dog and the comfortable life she appeared to be leading with the Parkers: "she is privileged to go into any room in the house that she pleases."[51] Nowhere did Catherine's letter mention the loss and return of Spark, or her pregnant state which by that time was perhaps obvious.

The severity of Darwin's reaction to Spark's death, and the manner in which the family gave him the news, underscores the strong emotional bonds Darwin had with dogs. Catherine knew of the Parkers' error when she went to Overton in January, but elected to shield Darwin from the news. After further delay, Marianne was forced to reveal Spark's death, and expressed considerable remorse to Darwin.

> You cannot think how sorry we have all been about it---Everybody in the house had got so fond of her, & she was such a nice little Dog. I hope you will write to me my dear Charles----for though I have been very sorry for poor Spark's death on her own account, I have been still more so on yours, and altogether it has vexed me more than

[51] Catherine Darwin to Charles Darwin, 15 January 1826. Ibid., vol. I, 27.

> any thing that has happened for a long time." [52]

It must have affected Darwin more.

Spark and Shelah were but the first of many of the Darwin family dogs to be discussed in Darwin's records. At the time of Spark's death, Shelah was pregnant and eventually had a litter of one, referred to in correspondence merely as "the puppy."[53] This dog may have become one of the two family dogs, Nina and Pinscher, which commonly appeared in Darwin's correspondence during his years at Edinburgh and Cambridge. Those two dogs are always referred to by name only, never "the dog," and appeared in letters sent to Darwin throughout his Cambridge years and during his voyage on the *Beagle*. Dogs seemed to like Darwin as much as he did them, for he was known to acquire the dogs of friends and family throughout his life.[54] In his later years, Darwin shared daily affairs

---

[52] Marianne Parker to Charles Darwin, 23 February 1826. Ibid., vol. I, 30.

[53] Caroline Darwin to Charles Darwin, 27 February 1826. Ibid., vol. I, 31. (Shelah Pregnant). Caroline Darwin to Charles Darwin, 22 March 1826. Ibid., vol. I, 35.

[54] *Autobiography*, 7. While a student at Cambridge, Darwin adopted William Owen's dog Sappho, who crept into Darwin's room and slept at the foot of his bed every night. Browne, *Charles Darwin: Voyaging*, 95. In 1861, Darwin adopted two dogs from John Innes when he moved to

with a well-known terrier, Polly, who came to live with him after the marriage of his daughter, Henrietta. His son Francis Darwin described Polly in Darwin's *Autobiography*:

> She was a sharp-witted, affectionate dog; when her master was going away on a journey, she always discovered the fact by signs of packing going on in the study, and became low-spirited accordingly. She began, too, to be excited by seeing the study prepared for his return home. She was a cunning little creature and used to tremble or put on an air of misery when my father passed, while she was waiting for dinner, just as if she knew that he would say (as he often did say) that "she was famishing." [55]

Darwin enjoyed the usual dog-master games with Polly, such as teaching her to catch biscuits off her nose and instructing her in mock-solemn way to "be a very good girl." He tolerated her high terrier spirits and her inclination to warn the family of every approaching stranger, barking at the verandah window at "naughty people," as Darwin jokingly referred to them.

In Darwin's naturalist work, his affection for dogs naturally led him to utilize them as objects of study. His

---

Scotland. Charles Darwin to John Innes, 19 December 1861. *The Correspondence of Charles Darwin*, vol. IX, 375.

[55] *Autobiography*, 75.

own family dogs regularly influenced Darwin's consideration of various aspects of the theory of adaptation of species. Dog's inspired Darwin's notion of animal consciousness in his *N*- and other notebooks:

> Dog obeying instinct of running hare is stopped by fleas, also by greater temptation as bitch: or dogs defending companion. (mem Cyanocephalus. Sphynx howling when I struck the Keeper) may be tempted to attack him from jealousy. (Pinscher & Nina)--or to take away food, etc., etc., Now if dogs mind were so framed that he constantly compared his impressions, & wished he had done so & so for his interest, & found he disobeyed a wish which was part of his system, & constant, for a wish which was only short & might otherwise have been relieved, he would be sorry or have a troubled conscience.[56]

This example demonstrates how Darwin's work reflected his affection for dogs. Darwin's observations of dogs, their breeding, their performance in the hunting field, and their everyday behavior would all have been keener for his enthusiasm at their company.

The importance of Darwin's consideration of the dog can be seen in comparison to other subjects that influenced Darwin's evolutionary theory, such as the Fuegian Indians which he encountered in his travel's aboard the *Beagle*.

---

[56] Barrett, *Charles Darwin's Notebooks 1836-1844*, 563.

When Darwin received his appointment to the *Beagle's* voyage in December 1831, he met and traveled with Jemmy Button and other Fuegian Indians brought back to England aboard the *Beagle* in 1830. Neither exposure to Button nor the Fuegian Indians he met in Tierra del Fuego inspired Darwin to study the "savage."

In fact, Darwin was largely unimpressed with the "savages" he observed. "[T]he Fuegians are in a more miserable state of barbarism, than I had expected ever to have seen a human being . . ."[57] This was an image not lightly shaken from Darwin's thoughts, and although he discussed the need to place the savage within his theory of natural selection in *Origin of the Species* and other works, he did so with difficulty, if not regret. In 1862, Darwin wrote:

> [Identifying savages as man's evolutionary precursors] is not so awful and difficult to me, as it seems to be most, partly from familiarity and partly, I think, from having seen a good many Barbarians—I declare the thought, when I first saw in Tierra Del Fuego a naked, painted, shivering hideous savage, that my ancestors must have been somewhat similar beings, was

[57] Nick Hazlewood, *Savage* (New York: St. Martin's Press, 2000), 340.

> at that time as revolting to me, nay more revolting than my present belief that an incomparably more remote ancestor was a hairy beast.

As he stated in correspondence to writer Charles Kingsley in 1862, and later wrote in *The Descent of Man and Selection in Relation to Sex* (1871) "For my own part, I would as soon be descended from that heroic little monkey, who braved his dreaded enemy in order to save the life of his keeper, or from that old baboon, who descending from the mountains, carried away in triumph his young comrade from a crowd of astonished dogs—as from a savage . . .[58] A clinical examination of Fuegian behavior might have contributed to Darwin's to evolutionary theory of man, but his own personal distaste for the behavior of the Fuegians that he witnessed led Darwin to relegate them to a subordinate position in his theories.[59]

Running with the Pack: Darwin Goes Hunting

Darwin's love of dogs certainly led him to spend as much time as possible with them, and no endeavor in

---

[58] Cited in Hazlewood, *Savage*, 340.

[59] Darwin credited the Fuegians, however, for their interest in dogs and their proper breeding. *The Correspondence of Charles Darwin*, vol. VIII, 401, n. 10.

Shropshire provided more opportunity for such interaction than hunting. While still in day school, Darwin engaged in dreams of travel and adventure, many of which typically included hunting. He particularly enjoyed tales from *Wonders of the World,* a volume that included foreign travel and hunting adventures for exotic game.[60] These daydreams turned to reality when at the age of fifteen Darwin was taught to shoot, most likely by William Owen.

> I do not believe that any one could have shown more zeal for the most holy cause than I did for shooting birds. How well I remembered killing my first snipe, and the excitement was so great that I had much difficulty in reloading my gun from the trembling of my hands. This taste long continued, and I became a very good shot. [61]

Darwin's shooting practice at Cambridge was often conducted at night in his room, bringing his gun to his shoulder before a mirror to check his aim, or loading the gun with a cap and using a lit candle for a target. A successful shot extinguished the candle, but kindled curiosity in a member of the school faculty, who remarked, "What an extraordinary thing it is, Mr. Darwin seems to

---

[60] *Autobiography,* 10.

[61] Ibid., 10.

spend hours in cracking a horse-whip in his room, for I often hear the crack when I pass under his windows."[62]

Darwin's efforts to become a skilled marksman served him well in his later hunting endeavors, and the record of his general correspondence indicates that he spent a great deal of time hunting. In 1825 Darwin went to Edinburgh at his father's behest to find a solution to Darwin's lack of interest in serious study. Darwin was to study medicine, but his expectation of a reasonable inheritance deprived him of much concern for making a living. Further, the rigor and impersonal nature of the medical studies left Darwin uninspired.

As Darwin's more prominent biographers have noted, once Darwin's attention was focused on a subject or activity, his enthusiasm and intensity were daunting.[63] By the fall term of Darwin's enrollment at Edinburgh, he had become focused on hunting, and it became considerably more than a repetitive recreational diversion from school.

---

[62] Ibid.

[63] Browne, *Charles Darwin: Voyaging*, 13. "Yet Darwin's own assessment of his simple tastes misses the strange intensity of his childhood amusements." That intensity was carried over to his adult pursuits, as well.

Throughout his schooling at Edinburgh and Cambridge, Darwin spent his autumns shooting at William Owen's at Woodhouse, and at Josiah Wedgewood's country home in Maer. Darwin became a well-known participant in foxhunts, and became skilled in employing packs of Foxhounds or, depending on the terrain, Beagles.[64] He also hunted other furred game, including Hares and Rabbit, which would have involved small hounds such as Harriers and, again, Beagles.

Darwin likely spent the majority of his time hunting fowl. On these excursions he hunted in the customary style over larger bird dogs on the estates of midland England. The sheer amount of discussion of hunting among Darwin and his friends reflects the considerable time Darwin invested in the sport, and letters from William Owen and William Fox to Darwin while he was at sea on the *Beagle* include wistful invitations to hunt partridge and grouse as soon as Darwin returned from his adventures abroad.[65]

---

[64] *Eddowe's Shrewsbury Journal and Salopian Journal* 26 April 1882, 5.

[65] William Owen to Charles Darwin, 1 May 1834: "I am afraid if you remain at Sea & on such an amusing expedition, (as it is to you at least), you will acquire too great a fondness for rambling, & never again be content to sit down quietly amongst your Country neighbors & be satisfied with the tame sport of Pheasant & Partridge Shooting." Mr. Fox was equally concerned about Darwin's travels interfering with his hunting interest: "It was just at the commencement of Grouse

The partridge season started in September and lasted through February, and Darwin squandered few opportunities to get into the field.

> My zeal was so great that I used to place my shooting-boots open by my bed-side when I went to bed, so as not to lose half a minute in putting them on in the morning; and on one occasion I reached a distant part of the Maer estate, on the 20th of August, For black-game shooting [the shooting of Black Grouse], before I could see: I then toiled on with the gamekeeper the whole day through thick heath and young Scotch firs.
>
> I kept an exact record of every bird which I shot throughout the whole season. One day when shooting at Woodhouse with Captain Owen, the eldest son, and Major Hill, his cousin, afterwards Lord Berwick, both of whom I liked very much, I thought myself shamefully used, for every time after I had fired and thought that I had killed a bird, one of the two acted as if loading his gun, and cried out, "You must not count that bird, for I fired at the same time," and the gamekeeper,

---

shooting. "I should so much have enjoyed walking over this beautiful country with my much valued & old friend Darwin, and unless you are much changed, & have learnt to despise such small game since you took to Ostriches, you would I think have enjoyed it too." *The Correspondence of Charles Darwin*, 382.

The reference to ostriches addresses Darwin's letter of 25 October 1833, *The Correspondence of Charles Darwin*, vol. 1, 344, wherein he describes a "fine animated chace" hunting Ostriches on the plain of La Plata with some local soldiers. Darwin hunted local deer on the same stop.

> perceiving the joke, backed them up. After some hours they told me the joke, but it was not a joke to me, for I had shot a large number of birds, but did not know how many, and could not add them to my list, which I used to do by making a knot in a piece of string tied to a button-hole. This my wicked friends had perceived. [66]

With his strong powers of observation and his enthusiasm for the dogs and the hunt, these hunting trips would have offered Darwin demonstrative evidence of the elements of natural selection: breeding mechanics, adaptation of species to environment and purpose, the parameters and laws of genetic inheritance. Darwin's boyhood interest in beetles and chemistry experiments with his brother Erasmus are generally regarded as providing early foundational elements for Darwin's scientific career.[67] It is more than fair to say the same about Darwin's hunting. When one considers the amount of time Darwin spent hunting, the almost compulsively inquisitive and organized character of his mind, and the complex elements which make up the various styles of hunting engaged in by Darwin, it is hard to deny that Darwin

---

[66] *Autobiography*, 16.

[67] See, e.g., Browne, *Charles Darwin: Voyaging*, 28.

gleaned important insights into nature and the topics which later composed his theory of natural selection.[68] Darwin greatly enjoyed shooting and intellectualized the process to a high degree. He enjoyed the skill involved in the endeavor and in particular the exercise of judgment and teamwork required to work the dogs in pursuit of game.[69]

It is thus worthwhile to conduct a more technical examination of the Darwin's hunting experience in search of the naturalist lessons that Darwin would have learned while in the woods hunting grouse, the uplands shooting partridge or pheasant, and the forest dales chasing down fox. Given that Darwin's prime hunting years occurred between the years 1825 and 1832, these lessons would have formed a critical part of his education prior to leaving on the *Beagle*. Also, when examining the "science" of Shropshire gentry hunting, it may be significant to bear in mind the question of where else prior to leaving on the *Beagle*, and

---

[68] Other commentators seem to share the same blind spot. In *Metaphysics, Materialism & the Evolution of the Mind, Early Writings of Charles* Darwin, eds. Paul Barrett and Howard Gruber (Chicago: University of Chicago Press, 1974), 66, Howard Gruber attributes Darwin's description of horses in the *M Notebook* to his "rather profound" knowledge acquired during his "many months" in the saddle while working overland on the *Beagle* voyage. Prior to the voyage, however, Darwin for many years owned and rode horses while hunting.

[69] *Autobiography*, 16.

even during the voyage itself, would Darwin have had an opportunity to examine and learn similar lessons.

Darwin participated in game sports by virtue of his social station, but walking or riding the fields of Shropshire in search of game offered far more than social amusements. For a hungry mind with a keen eye for nature, hunting in all of its forms provided Darwin an essential laboratory in which he was able to observe and formulate the basic concepts that would shape his studies and conclusions regarding natural selection. In examining that laboratory, it is important to recognize Darwin's skilled and enthusiastic participation in the two primary and distinctive theaters of game sport at the time: foxhunting and bird hunting. Both were distinct styles of hunting that were recognized by Darwin and his contemporaries.

For example, in a letter from William Owen Sr. to Charles Darwin in 1832, Owen distinguished between the two referring to both "hunting and shooting." Though the shooting of pheasant and partridge could be called "hunting" in a generic sense, bird hunting was commonly referred to as shooting, while chasing fox on horseback behind a pack of hounds was always called "hunting."

Eddowe's *Shrewsbury Journal and Salopian Journal* of April 1882 noted that:

> From Edinburgh Mr. Darwin went to Christ's College, Cambridge, where he took his Bachelor's Degree in 1831, proceeding to M.T. in 1837. The interval was of epoch-making importance. We believe that Darwin, like Murchison, was a keen fox-hunter in his youth, and that it was in the field that his great habits of observation were first awakened.

Sir Roderick Murchison, noted geologist and president of the Royal Geographical Society, may have discussed foxhunting with Darwin when they met in the scientific circles they frequented.[70] Their station in the Midlands gentry, and the means that came with it, contributed to both their hunting expertise and their naturalist pursuits. In any case, foxhunting would have exposed Darwin to all of the various aspects of that pursuit. Sarah Owen, one of William Mostyn Owen's daughters and a good friend to Darwin during his sporting years, referred to some of the appeal of the sport when she wrote to Darwin in December 1827 to

[70] Darwin and Murchison exchanged correspondence, generally addressing geological issues. See, for example, Charles Darwin to Sir R. Murchison, 30 May 1849, *The Correspondence of Charles Darwin*, vol. IV, 236.

describe the good hunting season at Eaton that year.[71] Her sister Fanny also shared Darwin's love of the sport in correspondence of January 1828:

> I have not been riding for some time, the last time I did was with the Hound's, which answer's my idea of "*Bliss on Earth*," it is such exquisite fun galloping on the Downs as hard as one can go--and there are generally about two hundred people out--I wish we had the Spaniard here, he is wasting his sweetness in the desert air of the forest[72]

Darwin shared the ladies' enthusiasm for the hunt and could find himself daydreaming of days with the hunting pack even as he prepared for his great adventures aboard the *Beagle*: "What changes I have had: till one to day I was building castles in the air about hunting Foxes in Shropshire, now

---

[71] Sarah Harriet Owen to Charles Darwin, 31 December 1827. *The Correspondence of Charles Darwin*, vol. L, 46. Mrs. Owen referred to her recent outing(s) "with the Foxhounds ,& excellent sport we had, I wish we could have the Spaniard here, instead of at the *Forest*, where he is now quite useless, there are very good horses to be hired here, & we intend to have another gallop soon--"

[72] Fanny Owen to Charles Darwin, January 1828, *The Correspondence of Charles Darwin*, vol. I, 48. Fanny's reference to "Bliss on Earth" was a probably a reference to Darwin's own description of his affection for fowl hunting. *Autobiography*, at 10, 16; Charles Darwin to William Fox, 19 August 1828, *The Correspondence of Charles Darwin*, vol. I, 63. "Upon my word, it is only about a fortnight until the first [opening of partridge season]. And then if there is bliss on earth, that is it."

Lamas in S America."[73] Because hunting was fun did not render the exercise without more substantive lessons, though.

Foxhunting appears deceptively simple, and so might easily be minimized as a mere amusement for Darwin. The popular form of the sport arose in response to the decline of the stag population in the 1700s, and the Fox became an able replacement.[74] The conversion was all the easier as Fox were viewed as vermin, marauders of useful agricultural livestock such as chickens and sheep. In addition, Foxes offered a good sporting challenge: they were quick and fairly smart little animals, and there was a fair amount of preparation needed to get the meet started.

Early in the morning of the hunt, workers would go into the field and plug the entryways to known Fox dens. As a result, Foxes returning from their typical nightly hunting would have to take up cover in a nearby field.

---

[73] Charles Darwin to J. S. Henslow, 5 September 1831. *The Correspondence of Charles Darwin*, vol. I, 142.

[74] The sport was not fully developed until the eighteenth Century. Dr. Cameron Ritchie in *The British Dog-It's History From Earliest Times* (London: Robert Hale, 1981), observed historical evidence of foxhunting in the United Kingdom at least as early as 1576. Breeders started keeping formal pedigrees of Foxhounds in 1787, institutionalizing the sport.

Late in the morning, hunters would assemble with a pack of hounds and the dogs would be turned loose into the field. Upon finding a Fox, the hounds would set off in the chase with the horse-mounted hunters not far behind. After miles of pursuit, the dogs would eventually corner the fox and kill it, and the hunters would preserve with the head, tail and paws of the Fox as trophies.[75]

The sporting challenge of the entire operation was found in the hunters' spirited horse chase, as it demonstrated the equestrian skills of the rider and his expertise in following the pack. It was the chase that Darwin enjoyed, although not without consequence. "I shall if possible withstand temptation and not ride this term," Darwin wrote to William Fox in January 1830. "I had one or two most glorious days hunting at the end of last. But the last day I had two such aweful (sic.) rolls as nearly knocked my lungs out."[76] The sport of the chase was only possible through the cooperation of the dogs and it was essential that the gamekeeper perfected a dog through

---

[75] Pool, *What Jane Austen Ate*, 171.

[76] Charles Darwin to William Fox, 3 January 1830. *The Correspondence of Charles Darwin*, vol. I, 96.

selective breeding just fast enough to hunt Fox.[77] Appropriate speed was the critical element, as one could not hunt Fox with a Greyhound or Whippet, which were too fast to facilitate sport. A Greyhound would simply run down the Fox and kill it before the hunters had ridden any distance. The greater challenge for these faster breeds would have been to find the Fox at all, as Greyhounds and their brethren hunt by sight and not smell. The wily Fox, crouching in the gorse and heather surrounding his home, would be all but invisible to such dogs.

The Foxhound, by comparison, was perfectly selected for the task. Foxhounds and their cousins Harriers and Beagles are typical hounds, with a length of stride ("gait") to allow them to move over variable terrain at a good pace, and heads constructed to accentuate their powers of scent.[78] Ear size and shape--draping downward alongside

---

[77] Darwin notes his love of the riding aspect of the sport on several occasions. Charles Darwin to William Fox, 3 November 1829. Ibid., 95; Charles Darwin to William Fox dated 8 October 1830. Ibid., 108. "Moreover, I think he [his new horse] will make a splendid hunter, from a specimen I had of him with the Eytons hounds.--" By 1830, Darwin's love of fox-hunting may have begun to take a back seat to Darwin's studies and his other love, shooting. Charles Darwin to William Fox, 3 January 1830. Ibid., 96. "I shall if possible withstand temptation & not ride this term. I had one or two most glorious days hunting at the end of last."

[78] The written standards established for scent hounds and other breeds relying on scent to hunt commonly require a head, which is half

the head and even with or past the nose-accentuated the scenting ability of the dog by trapping air around the muzzle. The neck of the dog had to be long enough for the dog to run with his head held low, below the level of the shoulder, for unlike bird dogs, see discussion *infra*, the scent hounds picked up the smell of game on the ground, near the level of the running game.

These breeds varied then as now, primarily in size but were therefore put to different game: Foxhounds to Fox, Harriers, smaller and thus slower than the Foxhound, were bred to hunt the slower but more maneuverable Hare; Beagles were put to smaller game, but Fox as well depending upon the terrain. For Fox, the dogs were hunted in packs of as many as forty to fifty dogs to put as many noses as

---

muzzle, half backskull, with the top of the muzzle in profile lying parallel to a line drawn across the top of the skull. See, e.g., American Kennel Club Staff, ed., *The Complete Dog Book*, 19th ed. (Foster City: Howell Book House, 1998), 138 (Basset Hound). In this manner, the sensory area of the nasal passages is maximized, and the scent is given a straight path to those sensors from nose to brain. See William Arkwright, *The Pointer and His Predecessors*, (London: Arthur L. Humphreys, 1906)(reprinted 1977, Aberdeen University Press), 122, wherein the author discusses the form and function of the Pointer headpiece.

As indicated in previous correspondence, hunts involving Darwin's friends and family certainly occurred in the company of Foxhounds, but letters to and from Darwin discussing hunting include reference to the other likely breeds. Sarah Williams to Charles Darwin, 26-31 August 1832. Ibid., 261. "We soon returned afterwards returned to Eaton, where we remained till the end of January & excellent fun we had, hunting almost every day with the Beagles."

possible after the quicker game.[79] Management of the pack was not the responsibility of the hunters, but rather the huntsman, who could tell the call of individual hounds and tell who was on the scent, and direct the hunt lest the horse-mounted hunters follow the wrong dogs.[80]

The adaptation of the dogs so utilized balances a remarkable set of criteria: fast enough to trail a fox, but not so fast that he is caught too quickly; a highly developed sense of smell, but one which is exercised near to ground level, and at top speed; the ability to cover diverse terrain of almost every sort while doing all of the above. Dogs were selected for these abilities and the huntsman would establish a pack character known for its better traits.

The adaptation of dog to game and terrain was well known to Darwin in the example of the Greyhound, a dog of ancient provenance in England.[81] A Greyhound hunts much

---

[79] The technique for hunting Hare with Harriers was much the same. For a thorough discussion of Harrier and Beagle hunting methods, see H. A. Bryden, *Hare Hunting and Harriers* (London: Grant Richards, 1903).

[80] Pool, *What Jane Austen Ate,* 172.

[81] In the tenth century, King Howel of Wales made killing a Greyhound punishable by death. King Canute of England established the Forest Laws in 1014, reserving large areas of the country for hunting by the nobility. Only such persons could own Greyhounds; any "meane

differently than a pack of Foxhounds, relying on his sight to pursue and run down game such as hare. The dog is essentially a missile, and must kill the hare before it gets to ground where a dog built for straight-line speed will lose a test of maneuverability amidst brush and forest. Where foxhunting relies on the principal of wearing out the Fox, a Greyhound gives the Hare no chance to wear *him* out.

Darwin's knowledge of such specialized activities as foxhunting and Greyhound coursing, along with other dog activities, began to suggest a theme of selection for purpose among those animals. Owing perhaps to the Greyhound's exaggerated features, Darwin cited the breed as an example of adaptation in many of his works. [82] For example in his essay of 1842 setting out initial themes for

---

person" (commoner) caught owning a Greyhound would be severely punished and the dog's toes "lawed" (mutilated) to prevent it from hunting. George Jones, *Greyhound History*, archived at http://www.barkbytes.com/history/gryhnd.htm (accessed 1 December 2004).

[82] The Greyhounds peculiar physical stature received description in 1486 when Dame Julian Berners set out the ideal for the breed in her Book of St. Albans: "headed like a snake, neck like a drake, footed like a cat, tailed like a rat, sided like a bream, chined like a beam." Brian Vesey-Fitzgerald, *The Domestic Dog: An Introduction to Its History* (London: Routledge and Kegan Paul, 1957), 81.

Origin of the Species, Darwin set out the perfection of the form:

> If a being infinitely more sagacious than man (not an omniscient creator) during thousands and thousands of years, were to select all the variations which tended toward certain ends ([or were to produce causes with tended to the same end]), for instance, if he foresaw a canine animal would be better off, owing to the country producing more hares, if he were longer legged and keener sight,--greyhound (sic.) produced.[83]

Hunting various game provided Darwin with considerable experience in the mechanics of selection. Seldom were these issues considered in Darwin's his later works without bringing up examples from the dog world. However, the problem that he faced was drawing parallels between man's deliberate breeding practices to develop certain characteristics, and the selection process that occurred naturally in the wild. The variety of scent hounds, each fitted to a different game type, would probably have been too fine a distinction to find in nature. Still, this was a distinction in objective and not process or form; men set

[83] *The Foundations of The Origin of the Species: Two essays written in 1842 and 1844 by Charles Darwin,* ed. Francis Darwin (Cambridge, 1909), http://pages.britishlibrary.net/charles.darwin/texts/ foundations/foundations_part1.html (accessed 1 December 2004).

goals for their breeding, just as nature appeared to. The means of arriving at the chosen destination would be the same, though, as Darwin recognized from his dog experience and noted in his 1842 manuscript on the origin of species:

> Before considering difficulties of theory of selection let us consider the character of the races produced, as now explained, by nature. Conditions have varied slowly and the organisms best adapted in their whole course of life to the changed conditions have always been selected,--man selects small dog and afterwards gives it profusion of food,--selects a long-backed and short legged breed and gives it no particular exercise to suit this function . . .In ordinary cases nature has not allowed her race to be contaminated with a cross of another race.[84]

Yet man's "contamination of the races" among dogs, such as crosses between Greyhounds and Bulldogs, offered scientific insights to Darwin unavailable from other sources at the time. Foremost, hunting a pack of well-bred Foxhounds allowed Darwin to see predator and prey in action in the field. To examine the utility of physical forms at

---

[84] *Essay on the Origin of the Species 1842*, 5. Darwin's reference to long, low breeds could have included any number of spaniels, including the Sussex and Clumber indigenous to England. The Basset Hound and Dachshund were also well developed by that time, and the Skye Terrier was also in the later stages of development. Each of these dogs did, however, have a function suited to its unique characteristics, whether going down a hole after game or keeping a pace consistent with a hunter following on foot.

work--a tall dog moving quickly over a field, a smaller dog moving more nimbly through a thicket--certainly must have suggested the need for adaptation of an animal to a specific habitat. Dogs with ungainly proportions, poor endurance, and other undesirable characteristics would perform weakly in the field, while those with proper structure and hunting instincts would excel. Man might sustain the weaker examples of a breed, but nature would not.

Darwin's specific analogy to the Greyhound in *Origin of the Species* documents his observation of canine adaptation, and his use of the Greyhound, with its more exaggerated features, may have been consciously aimed at providing a more obvious example to readers of *The Origin*. He could have chosen a Foxhound, but the extraordinary and well-known form of the Greyhound, with its long legs and hard-coiled body designed for speed, perhaps better made his point.

Another unique lesson Darwin would have gained from foxhunting was the viewing of several generations of dogs performing together. Darwin spent time with the gamekeepers and huntsmen in charge of the dogs, and would not have spent such time in their company without

discussing the problems of breeding a proper hunting pack. Darwin documented days spent with such men in his autobiography when he described how his excitement over hunting would get him to the field well ahead of the hunting itself, in which case he "toiled on with the gamekeeper the whole day through thick heath and young Scotch firs."[85]

Later in his studies Darwin remarked upon discussions he has had with breeders of various types, including the well-known Bloodhound kennel of John Howard Galton, to whom Darwin had been introduced by William Fox around 1837.[86] Darwin would have observed firsthand the functioning of characteristics desirable to the task of hunting, but would also have observed the passage of those traits from generation to generation. Of course, the better formed the dog, the longer and more efficiently he would be able to hunt. Moreover, a pack could possibly contain three or four generations of a line, demonstrating vividly the

---

[8585] *Autobiography,* 16.

[86] For example, in his *B Notebook* Darwin considers the cause and effect of a hereditary kinked tail, which arose in Galton's Bloodhound line. Barrett, *Charles Darwin's Notebooks 1836-1844,* 176 n. 1.

breeder's selection powers and the operation of genetic process.

It's doubtful that a young naturalist could have otherwise obtained similar knowledge. By the time he was at Cambridge, Darwin was an accomplished beetle collector, and had taken a couple of classes in zoology and botany, but it is questionable that any of those classes would have presented the evidence of the process of adaptive breeding at work available from a day observing a hound pack.[87] In a hunting pack, a generation could turn over every two or three years, allowing observation of how and which traits were passed down, which parents had a greater influence on litters, and how those traits were utilized by their receptors.

Collecting beetles and insects could not have provided comparable information; Darwin could not have kept track of the pedigrees of the bugs, at least not in the wild. While Darwin's parents did some pigeon breeding, there is no evidence in his *Autobiography* or in his correspondence to indicate that those activities, modest as they may have been, had a substantial impact on Darwin. On the other

[87] *Autobiography*, 112, 115.

hand, he spent a great deal of time with kennel men, and the lessons of genetic inheritance and selection of characteristics through proper breeding would have been part and parcel of their daily lives. These lessons likely were part of their conversations with Darwin as well.

Commentators examining other agricultural sources for Darwin's research, such as botany and animal breeding in other species, have lamented that there was little exchange between breeders and the scientific community during this period of time, at a cost to both breeders and naturalists. For example, in *Darwin and the Breeders: A Social History*, James A. Secord cites to an article published in the *Quarterly Review* describing the loss of the poultry breeding community for its lack of interest in scientific advances of the day.[88] The same observation may be less applicable to the activities of dog breeders in the same period, for dog breeders themselves were at least familiar in passing with some of the contemporary scientific discussion of genetics and selection that may have affected their breeding programs. For example, Daniel's *Rural Sports* notes the writings of Georges Buffon and Peter Simon

[88] Secord, *Darwin and the Breeders*, 522.

Pallas--both influential in Darwin's researches--in discussing the history and breeding of dogs.[89] Breeders such as George Cupples, one of the main proponents of the Scottish Deerhound in the nineteenth century, were interested in Darwin's findings on genetics and selective breeding could bring to their breeding and its effect programs as well.

Moving Upland: Shooting as "Bliss on Earth"

Insights gained by Darwin from hunting with Hounds varied from those learned while hunting game fowl, for the technique and participants in the sport of fowling were quite different. It is easy to see why a budding naturalist might find the hunting of partridge, grouse and pheasant a more intriguing pastime. Darwin himself noted that he saw a great intellectual challenge in the science of finding the game, working with the dogs, and the skill of shooting.[90]

The sport of shooting did not involve the masses of people required of a Fox hunt, nor the preparation and number of dogs. On an informal shoot, a hunter would

---

[89] *Rural Sports*, 14 (Pallas), 35 (Buffon).

[90] *Autobiography*, 16.

arrive on site with no more than four dogs, and more likely two. Depending on the terrain and the game, these dogs would be Pointers, Setters, or Spaniels.[91] That Darwin was familiar with all of these breed types is evident from the numerous references to these three in his notebooks and essays, as well as the larger works from *Origin of the Species* on. Because he hunted in the Shropshire region for larger birds, Partridge and Grouse, Darwin most certainly hunted over Pointers and Setters.[92] These breeds are unique in their background and breeding and would have imparted a unique experience when working in the field with Darwin.

---

[91] Retrievers were breeds developed by that time, but there is no record of Darwin hunting waterfowl, those birds for which retrievers are useful. Later in his life, though, Darwin owned a large retriever, the famous Bob referred to in Darwin's *The Expression of the Emotions in Man and Animals* (Chicago: University of Chicago Press, 1965), 57. Bob's look of dejection at not getting an expected walk was referred to by Darwin as his "hot house face," and a good example of antithesis in expression.

[92] The use of Spaniels for bird hunting generally involved smaller game, such as Woodcock, which birds generally inhabit regions of brush. Spaniels are bred to be smaller and nimbler than their setting and pointing relatives, and so are able to move through these tighter confines and flush the game for the hunter to shoot. Larger Spaniels, such as the Clumber and Sussex--ancient English breeds--are more useful in the heaviest growth, where their bulk and low centers of gravity allow them to batter through the brush to reach the bird.

Spaniels, especially the modern Cocker and Springer Spaniels, were in constant development in the eighteenth and nineteenth centuries in England, a fact that would not have escaped Darwin's consideration.

The Pointer came to England from Spain in the first decade of the eighteenth century probably as the acquisition of English soldiers fighting the War of Spanish Succession.[93] The breed had been developed for hunting larger upland game birds with, at first, the crossbow and then the gun. While it is a much older breed than that, the English Pointer soon became a favorite among English hunters for his skill in finding Partridge.[94] This technique of hunting stands in stark contrast to the afore-mentioned Fox hunt.

An Englishman hunting Partridge might go out with a friend and have four dogs between them. The dog finds and points out the Partridge (or Pheasant or Grouse), and working in teams of two generally allowed the dogs to cover a field at a good pace ahead of the walking hunters. Because the birds travel above ground on the wing, a

---

[93] William Arkwright, *The Pointer and His Predecessors* (London: Arthur L. Humphreys, 1906)(reprinted 1977, Aberdeen University Press), 28.

[94] "The first likeness of a pointing-dog that I have found is a pencil sketch of a head by an Italian, Pisanello (1380-1456), which is supported by a painting attributed to Titian (1477-1576), and by a picture by Bassano (1510-1592), at Madrid. The scene of this last is laid in the Garden of Eden; and here in a corner is a "bracco" staunchly pointing partridges." -- *Arkwright, The Pointer and His Predecessors*, 15.

fundamental difference between "gun dogs" and Hounds is that the former acquire scent in the air, not on the ground, and so move with their heads held at or a little above shoulder level. As the dogs search the field, the hunter would often give instructions, preferably by whistling, to indicate the direction in which the dogs might proceed. The dogs go about their business at a gait, not a gallop, and must stay within reasonable distance of the hunters to at once find the bird, indicate its location, and allow the hunter a good shot. Dogs that range too far ahead, or move to quickly, deny hunters the chance at hitting the bird.

The delicacy of this art cannot be overestimated. In an open field with birds hidden in the cover, a pointing or setting dog may find a single bird to start, but it is not at all clear that the bird is alone. Flushing a covey of partridge could deny the hunter a good half-day's sport. The object was to flush birds consistently and in such numbers that they could be shot *seriatim*. A hunter's ability to work with his dog, keep the dog working upwind

and in likely ground was as essential as the dog's own nose.[95]

There was a greater intimacy to this form of hunting: two men traveling on foot across upland grass fields, watching their respective dogs work to find the scent of the birds, watching the dogs come to a point indicating the location of the game, managing their targets with the dogs, communicating with the dogs to maximize their opportunities to shoot. The shooting, a skill in itself, was largely secondary to the coordinated efforts of man and the dogs. Popular magazine writer Idstone, whose pieces often appeared in the sporting journal *The Field*, summed it up quite nicely in an article in 1874 when describing Snipe shooting over an English Setter:

> As we intended to shoot down wind at snipe it seemed useless to take a dog, but we had more than we could do without him, and I considered that, if he really was a snipe-dog, he would enable us to kill more than if he was not with us. For my own part I do not care to work without a dog at any sort of shooting. The sport, to my mind, is in witnessing the dog's intelligence. Knocking down the game is simply the

[95] Arkwright, *Pointers and Their Predecessors*, 31.

> dog's reward, everything else is "pot hunting."[96]

The Field was a popular publication bringing the hunting sport to readers but there was a wealth of other published material to help hunters learn their craft.[97] Among these was Lt. Col W. N. Hutchinson's *Dog Breaking: The Most Expeditious, Certain and Easy Method*, a copy of which occupied a shelf in Darwin's personal library.[98] Darwin was particularly attentive to Hutchinson's references to a dog's natural, i.e., untaught behavior in the field manifesting reason and choice, and apparently referenced the book often enough that he specifically referred to it when requesting that his publisher produce his edition on Orchids in the same size.[99]

The English Setter was a breed developed to its perfection in Shrewsbury during Darwin's hunting years.

---

[96] Idstone, *The Idstone Papers, Reprinted Articles From The Field* (London: The Field, 1874), 281.

[97] The full title of the magazine was *The Field, the Farm, the Garden, the Country Gentleman's Newspaper*, and was published from 1853. J. don Vann & Rosemary Van Arsdel, *Victorian Periodicals and Victorian Society*, (Toronto: University of Toronto Press, 1994), 294.

[98] (London: John Murray, 1848),noted in Darwin's library in Di Gregorio, *Charles Darwin's Marginalia*, vol. I, li.

[99] Charles Darwin to John Murray, 3 October 1861. *The Correspondence of Charles Darwin*, vol. IX, 293.

Unlike the Pointer, which had at some stages been crossbred to Fox Hounds to increase the scenting ability and substance of skeletal structure, the Setter was developed from spaniel stock and offered a slightly different style of hunting. The benefits of the English Setter's slightly smaller build, heavier coat, and unique foot structures made the Setter a more adaptable animal. "Their noses are undoubtedly superior, their feet more durable . . .and are to be preferred to the Pointer."[100] The Setter was particularly useful on Grouse, or "Black Game" as it was known, owing to its nimbleness and protective coat providing virtues around the forest edges where the birds were to be found.

The quality of the dog, and his ability to efficiently find birds to shoot, was not to be underestimated. As the father of the English Setter breed, Edward Lavarack emphasized that good dogs bred good dogs, and a good dog meant the difference between a slim take and great success on a day in the field:

> I have long had the idea that dogs carefully bred together, carefully

[100] Edward Laverack, *The Setter* (London: Longman's, Green & Co., 1871), B (citing Daniel's *Rural Sports)*.

> educated, and carefully shot over, that their instinct and sagacious-ness has developed and increased; that a clever dog imparts his cleverness and peculiarities to his progeny. Man has become what he is by study, observation, though, and education. Why should not the dog, by careful training, improve likewise.[101]

Success in this regard, measured in birds shot, is rather profound. Laverack notes that he participated in a hunting day with a party of four near the start of Grouse season (September 1) when the party bagged 3,066 head of Grouse. This was due solely to the virtue of the dogs. A single brace of Setters could provide one hunter with 1,000 or more birds in a day.[102]

Idstone's point regarding the loss of sport for want of a dog typified the exercise: the hunting of fowl was not entirely about shooting, but about the social structure of the event, and at the heart of that structure was the relationship of man and dog. Unlike foxhunting, in which hunters trailed along behind an almost autonomous--and rather anonymous--pack of sprinting hounds, a Grouse hunter went out with his two dogs and the three of them devised a

---

[101] Ibid., 2.

[102] Ibid., 60.

system for conducting the hunt. The dog had to pay attention to the hunter, cooperate with him, and at the same time employ his own innate skills to finding the birds. Hunters had to learn the skills of communicating with the dogs, both in telling the dogs what needed to be done (and without disrupting the birds in the field), and in understanding the dog's own responses to commands and information observed. And there was great poetry in watching the dogs exercise their natural skills in the field, and this poetry was often reflected in the works describing the function of the dog. William Arkwright, the chief historian of the Pointer breed, described working over pointers in terms which no doubt reflected Darwin's experience:

> [T]he chief glory of the sport is to shoot over a brace of raking pointers, matched for speed and style, sweeping over the rough places like swallows and passing each other as if they were fine ladies not introduced. . . how proudly will the first dog march hip up to the game with outstretched neck, flame in his eye, and foam at his lip, while his companion watches from a distance with perfect self-control; and, when the birds rise, both dogs instantly drop to the ground, not to move till the game is gathered, and they are bidden to resume their search.[103]

[103] Arkwright, *Pointers and Their Predecessors*, 169.

There is thus little wonder why Darwin considered shooting "bliss on earth."[104] During his years at Cambridge, Darwin shot Partridge, Pheasant, and Black Grouse and certainly worked with Pointers and Setters in the process.[105] He specifically refers to the breeds and their behavior numerous times throughout his notebooks and essays, where he noted the inherited habits of Setters and Pointers "as manner of movement . . . Habits, as pointing and setting on certain occasions. Taste for hunting certain objects and manner of doing so . . . Origin partly habit, but the amount necessarily unknown, partly selection. Young pointers pointing stones and sheep . . ."[106]

Further documentation of Darwin's hunting years certainly exists, albeit among some unusual sources. Darwin kept personal hunting journals ("I kept an exact record of every bird which I shot throughout the whole

---

[104] *The Correspondence of Charles Darwin*, vol. I, 63.

[105] Charles Darwin to John Maurice Herbert, 13 September 1828: "In the first week I killed 75 head of game; a very contemptable number, but there are very few birds. I killed, however, a brace of Black Game." *The Correspondence of Charles Darwin*, vol. I, 64.

[106] *Essay of 1842*, 8.

season."), and similar records were kept by hunting clubs as a matter of course.[107] Examination of the club records might reveal in finer detail Darwin's hunting ventures, including shooting partners and dogs in attendance. The shooting day was long, with plenty of time for conversation among the hunters. These conversations would have included discussion of breeding techniques and goals. What if Darwin hunted with Lavarack with his English Setters? What advice would they have exchanged? How would Darwin's consideration of the mechanism and motivation of natural selection have grown?

When entering the height of his hunting youth, Darwin obtained a young hunting dog, "Dash," and derived great joy from breaking the dog for the field. "Dash arrived quite safely here on Saturday morning. He rises in my opinion hourly . . . it would have excited your envy & spleen to have seen him on the scent of a covey of Birds, & the style in which he went down when I held up my hand.[108] Darwin's love of Dash was such that his cousin William Fox enjoyed

---

[107] Darwin refers to his own hunting records in his *Autobiography*, 16. For information regarding the systematic keeping of hunting records by hunting clubs, see Mackenzie, *The Empire of Nature*, 34.

[108] Charles Darwin to William Fox, 24 December 1828. *The Correspondence of Charles Darwin*, vol. I, 71.

chiding him about Dash's tail, attempting to create fault in the dog where Darwin seemed unable to find any.[109]

The fraternity of man and dog was dramatically expressed in fowl hunting. According to Darwin, his interest in natural science grew strongly during these hunting years, a trend not coincidental when one looks at the physical and metaphysical issues presented in the fields of Shrewsbury and Woodhouse. The lessons of hunting would have emphasized for Darwin aspects of naturalist study that would later form the backbone of his evolution work.

If for no other reason the sheer volume of dog information available to Darwin presented him with his earliest and most complete exposure to many of the issues tht he would later wrestle with in his scientific themes on which he would later write. After all, Darwin lived with

---

[109] See, e.g., Charles Darwin to William Fox, May 1832, ibid., 233, where Darwin wrote while aboard the *Beagle*, "I often see you and poor little Fan [Fox's dog]--Oh Lord, & then old Dash poor thing!--do you recollect how you all tormented me about his beautiful tail[?]."

The shape and action of a Pointer's tail was and is considered a point of type in the breed, and a poor tail would be considered a mark of poor breeding. "There is nothing for a pointer more necessary than a tail of the right shape . . . It is more convincing warranty of pure blood and high breeding than reams of written pedigree." Arkwright, *Pointers and Their Predecessors*, 129. This and other references regarding Dash's pointing behaviors indicate that Dash probably was a Pointer.

and observed dogs for twenty-two years before he boarded the *Beagle* and continued to study dogs until his death. Through his personal and professional contacts he was informed on many of the breeds prominent in England in the early to mid-nineteenth century including Setters, Spaniels, Pointers, Retrievers, Terriers, Greyhounds, Bulldogs, Harriers, Beagles, Foxhounds, Newfoundlands, Scottish Deerhounds, Pomeranians, Spaniels, miscellaneous toy breeds such as Pugs, as well as shepherd breeds.[110] Darwin had direct experience with the gun breeds and Hounds, and owned a number of others.

Dogs and Darwin's Methodology

The life that he shared with dogs made Darwin's considerations of nature generally inclusive of the species. After he had returned from voyaging on the *Beagle* and began keeping notebooks to construct his theories of natural selection and other topics, there seldom pass even a few pages without some reference to dogs, even among topics not addressing such likely issues as breeding. For

[110] Of these breeds, Darwin's correspondence indicates ownership of Pointers (Dash), Terriers (Polly, Spark, Tartar), Retrievers (Bob), Scottish Deerhound (from George Cupples), Pomeranian (Snow), and dogs of unidentified ancestry.

example, in the *Glen Roy Notebook* documenting an 1837 field trip to Scotland, Darwin focuses on geological observations of the area. Yet, in the same pages he finds himself including notes on the breeding and behavior of the Highland shepherd dogs.[111] The omnipresence of the dog in this and other notebooks speaks both to the availability of information on the dog and to Darwin's sensitivity to that information, bolstered by the relation of similar interests from his friends and family in correspondence and in consultation.

Within the Darwin archives, this aspect of Darwin's work can be challenging, for although there are many letters to Darwin from people interested in dogs, the corresponding record of Darwin's inquiries to those same individuals is not equally collected. It is likely that other archives of Darwin's correspondents would reflect directly and indirectly Darwin's interest in these matters.

Darwin did make direct inquiries about dog breeding and behavior. Where other agriculturalists may not have been so forthcoming, dog breeders and fanciers seemed more

---

[111] Barrett, *Charles Darwin's Notebooks 1836-1844,* 2, 12.

eager to help Darwin.[112] When one puts Darwin's considerable correspondence referring to dogs in the context of what Darwin scholar James Secord of Cambridge University has referred to as "the sheer scale of Darwin's research network among the breeding community" these contacts become all the more profound. As Secord suggests, any substantial line of research notable in Darwin's archives must be multiplied "hundreds or even thousands of times over . . ."[113] Darwin's frequent contacts with cousin William Fox and other gentry such as William Yarrell were probably typical of many contacts Darwin maintained in the dog world, for both gentlemen "had more esoteric lore about dogs than about all the zoo animals put together." [114] Driven in the post-*Beagle* years by this stimulating community, it is arguable that the questions and lessons

---

[112] Secord, "Darwin and the Breeders: A Social History," 522.

[113] Ibid., 533.

[114] Adrian Desmond and James Moore, *Darwin, the Life of a tormented Evolutionist* (New York: W. W. Norton Co., 1991), 240. For an instance of Darwin's talks with Yarrell, see Barrett, *Charles Darwin's Notebooks, 1836-1844*, 239, where Darwin cites Yarrell's theory that in a breeding between recent and older species, the elder takes greatest effect on the offspring. Yarrell uses a cross between a Pointer and an Esquimaux dog (probably a malamute or other sled dog variant) as an illustration.

learned from observing dogs constantly intruded upon his evolutionary thoughts.

Yarrell may have had particular influence on Darwin with regard to the passage of heritable traits. Yarrell's own pet theory, that a breeding of two individuals would produce offspring more like that parent exhibiting the oldest traits, was of particular interest to Darwin. Darwin wrote in his notebook "[Yarrell] states that Esquimaux dog when crossed with Pointer produces offspring much nearer Esquimaux than Pointer."[115] The theory concerned Darwin because if proven true it would affect how quickly and to what degree inherited physical and mental abilities could be developed. Ultimately, he found little support for Yarrell's idea, but it continued to be a subject of interest at least out of concern that atavism would overcome more effective recent adaptations of a given species.[116]

Darwin included his concerns about Yarrell's theory and other matters in questionnaires he sent to breeders. This form of research continued in the years after Darwin's

---

[115] Barrett, *Charles Darwin's Notebooks 1836-1844*, 239.

[116] Ibid., 275.

return from his time aboard the *Beagle*. The questionnaires that were sent to agriculturalists and breeders Richard Sutton Ford and George Tollet in 1839, included reference to other species but most always included reference to dogs as well.[117] In the questions posed to Ford and Tollet Darwin confronts atavism with an intriguing canine experiment. "In crossing between an old-established breed . . . with some new breed, does the progeny in the first generation take more after one than the other?"[118] Darwin illustrates the question by positing hypothetical breedings between an Australian Dingo, a Pug, and modern Spaniels. Would the puppies resemble the older breed (the Dingo), or the more recent Spaniel variety? Darwin was quick to offer scientific controls for such an experiment. "The effect should be observed both in a female of the old race crossed by the new, and a female of the new crossed by a male of the old; for otherwise the greater or less preponderance of the peculiarities in the progeny might be attributed to the power of sex, thus characterized in transmitting them; and

---

[117] *The Correspondence of Charles Darwin* vol. II, app. V, 446.

[118] *The Correspondence of Charles Darwin*, vol. III, 447. Copies of the questionnaires Darwin sent to Ford, Tollet are included in Appendix A.

not to the length of time the breed had been so characterized."[119]

Darwin devised other similar tests to identify the factors affecting reproduction. He suggested another experiment breeding foxes and hounds with Pointers, then breeding the progeny back to the purebred. In this way, Darwin hoped to observe the tendency of the puppies to revert to prior forms. By analogy, one could examine the ease with which new varieties of species could be formed and lost.

Physical characteristics were not Darwin's only concern in the questionnaires. In his questions to Shrewsbury breeder Mr. Wynne, he inquires "About sporting in a pack of Hounds: how much selection?"[120] If there was selection involved, Darwin was interested in what criteria might help guide those choices. "Idea of beauty in animals: do females prefer certain males? Or vice versa?" Darwin wondered. Whether animals made such choices was of

---

[119] Ibid.

[120] "Questions for Mr. Wynne," notes of Charles Darwin dated February-July 1838, Darwin Collection, Cambridge University Library, D1838.20, reprinted in Barrett, *Metaphysics, Materialism & the Evolution of the Mind, Early Writings of Charles* Darwin, 163. Copies of Darwin's questionnaires are attached hereto as Appendix A.

no less interest to Darwin, however, than if those preferences might be passed on to the next generation. The questionnaires thus necessarily included inquiries into how *character* might be transmitted as well. Darwin included in this not only habitual information, but learned traits as well. "If an animal's temper is spoilt by constant ill usage, or its courage cowed, do you believe the effect is transmitted to its offspring?"[121]

These questions are repeated in the years leading up to publication of *Origin of the Species* and beyond. While complete questionnaires to other breeders are not as yet available, Darwin repeats many of the same questions in personal correspondence in the years that followed. For example, Darwin asks William Fox in 1855 to talk to his breeder friends about the fertility of successive generations of cross-breeding, referring to Bulldog-Greyhound crosses by way of example. After all, if subsequent generations were less fertile, the subsequent hybrid would be lost. In the wild, the adapted hybrids would not reproduce sufficiently to form new species or

---

[121] *The Correspondence of Charles Darwin*, vol. III, 449 (Ford/Tollet questionnaire).

varieties, a likelihood considerably magnified if domestic breeders exercising far more control over the selection process could not maintain breeding vigor in their stocks.[122]

Other animals subjects could and did in some circumstances serve Darwin just as well as dogs in examining the elements forming the process of natural selection-Darwin inquires about cows, pigs and other domestic species in his requests to Wynne, Ford and Tollet for example- but the dog's availability, variety, and frank presentation of hereditary patterns, both physical and mental, made the species an ideal study. Undomesticated breeds did not offer the same learning opportunity.

Darwin's correspondence seeking information from dog breeders continued well after publication of *Origin of the Species* and his other books, and dog men may have been more disposed to conversations with Darwin than those working in other species. Correspondence with a Scottish Deerhound breeder George Cupples is indicative of the sort of exchange which probably occurred many times over. George

---

[122] Ibid., 324. The letter also apparently refers to Fox's friend, Bloodhound breeder John Howard Galton, and returns a letter to him via Fox, reinforcing Darwin's breeder contacts.

Cupples wrote to Darwin on May 1, 1868, having read *Origin of the Species*. Of particular interest to Cupples were Darwin's frequent references to "breeders." "It so happens that I have been for many years an enthusiastic amateur breeder of a special race of dogs--namely, Scotch Deerhounds."[123] Cupples felt that both men could learn something from each other, and offered to assist Darwin with the naturalist's questions about dogs.

In return, Cupples hoped that Darwin could provide him with information to include in his upcoming "monograph" on the Deerhound, presumably with regard to breeding and selection, as well as information that would help him as a breeder. For example, Cupples was concerned about the incidence of "hydrophobia" [rabies] in his puppies and wanted to know if the disease originated with the mother of a litter.[124] As if to confirm his worth to Darwin, Cupples offered some correction of Deerhound information contained in Darwin's writings which had been wrongly attributed to a source who "was no authority whatever on Deerhounds."

---

[123] George Cupples to Charles Darwin, 1 May 1868. The Darwin Collection, Cambridge University Library.

[124] George Cupples to Charles Darwin, 11 May 1868. Ibid.

Cupples subsequently published the seminal *Scotch Deerhounds & Their Masters* in 1894.

Darwin was quite willing to pursue a relationship with Cupples, as he wrote back within the week, and Cupples' next letter thanking Darwin for the response is dated May 11. Darwin posed several questions to Cupples in this correspondence: (1) What is the inequality of size of the male and female Scotch Deerhound?; (2) Whether the dam of a litter shows a preference for individual puppies?; (3) Which puppies show likelihood of success as adults?; and (4) What are the proportion of sexes in a litter? All of these questions addressed the issue of how traits were passed on from generation to generation, information particularly interesting to both Darwin and breeders.

Cupples and Darwin continued to correspond for some ten years. Cupples responded to Darwin's questions with information garnered from his own experience and by polling his breeder friends. The correspondence in Darwin's archives does not often indicate direct contact with these other breeders, but Cupples' responses to Darwin included reference to more than a dozen in dogs as well as other livestock, assembling breeding records for Deerhounds, Greyhounds and other dogs as well as pigs and sheep.

Cupples became a personal investigator for Darwin, writing, "I shall be sending you letters on sheep & cattle to you from week to week."[125] Such was the level of friendship that developed between the two that Cupples sent Darwin a Deerhound puppy as a gift. "Bran" apparently arrived in 1871, but there is little record of the dog in the archives beyond that date.

Cupples' willingness to assist Darwin in the world of dog breeding underscores both Darwin's interest in the lessons available from dog breeders, and breeders' interest in Darwin's work. Contrast Darwin's rich discussion of the dog with the relatively sparse notebook references to the Orangutan, which Darwin felt was possibly a close relative of man. In the Darwin notebooks there are a mere twenty-three references to the Orangutan, while the dog references number well more than 200. Darwin spent some time at the zoological gardens to observe the Orangutans "Jenny" and "Tommy," but was not able to observe the primates' behavior in the same detail that he observed the dog: he simply

[125] George Cupples to Charles Darwin, 20 June 1869.

could not get as close to the Orangutan and for as extended periods of time, as he could dogs.[126]

One particularly noteworthy contribution of Darwin's study of the dog to his scientific method was his emphasis on mature forms. In foxhunting, the younger dogs would be run in the spring against the inexperienced younger foxes and novice hunters so that they could learn the ways of the pack. Successful dogs advanced to the older packs with experienced hunters because they could cope with the cunning older foxes. The demonstration of the value of mature forms led Darwin to conclude that scientific inquiry such as embryology-the study of embryos-would not be of much use in researching nature's treatment of variation in species.

Embryologists of that time studied prenatal forms looking for comparisons between species that might manifest earlier evolutionary ties. Darwin discounted the value of the exercise. "Whatever may be thought of the facts on which this reasoning is based, it shows how the embryos and young of different species might come to remain less changed than their mature parents, and practically we find

---

[126] Barrett, *Charles Darwin's Notebooks, 1836-1844,* 136.

that the young of our domestic animals, though differing, differ less than their full grown parents."[127] In other words, the young of every species tend to look more alike, whereas the grown animal exhibits more divergent features. Moreover, natural selection would have to rely on mature forms, because mature animals were the most efficient hunters, bred the next generation, and their survival depended on adaptation. Seeing these concepts proved in the hunting pack helped Darwin realize embryology theorists such as Ernst Haeckel were misplaced.[128]

The methodological contributions of Darwin's canine experience that stressed the importance of breeding, adaptation and genetics very likely influenced his work on natural selection. Many of the smaller adaptive features of purebred dogs excited Darwin's curiosity. He wanted to know whether Newfoundland dogs, a large water breed, had webbed feet to help them in their work.[129] He asked William

---

[127] *1842 Essay*, ch. 7, 5.

[128] Browne, *Charles Darwin: The Power of Place*, 397. As Browne states, "Haeckel ran amok with missing links and recapitulation theory." Haeckel's cavalier scientific method was exposed as fraud when he manipulated drawings of dog and human embryo's to provide evidence of a common ancestor.

[129] Charles Lyell to Charles Darwin, 25 September 1860. *The Correspondence of Charles Darwin*, vol. VIII, 383. Lyell apparently

Fox about his friend's Harrier pack and whether a particular dog's exceptional powers of scent were transmitted to her offspring.[130] Darwin's use of the dog to aid in establishing natural selection theories offered him a key component in his evolutionary theory, i.e. the role of non-physical adaptation and its hereditary transmission.

Moreover, as a matter of scientific method, Darwin's background in dogs may have been underestimated. When Darwin was criticized as "unscientific" by his geology professor Adam Sedgwick, it was because in Sedgwick's view Darwin had strayed from Baconian inductive principals. Rather than assemble data and then develop a theory to explain the data through induction, Sedgwick found that Darwin had hypothesized his general law of natural selection, and sought after the fact to prove it through anecdotal evidence.[131] Darwin felt his approach had followed Baconian principals, and if his dog background is

---

argued that the multiple origin of dogs could be an analogous scenario for multiple origins of man. Darwin disagreed. Charles Darwin to Charles Lyell, 28 September 1860. Ibid., 396.

[130] Charles Darwin to Charles Wicksted, 13 February 1844(?), *The Correspondence of Charles Darwin*, vol. III, 9.

[131] David Hull, "Darwin's Science and Victorian Philosophy of Science," in *The Cambridge Companion to Darwin*, 168.

taken into account as a part of the scientific process, his position was all the more defensible. He had gathered by experience years of data concerning the adaptation of dogs and the process by which their characters were altered in the breeding process. Darwin collected years of data and experience concerning the breeding and adaptation of dogs before coming to his thesis of natural selection. His own familiarity with the data may have led even Darwin to minimize the role of dogs in the formulation of his scientific theories, but he included in his subsequent work ample discussions of the dog as an example of adaptive breeding to support his theory.

The dog's role, described by Darwin as "brethren in pain, disease death & suffering & famine; our slaves in the most laborious work, our companion in our amusements," presented a useful example of adaptation and selection comparable to that of man.[132] One of the conundrums of natural selection was that within a given species, as adaptation became more focused and forms more extreme, there should be (within a given environment) less variation within a species. When this rule did not hold, as in the

[132] Barrett, *Charles Darwin's Notebooks 1836-1844*, 228.

case of the human, Darwin needed to explain the ostensible exception. How would Darwin explain man as a product of natural selection?

The domestic dog presented the same magnitude of variation as humans, but the dog also survived within that environment because it was domesticated. Domestication was a virtue; the sociability of the dog made his survival possible. Darwin therefore examined the dog as occupant of the social environment and identified those mental and emotional characteristics that facilitated sociability in dogs. As these elements shared with man allowed dogs to survive in their varied forms, they might also be the key to mans' survival despite his own heterogeneity.

Nineteenth century Canadian naturalist Sir J. W. Dawson considered that variation could be a function of intelligent adaptation as observed in wolves. This approach appealed to Darwin for it facilitated a theory of multiple origins of dogs by allowing varieties to develop in spite of environmental factors. Multiple origins also explained the variety of dog breeds seen during Darwin's time. Against this theory, Darwin's "honored old guide and master" the geologist Charles Lyell argued that dogs came from a single progenitor. Although Darwin doubted Dawson's

claim that there was much variation among the wolf species- "I suspect he would find it very hard to prove" wrote Darwin- to the extent that the wolf was progenitor to the dog, Dawson's argument may have offered Darwin an oblique analogy of man to wolf to explain the variation in the human species. [133]

That these character traits allowed dogs and men to survive in a world where they were, respectively, overmatched physically in many circumstances helped to explain the uniqueness of man, and left him effectively at the top of the food chain, and closely allied with the dog: "The dog being so much more intellectual than the fox, wolf &c &c--is precisely analogous case to man, exceeding monkeys--."[134] While monkeys offered a greater physical likeness to man, it was the dog that shared the more critical intellectual and social tools which had allowed

---

[133] Charles Darwin to Charles Lyell, 27-8 April 1860, discussing Dawson's theory. *The Correspondence of Charles Darwin*, vol. VIII, 170. The theory may have been discussed between Lyell and Dawson when they worked together on the excavation of fossils in Nova Scotia in 1851. See *Fossils of Nova Scotia*, http://museum.gov.ns.ca/fossils/finders/dawson.htm [accessed 3 December 2004].

[134] Barrett, *Charles Darwin's Notebooks 1836-1844*, 408.

man to survive, and provided a means of locating man as a subject of God's natural laws.[135]

On the publication of *Origin of the Species* in 1859, members of the reviewing public sought to pit Darwin against God, but Darwin's training for the ministry at Cambridge, while not ultimately successful, cultivated some religious beliefs and his early work regarding evolution seldom denies some role to the hand of God.[136] Instead, Darwin felt that his general theory of evolution glorified God whereas creationism lacked a complexity befitting in Darwin's words, "him, who is supposed to have said let there be light & there was light."[137] Comparing natural laws regulating breeding selection to physical laws applied in astronomy, Darwin wrote "God orders each animal created with certain form in certain country, but how much more

---

[135] Darwin expressed doubt that the monkey would actually have evolved into man if that process were left to laws of nature. "The believing that monkey would breed (if mankind destroyed) some intellectual being though not man--is as difficult to understand as Lyell's doctrine of slow movements &c &c" Barrett, *Charles Darwin's Notebooks 1836-1844*, 262.

[136] See, e.g., Orestes Brownson, *Darwin's Descent of Man* : "We are thus severe against these men . . . because they do not give us science, but their own opinions and speculations, which they can neither know nor prove to be true, and which we know cannot be true, unless the religion of Christ is false, God is not, and heaven and earth a lie."

[137] Barrett, *Charles Darwin's Notebooks 1836-1844*, 343.

simple & sublime power [to] let attraction act according to certain laws such are inevitable consequence [and] let animal be created, then by the fixed laws of generation, such will be their successors."[138] In other words, instead of having species procreation and modification determined by *a priori* design, let reproduction follow general rules of selection and let the species develop as they may. To design such universal and elegant rules would not obviate the existence of a divine being, reasoned Darwin, as the application of similar universal laws by astronomers had not removed God's hand from the stars.

And so Darwin began to look into the causal elements drawing God's highest forms, man and dog, toward the top of the evolutionary ladder.

Canine Consciousness and Evolution

Darwin's consideration of "metaphysical" matters began circa 1837 when he began keeping notebooks on his readings and observations of nature. The notebooks were initially intended to address specific fields of thought: the *B Notebook* was titled "Transmutation of Species," the *M Notebook* addressed "Metaphsyics." Darwin did not strictly

[138] Ibid., 195.

adhere to these delineations as he began working on his theories, and over the seven years of their writing the notebooks included elements arguably within the scope of another. That is, Darwin included matters of animal intelligence in the transmutation book, and issues concerning animal intelligence and consciousness percolate up through other notebooks without readily apparent pattern or cause. Nevertheless, the theme of animal consciousness as an active factor in natural selection starts during this period and continues in Darwin's correspondence and publications into the 1870s. In the period between 1844 and 1859, with the publication of *Origin of the Species*, Darwin's references to the issues in correspondence wanes to some degree, but Darwin was writing on other subjects, e.g., barnacles. By 1861, Darwin was already actively considering work on "materials for a curious essay on Human expression, and a little on the relation in mind of a man to the lower animals."[139]

Darwin observed the propensity of animals to change over time, and asked the question whether the species

---

[139] Charles Darwin to Charles Kingsley, 6 February 1862, *The Correspondence of Charles Darwin*, vol. X, 71.

progress, and answered implicitly in the case of man, yes, because "Man gains ideas."[140] Because Darwin found such variation in man relative to his environment, often surmounting physical maladaptation, man had to rely on mental capacity to adapt. Intellectual adaptation would then serve as the fulcrum for the argument that the human species was a product of natural selection. "For man is enabled through his mental faculties to keep with an unchanged body in harmony with the changing universe."[141]

At the same time, merely establishing human intellectual or moral superiority as a unique adaptive force could fuel the creationist argument for human exceptionalism. If man were one of many animals that relied on inherited intellectual and emotional ability to exist as a species, however, he would be included among those animals, a participant in the process of descent that Darwin was beginning to formulate. David Hume's *Of the Reason of Animals* provided Darwin with support for the argument including man in nature. Hume had argued that

---

[140] Ibid., 175.

[141] Excerpted from *The Descent of Man and Selection in Relation to Sex,* reprinted in *The Darwin Reader,* 2d ed., ed. Mark Ridley (New York: W. W. Norton & Co., 1987), 180.

"any theory by which we explain the operations of the understanding or the origin and connection of the passions in man will acquire additional authority if we find that the same theory is requisite to explain the same phenomena in all other animals."[142] Following Hume's lead, Darwin recognized the need to define "reason, will, and consciousness" as agents of adaptation in order to construct the proper analogy between man and animal, and thereby place man in the natural evolutionary plan.[143] Such an argument would in the long run help to defeat opponents of Darwin's coming theory for the descent of man that he was already anticipating in 1838. "I suspect the endless round of doubts & skepticisms might be solved by considering the origin of reason, as gradually developed." [144]

---

[142] David Hume, *an Inquiry Concerning Human Understanding* (new York: Liberal Arts Press 1955) from Vol. IV section IX of *he Philosophical Works of David Hume* (Constable, Edinburgh 1825) a copy of which was held at the Aetheneum Club accessible to Darwin. *Metaphysics*, 42 n. 83.

[143] Barrett, *Charles Darwin's Notebooks 1836-1844*, 613. *The Old and Useless Notes* are an assembly of loose pages appearing to be taken during the time the *M* and *N Notebooks* were written, and perhaps in their stead when Darwin did not have the other books at hand. The content of the loose notes mirrors much of the "metaphysical discussion" in the other contemporaneous volumes. See introduction at 597.

[144] Ibid., 592.

The challenge of so defining the evolution of reason by analogy was also pinpointed by Hume: "if there be any reality in arguments of this nature [how animals reason], they surely lie too abstruse for the observation of such imperfect understandings, since it may well employ the utmost care and attention of a philosophic genius to discovery and observe them." In other words, Hume seemed to recognize that to define an animal's reason, one would have to be able to identify that reason solely on that animal's terms: its experience, its motivation, its goals, its perception of results.[145]

The initial barrier to establishing knowledge of the animal's frame of reference would be language. As the modern philosopher Ludwig Wittgenstein would put it in his *Philosophical Investigations*: "If a lion could talk, we could not understand him."[146] The problem was not only that animals did not speak human language, but also that any animal's language would be shaped by his specific

---

[145] Though Hume was reluctant to credit animals with too much reason, he interestingly fell back on the dog as an example of "cunning and sagacity," describing elder Greyhound's advantage over a junior pup in his acquisition of knowledge on how to most efficiently hunt hare. *Of the Reason of Animals*, 113.

[146] Wittgenstein's Philosophical Investigations, II, xi, p. 223.

experience, memory, and instincts. In the general case, Hume found it impossible to understand animals on those terms, if only for the language barrier separating man and animal. Because Hume could not perceive the animal context, he assumed that animals did not reason (or at the very least reasoned in simpler and inferior way to man), and thus obviated the necessary analogy to consciousness in man.[147]

Carey Wolfe, professor of English at Duke University and frequent contributor to Posthumanist discussions in literature, has identified in that discourse a major part of the problem: in approaching animal consciousness, there is a fear that to consider an animal's consciousness and fall short of understanding that consciousness, man subverts his own consciousness. Is the human form of knowledge inferior to other animals? Is their manner of communication superior to ours? This is "more a problem for us than the animal."[148]

---

[147] For a discussion of some of the broader implications of Wittgenstein's lion riddle, see Carey Wolfe, *Animal Rites: American Culture, the Discourse of Species, and Posthumanist Theory* (Chicago: University of Chicago Press, 2003), 44-94.

[148] Wolfe, *Animal Rites*, 45, discussing Vicki Hearne, *Animal Happiness* (New York: Harper Collins, 1994).

Darwin felt compelled, and perhaps better equipped than Hume, to tackle these questions.[149] There is a marvelous ongoing tension in Darwin's notebooks as he returns to the comparative knowledge and reason of animals in an attempt to stake out man's role in nature. In a series of thoughts starting in his *B Notebook*, Darwin begins to compare and contrast man's consciousness with those of other species. "It is absurd to talk of one animal being higher than another," he wrote in 1837, "*We* consider those, where the {cerebral structure/ intellectual faculties} most developed, as highest. A bee doubtless would when the instincts were."[150] Darwin's observations starts with the accepted presumption of human superiority, but he immediately realizes that the phrase is loaded: man stands taller because he selects the measuring stick. His second thought is to change the measure, from cerebral development to "instinct," in which case a bee would be a potential superior.

---

[149] Hume, *Of the Reason of Animals*, 114. "Nature must have provided some other principle , of more ready and more general use and application, nor can an operation of such immense consequences in life as that of inferring effects from causes be trusted to the uncertain process of reasoning and argumentation."

[150] Barrett, *Charles Darwin's Notebooks 1836*-1844, 189.

But Darwin appears to imply even more by supplying emphasis on the *we*: "*We* consider those . . ." Is Darwin considering that a bee could or would make similar judgments, and that the bee's system of reference would cause him to think differently about the answer? Darwin does not appear to evaluate the likelihood of bee consciousness; the bee's opinion may have equal value to the human. Darwin appears to be noting the possibility, though. Even if it were not Darwin's specific intention to imply that a bee might have his own consciousness, he questions how to appropriately evaluate and credit the advancement of reason in man and animals. As he wrote in the *B Notebook,* "The difference [between the] intellect of Man & animals [is] not so great as between living things without thoughts (plants) & living things with thought (animal)."[151]

Darwin visited the question of consciousness in other species throughout his notebooks, and often returned to the problem later in life, as well. Even insect behavior raised the question for Darwin: on reading another observer's remarks on ants crossing cups of water and comparing that

[151] Barrett, *Charles Darwin's Notebooks 1836*-1844, 224.

behavior to homing pigeons' instinctive flight, Darwin challenged the likeness: "there is something wrong in comparing these cases, when agency is unknown, with simple exertion of (intellectual faculty) if ants had at once made this leap it would have been instinctive, seeing that time is lost and endeavors made must be experience & intellect."[152] If the ants had been able to traverse the cups automatically, Darwin could have attributed the act to simple instinctive behavior. When the ants spent time assembling experience and solving the problem through trial and error, Darwin felt there was more than preprogrammed, unconscious behavior involved.

Darwin felt on firmer ground with animals, and especially dogs. "It would indeed be wonderful, if, [the] mind of [an] animal was not closely allied to that of men, when the five senses were the same."[153] The difficulty in interpreting the motive to animal actions circumscribed the problem of defining reason and consciousness, how they could be passed on, and how they are limited by instinct.

---

[152] Barrett, *Charles Darwin's Notebooks 1836-1844,* 534. Even in worms, Darwin considered the possibilities of forethought and deduction. See Amy Stewart, "Darwin's Worms," *Wilson Quarterly* 28, no. 1 (Winter 2004).

[153] Barrett, *Charles Darwin's Notebooks 1836-1844,* 600.

In Darwin's experience, though, during his time with dogs in the field he had seen copious practical demonstrations of animal instinct and reason.

In fact, the contrast between foxhunting and the shooter's pursuit of Pheasant and Grouse offered Darwin early insight into the question. Recall the contrasting styles of hunting: for fox, packs of dogs follow their noses across forest and field in pursuit of the prey, pursued by men on horseback exercising little or no control over the dogs. The better dogs are those with the most adept olfactory abilities, the most efficient and enduring gaits. Compare this with shooting, where a hunter with one or two dogs works with the dog in the field on foot at close range, the dogs positioning themselves to find and flush birds, and then retrieve them to the hunter. The dogs are trained and directed by the hunter, and work in cooperation to bag the most game.

Darwin confronted the interplay of will and instinct when training and breaking his hunting dogs. William Hutchinson's *Dog Breaking* warned that a good bird dog

exercised considerable will in employing his instincts.[154] "I fear you think I am attributing too much reasoning power to [the dog]. You would not be of that opinion if you had broken two or three."[155] In his personal training of the Pointer Dash, Darwin marveled at the difference and complimentary workings of the dog's instinct and intellect. "[Dash] rises in my opinion hourly, & I would not sell him for a 5 pound note. It would have excited your envy & spleen to have seen him on the scent of a covey of Birds, & the style in which he went down when I held up my hand." To have the dog's native senses identify the prey, and the dog subsequently restrain himself on command from any greater pursuit of the prey, identified the two elements fairly well.

Darwin's association of dogs in this debate had by this time become fairly second nature. When Darwin read other sources of theory on the instinct/intellect relationship, for example John Abercrombie's *Inquiries Concerning the Intellectual Powers and the Investigation of Truth* (1838), Darwin's margin notes typically make liberal

---

[154] W. N. Hutchinson, *Dog Breaking: The Most Expeditious, Certain and Easy Method* (London: John Murray, 1848).

[155] Hutchinson, *Dog Breaking*, 37.

exercised considerable will in employing his instincts.[154] "I fear you think I am attributing too much reasoning power to [the dog]. You would not be of that opinion if you had broken two or three."[155] In his personal training of the Pointer Dash, Darwin marveled at the difference and complimentary workings of the dog's instinct and intellect. "[Dash] rises in my opinion hourly, & I would not sell him for a 5 pound note. It would have excited your envy & spleen to have seen him on the scent of a covey of Birds, & the style in which he went down when I held up my hand." To have the dog's native senses identify the prey, and the dog subsequently restrain himself on command from any greater pursuit of the prey, identified the two elements fairly well.

Darwin's association of dogs in this debate had by this time become fairly second nature. When Darwin read other sources of theory on the instinct/intellect relationship, for example John Abercrombie's *Inquiries Concerning the Intellectual Powers and the Investigation of Truth* (1838), Darwin's margin notes typically make liberal

---

[154] W. N. Hutchinson, *Dog Breaking: The Most Expeditious, Certain and Easy Method* (London: John Murray, 1848).

[155] Hutchinson, *Dog Breaking*, 37.

reference to dogs; they are his prime analogy.[156] In reference to Abercrombie, for example, Darwin considered Abercrombie's definition of analogy in thought, and noted how commonly dogs reasoned by using analogies: the association of a master's donning of a hat with a walk, a gun for shooting, the location of a bird. But the ability to sense a particular item (prey, a Partridge) or behave in a specifically useful manner (pointing at the Partridge) without being taught also suggested memory, but of a hereditary origin.

The efforts of dog breeders to retain hard-won hunting abilities in their future litters, creating hereditary aptitude and memory, would have given Darwin a perfect example of how mental ability could serve as an adaptive element and help the evolutionary process. He raised questions concerning the passage of mental abilities to the breeders in his questionnaires:

> Can you give any detailed account of the effects on the mind, instincts or disposition of the progeny, either in the first or in the succeeding generations from crossing different breeds, (for instance tumbler pigeons,

[156] 8th ed. (London: John Murray, 1838), a copy of which was held in Darwin's library. Di Gregorio, *Charles Darwin's Marginalia*, vol. I, 1.

> grey-hounds and spaniels) or different species (as fox and dog). Do they show an aptness to acquire the habits of both parents?[157]

How and through which parent mental abilities would be passed marks Darwin's concern for the frequency and speed with which changes could be affected in succeeding generations, and an important clue as to how swiftly adaptation could take place. The concern with cross-breeding (fox to dog) indicated concern that the changes affected by dog breeders in but three or four generations were artificially accelerated; nature seemed to work at a more leisurely pace. Comparison between the two selection processes made Darwin wonder about the nature of the mechanism of change, while at the same time remaining confident that the mechanism in both cases was the same.

Note also that Darwin asked the breeders for examples of these phenomena and not to describe the actual mechanism. When discussing the mental faculties of dogs, the form of the questions suggest that Darwin often asks

---

[157] *The Correspondence of Charles Darwin*, vol. II, Appendix V, 448 ("Questions about Breeding"). See Appendix C.

for information that he already had in hand.[158] Darwin had after all observed the breeding and behavior of dogs for over twenty years by the time he wrote the first questionnaires, and that experience was as valid a source of information as the opinions of the breeders themselves. He already had well-formed ideas about the process of selection in dogs and their mental faculties. Darwin sought affirmation of that knowledge in the questionnaires, and perhaps also to test his theories against adverse anecdotes as a matter of scientific process and preparation for the debate his theories would generate.

The dog's ability to associate cause and effect implied to Darwin that dogs had historical as well as active and developing memory, and also the ability to imagine outcomes. The dog's power of imagination was but one of the mental characteristics Darwin found important in circumscribing its consciousness. Dogs had senses of humor: they laughed, smiled.[159] Dog's were courageous: breeders crossed Greyhounds and bulldogs to get the courage

---

[158] Peter J. Vorzimmer, "Darwin's Questions About the Breeding of Animals (1839)," *Journal of the History of Biology,* no. 2 (1969), 269.

[159] Barrett, *Charles Darwin's Notebooks 1836-1844,* 315, 540.

of the latter into the former.[160] Darwin recalled a story Lyell had told him about a little dog that had gone to the assistance of a companion who was struggling in a fight with a larger dog, providing evidence of both courage and affection, and perhaps even justice.[161]

Dogs also had a working conception of property, and appeared to understand contractual relations in Darwin's estimation.[162] They had shame, which suggested that other issues of morality could govern their behavior as well.[163] Dogs even have a sense of beauty, as suggested by Darwin's questions to breeders about whether dogs indicated aesthetic preferences when selecting mates. George Cupples' response to Darwin's inquiries in this regard were animated: "A female deerhound now in my Kennel, which has 3 times had pups, has on each occasion shown a most decided and marked preference for one out of four deerhound dogs, free beside her-."[164] As to the issue of whether dogs made

---

[160] Ibid., 275.

[161] Ibid., 594.

[162] Ibid., 550.

[163] Ibid., 525, 570.

[164] George Cupples to Charles Darwin, 11 May 1868, Darwin Collection, Cambridge University Library.

aesthetic selection of mates, Cupples wrote, "I give the case of a black-and-tan English terrier, which I knew well. She formed an early attachment to a retriever, doing her best to have progeny from him-but failing, she ever afterwards refused dogs of her own size, taking refuge at home when pursued by them-and died a virgin."[165]

The attribution to dogs of these abstract elements of reason and aesthetics distinguished Darwin's work in dogs from other species, and drew man and dog more closely together. Darwin had acquired ability for, in Hume's words, "the observation of such imperfect understandings" through years of living with dogs and knew that he communicated with dogs and they with him.[166] He was not always supported in his belief in a dog's "progressive and improvable reason," but the strength of his experience with dogs gave his theory conviction. He remained resolute even in dispute with Lyell. In a letter to Lyell providing criticism of Lyell's draft of *Antiquity of Man*, Darwin objected to Lyell's characterization that an improvable

---

[165] Ibid.

[166] *On the Reason of Animals,* 113

intellect was "man's peculiar and exclusive endowment." "Compare mind of dog with its wild aboriginal," chided Darwin, confidently implying that the former held qualities superior to the latter. [167]

The strongest, and yet arguably the most speculative evidence of the dog's likelihood of intellectual progress may be found in Darwin's belief that dog's dreamed. When reading the philosophical writings of Lord Brougham and Herbert Mayo, Darwin was distressed that they had limited dreams to the time near wakening. "How does he account for dogs and men speaking in their sleep?" asked Darwin. As dogs dreamed, so could they imagine. And if they could imagine in their sleep or unconscious, so could they imagine in a conscious state, "for it will not be allowed they can dream, & not have daydreams--think well over this--it shows similarity in mind."[168]

Presumably, Darwin was considering the similarity of the canine mind to the human. The fluid nature of conscious and unconscious imagination was mirrored in

---

[167] Charles Darwin to Charles Lyell, 6 March 1863. *The Correspondence of Charles Darwin*, vol. XI, 207.

[168] Barrett, *Charles Darwin's Notebooks 1836-1844*, 595. This section of the *N Notebook* would have been written after October 1838.

Darwin's consideration of instinct. Often ideas, products of intellect or will, could become unconscious, and thus reduced to habit could be further reduced to instinct and passed on to generations.[169] This process bothered Darwin insofar as it lent a distinctly materialist character to his argument, and deprived men-and dogs-of free will. "By my theory, no animal as now existing can be a cause of itself & hence there is great probability against free action.--on my view of free will, *no one could discover he had not it.*"[170] So was a behavior a product of will, the product of instinct, or of will become instinct? And when could you tell?

This was especially problematic with respect to dogs, for if Darwin had observed free will anywhere in the natural world, it was in the behavior of dogs. "With respect to free will, seeing a puppy playing cannot doubt that they have free will . . . free will is to mind, what chance is to matter."[171] When in-law Hensleigh Wedgwood objected to the French naturalist Cuvier's position that

---

[169] Ibid., 545.

[170] Ibid., 576. (emphasis supplied).

[171] Ibid., 536.

dogs remained slaves to man and in domestication renounced their love of independence solely out of reflexive surrender to man's superiority and not companionship, Darwin came to their defense. Darwin's reading of John Sebright's *The Art of Improving the Breeds of Domestic Animals* suggested that habits could become instinctual, and thus so could a dog's love of man.[172] Moreover, said Sebright, not all dogs express affection-wild dogs certainly did not-so to love man was not a dog's primary or unconscious act.

A dog's affection for man would start as an act of will, through practice become habit, and then through recurrence be converted to instinct. In domestication, dogs developed an affinity to become man's companion, which thus made their affection not an automatic reaction, a la Cuvier's master-servant relationship, but rather the end result of consistent acts of will. As Darwin stated, "problem solved."[173] The problem in that case was both to undermine Cuvier's master-servant model for the dog, but

---

[172] Ibid., 290.

[173] Ibid.

also, and perhaps more importantly, establish a dog's love of man as freely given and not materially compelled.

Darwin's struggle in the 1836-1844 notebooks to identify the common consciousness of man and dogs was not resolved in these early writings, and remained in and around his thoughts thereafter. In *The Descent of Man* (1871), Darwin repeated the connection between imagination, dreams, and canine consciousness:

> No one supposes that one of the lower animals reflects whence he comes or whither he goes,—what is death, or what is life, and so forth. But can we feel sure that an old dog with an excellent memory and some power of imagination, as shewn by his dreams, never reflects on his past pleasures of the chase? and this would be a form of self-consciousness. . . . That animals retain their mental individuality is unquestionable.[174]

Still, it was a connection without adequate explanation, and Darwin continued to look at the issue most directly in *The Expression of the Emotions in Man and Animals* (1872). In spite of the difficulties involved, Darwin's enduring curiosity into these issues speaks to his

---

[174] Charles Darwin, *The Descent of Man, and Selection in Relation to Sex* (1871; reprint, Princeton, N.J.: Princeton University Press, 1981), 62-63.

devotion to dogs and the role they played in his life, and perhaps to a confidence that he could, unlike Hume, in some small way hurdled the language barrier, could "speak dog" if you will. The usefulness of Darwin's consideration of the issue was not diminished for the lack of closure, though. Darwin's analogy between man and dog's evolution based on metaphysical factors, helped to pave new routes by which man could be located on the trajectory of natural selection. The analogy between man and dog itself was a product of a vibrant English dog culture, and so Darwin's use of the dog as an illustration of elements of natural selection arguably put a culturally acceptable face on his theories, and perhaps to some minds made more palatable the application of those theories to humans.

Within the consideration of Darwin's work as a whole, the dog stands out as a consistent point of reference. While the theory of natural selection rests on many factors, there appear two questions emerging from even brief review of Darwin's life with dogs is: Where would Darwin's scientific inquiry have gone *without* the dog, and in light of the many diverging paths resulting from Darwin's work identifying the laws of nature, down what path was the dog ultimately taking him?

Postscript: Where Was the Dog Taking Darwin?

As Darwin analyst Howard Gruber has observed, Darwin became so immersed in so many threads of thought when constructing his natural selection theories that it is impossible for one person to illuminate that total effort.[175] It must be a collective effort, and "[a]ny description of Darwin by a reasonable competent person is a candidate for inclusion in the solution tree."[176] In the case of dogs, the breadth and depth of Darwin's relationship with dogs is likely to reveal some new insights into Darwin's work. By drawing on additional sources of historical data, the advantages of this study are two-fold.

The first area of examination would be the completion, to the greatest extent possible, of the full scope of Darwin's early dog experiences, that we may be able to understand better the inclusion of the dog in Darwin's major works. Useful additional archives would include correspondence held by other sources; the lion's share of

---

[175] Howard Gruber, "Going the Limit: Toward the Construction of Darwin's Theory (1832-1839)," in *The Darwinian Heritage*, ed. David Kohn (Princeton: Princeton University Press, 1985), 13.

[176] Ibid.

correspondence referred to in this paper is held by Darwin's personal collection at Cambridge University Library. Within the archives of Darwin correspondents such as Thomas Huxley, botanist J. D. Hooker, and others there may be important references to dogs that would more fully illustrate Darwin's influences, knowledge and speculations based on the dog. Examination of the hunting records of the Shrewsbury and Maer clubs where Darwin hunted might also provide more detail of how and with whom he hunted, identifying new sources of inspiration for Darwin's young mind.

These experiences must be filtered through the grid of ideas Darwin gleaned from books he reviewed in the periods before and after the *Beagle* voyage: Hume, the entomologist William Kirby, the breeder John Sebright, et al. Darwin himself did not place give great weight to his education at Edinburgh, but the teachings of the Scottish Enlightenment on animal consciousness would seem logically within the teachings to which Darwin was exposed there, and review of some of those possible influences would also be valuable. At a minimum these readings would help understand the context in which Darwin's thoughts emerged and developed.

Reading Darwin's seminal works from the perspective that he was writing as a dog owner and fancier may then offer one of those points of view that Gruber refers to as an essential component of the a full understanding of the work. Darwin's relationship with dogs was certainly a substantial aspect of his own personality and full realization of the relationship would seem primary to the task of "getting inside Darwin's mind."

The third and longer-term project arising from studying the role of dogs in Darwin's work is projecting the work Darwin *didn't* complete in his lifetime. From the early notebooks and recollections of his youth, Darwin recognized a community with dogs. When Darwin read animal activist Frances Power Cobbe's article *The Consciousness of Dogs* in 1872, he wrote to her: "I have been particularly glad to read what you say about the reasoning power of dogs & that rather vague matter, their self-consciousness . . . Since publishing the *Descent of Man*, I have got to believe rather more than I did in dog's having what may be called a conscience."[177] While Darwin's examination of intellect in

[177] Charles Darwin to F. P. Cobbe, 28 September 1872, Darwin Collection, Cambridge University Library.

higher animals has been a topic of general discussion, such as in Richard Burkhardt, Jr.'s essay *Darwin on Animal Behavior and Evolution*, it seems logical, and well-founded on the archival material that much of that Darwin's interest in animal consciousness centered on the dog.[178] Indeed, Darwin seemed to share feelings with Ms. Cobbe that the dog offered a chance to "see how metaphysics & physics [could] form one great philosophy."[179]

Could Darwin have followed that inquiry into Posthumanist discussions concerning the relationship between man and animal, and the role of man-as-animal in an ecological world view? With his work in *Descent of Man* regarding sexual selection and intellect, and in *The Expression of Emotion in Man and Animals*, tentatively examining issues of language among dogs and other various species, Darwin revisited those metaphysical questions at which he posed in his early notebooks. Perhaps Darwin would have taken Cobbe's suggestion and tried to create "one great philosophy" connecting man and animals in the

---

[178] *The Darwinian Heritage*, ed David Kohn (Princeton: Princeton University Press, 1985), 327,

[179] F. P. Cobbe to Charles Darwin, 28 March 1870, Darwin Collection, Cambridge University Library.

same way that he felt connected to his dogs. Had he continued to examine questions of dog consciousness with his meticulous eye for nature's details, perhaps Darwin might have rendered Wittgenstein's lion a little more commensurable.

Appendix A

Darwin's Questionnaires to Breeders

Questions for Mr Wynne[2]

Are offspring like fathers or mothers? How are real *nipples*.

Is a peculiarity which has long been in blood more easily transmitted, than a newly acquired one?

Does the peculiarity adhere in geometrical progression, in proportion to no of generations

When old variety is crossed with new; or natural one with very artificial one as shepherd dog with Italian Grehound do offspring partake more of the natural than artificial kind? —

When wild animal crossed with tame does offspring favour the former. fox with dog?.

About sporting in pack of Hounds: how much selection??[3]

Is a breed of half bred animals more subject to variation, than either parent stock? is unusual care required to keep breed constant.

Superfœtation cases of?.—

Idea of beauty in animals: do females prefer certain males? or vice versâ.— when in a flock.—

When healthy & unhealthy[4] animals or men crossed do offspring partake more of former or latter?—

Effects of habit on form. in men as in trades.

Could you get race horse from carthorse without training?

If horses temper soured, could be handed down.—

if temper cowed in horse or dog or cock, hereditary.—

Case of Malay fowls.—habits?

Cross of Chinese pigs, are they intermediate in form, as in dogs.— does Mr Wynne believe in dogs

Cases of hereditary monsters? of accidental mutilations being hereditary.

Case of heterogeneous offspring, in fowls, pidgeons, rabbits.—if race horse & cart horse be crossed, will offspring be constant.—

Effects of crossing stocks with different constitutions?—

If bull-dog be crossed with greyhound are they as prolific as rather nearer breed— But Are the mongrels prolific.

Breeding in & in Infertility, & loss of passion?? in Male?

What would effect be of one brother & sister taken to one country, one pair to other & made different. Would not the cousins cross. No because both would be bred [in] & in.⇒now the rule is to pick out opposed animals, ie. animals which have each acquired peculiarities.—

Is there not some strange fact about twin calfs, one being *neutral*. how is it with animals are sexes always same in twins why.[5]

Are **all** or some only of cross-bred animals more prolific??[6]

APPENDIX V
Questions about the Breeding of Animals

Letters from Richard Sutton Ford, 6 May 1839 and George Tollet, [10 May 1839] were replies to a printed questionnaire *Questions about the breeding of animals*. The questionnaire was signed and distributed by CD from 12 Upper Gower Street, and consists of eight quarto pages. The type runs down the inside half of each page, thereby leaving a blank column for answers to be inserted. Of the two replies, only George Tollet's was actually written on the questionnaire. Richard Freeman and Peter Gautrey consider that the earliest possible dates for circulation were between 1 January 1839, the day after CD moved into 12 Upper Gower Street, and 6 May 1839, the earlier of the answers. The text is fully discussed in Freeman and Gautrey 1969 and is available in facsimile in De Beer 1968. It is printed below because without the questions the replies are meaningless.

1. If the cross offspring of any two races of birds or animals, be interbred, will the progeny keep as constant, as that of any established breed; or will it tend to return in appearance to either parent? Thus if a cross from the Chinese and common pig be interbred, will the offspring have a uniform character during successive generations, that is, as uniform a character, as the pure-bred English or Chinese ordinarily retains? Thus, again, if two mongrels, (for instance of shepherd dog and pointer) which are like each other, be crossed, will the progeny, during the succeeding generations retain the same degree of constancy and similarity, which might have been expected from pure-bred animals? Is it known by experience, that when an attempt has been made to improve any breed by a cross with another, that the offspring are apt to be uncertain in character, and that *unusual* care is required in matching the descendants of the half-bred among themselves, in order to keep the character of the first cross?— Always please to give as many examples as possible, to illustrate these *and the following* questions.

2. If by care, the character of half-bred animals (mongrels or hybrids) be preserved through some two, three, or more generations, is it then generally found, that the character becomes more permanent, and less care is required in matching the offspring? If this be so, how many generations do you suppose is requisite to form a mixed race, into what is ordinarily termed a permanent variety or well-bred race?

3. Supposing some new character to appear in a male and female animal, not present in the breed before, will it become more permanent, and less likely to disappear, after it shall have been made to pass through some successive

generations, by picking out and crossing those of the offspring, which happened to possess the character in question?

4. In crossing between an old-established breed, or local variety, which from time immemorial has been characterized by certain peculiarities, or the animal in its aboriginal state, with some new breed, does the progeny in the first generation take more after one than the other? or if not so, is the character of one more indelibly impressed on the successive generations, than that of the other? Or, which is the same question, is the *breed* of the parents of more consequence, when a *breeding* animal is wanted, than when merely a fine animal is wanted in the *first* generation? The effect should be observed both in a female of the old race crossed by the new, and a female of the new crossed by a male of the old; for otherwise the greater or less preponderance of the peculiarities in the progeny might be attributed to the power of the sex, thus characterized in transmitting them; and not to the length of time the breed had been so characterized. Thus to take an extreme example, we may *presume* that an Australian Dingo is an older breed than a pug-dog: if both were crossed with Spaniel bitches, would the litter in the one case more resemble the Australian, than in the other case the pug: and however this may be, would the pug, or Australian character be most persistent under similar circumstances in successive generations? How would this be in the various breeds of cattle? Thus if a Bull (or cow) of a breed which had long been known to have been white with short horns, were crossed with a black cow with long horns, (or Bull, if the first were a cow) which had accidentally sprung from some breed, not thus characterized, would there be any marked leaning in the character of the calves to either side; or would *successive* generations have a stronger tendency to revert to one than the other side? Please to mention in detail any instances you may be acquainted with.

5. What would the result be, in the foregoing respects, in crossing a wild animal with a highly domesticated one of another species, supposing the half cross to be fertile? Thus if a fox and hound were crossed with pointer bitches, what would the effect be both in the first litter and in the successive ones of the half-bred animals? To form a judgment on this latter point, the subsequent crosses in each case should be relatively the same; thus the half-bred fox and half-bred hound should be recrossed with the pointer, or with some other, but the same breed.

6. Where *very* different breeds of the same species are crossed, does the progeny generally take after the father or mother?

7. When two breeds of dogs are crossed, the puppies of the same litter occasionally differ very much from each other, some resembling the bitch and some the dog. In the mule between the ass and horse, this great variation does not appear commonly to occur. Do you know any cases, where two *varieties* have been often crossed, and *mongrels* have been uniformly produced similar to each other within small limits, and intermediate between their parents? And on the other hand, do you know of *hybrids*, between such animals as are generally considered distinct *species*, varying in this manner?

8. When breeds extremely different (as the grey-hound and bull-dog, the pouter and fantail-pigeon,) are crossed, are *their offspring* equally prolific, as those from between nearer varieties (such as from the grey-hound and shepherd-dog). Is the half-bred Chinese pig as prolific as the full-bred animal? Does a slight cross increase the prolifickness of animals?

9. Do you know of instances of any character in the external appearance, constitution, temper, or instinct, appearing in half-bred animals, whether mongrels or hybrids, which would not be expected, from what is observable in the parents?

10. In those rare cases, where hybrids *inter se* have been productive; have the parent hybrids resembled each other; or have they been somewhat dissimilar, partaking unequally of the appearance of their pure-bred parents. Also, what has been the character of the progeny of such hybrids?

11. When wild animals in captivity, cross with domesticated ones, is it most frequently effected by means of the male or female of the wild one?

12. Amongst animals (especially if in a free, or nearly free condition,) do the males show any preference, to the young, healthy, or handsome females? or is their desire quite blind?

13. Where a female has borne young to two different breeds or kinds of animals, do you know of any instances, of the last born partaking of any part of the character of the first born, and to what extent?

14. When a female of one breed has been crossed by a male of another breed *several times*, do the last-born offspring resemble the breed of the father, more than the first-born, and therefore are they more valuable in those cases, where the peculiarity of the father is desired?

15. Do you know instances of any peculiarities in structure, present for the first time in an animal of any breed, being inherited by the grand-children, and *not by the children*? It cannot be said to be *inherited* without it appear in more than one of the grand-children, or without it be of an extremely singular nature; for otherwise it ought to be considered as the effect of the same circumstances, which caused it to appear in the first case.

16. What are the effects of breeding in-and-in, very closely, on the males of either quadrupeds or birds? Does it weaken their passion, or virility? Does it injure the secondary male characters,—the masculine form and defensive weapons in quadrupeds, or the plumage of birds? In the female does it lessen her fertility? does it weaken her passion? By carefully picking out the individuals most different from each other, without regard to their beauty or utility, in every generation from the first, and crossing them, could the ill effects of inter-breeding be prevented or lessened?

17. Where any animal whatever (even man) has been trained to some particular way of life, which has given peculiarity of form to its body by stunting some parts and developing others, can you give any instances of the offspring inheriting it? Do you know any such case in the instincts or dispositions of animals? If an animal's temper is spoilt by constant ill usage, or its courage cowed,

do you believe the effect is transmitted to its offspring? Have any cases fallen under your observation, of quadrupeds (as cats or pigs, &c.) or birds (fowls, pigeons, &c.) born in this country, from a foreign stock, which *inherited* habits or disposition, somewhat different from those of the same variety in this country? If removed early from their parents, there are many habits, which we should be almost compelled to believe were inherited, and not learnt from them; and if transmitted to any half-breed we should feel sure of this.

18. Can you give any detailed account of the effects on the mind, instincts or disposition of the progeny, either in the first or in the succeeding generations from crossing different breeds, (for instance carrier and tumbler pigeons, grey-hounds and spaniels) or different species, (as fox and dog.) Do they show an aptness to acquire the habits of both parents? Or do they partake strongly of the habits of one side, (if so, which side?) with some peculiarity showing their hybrid origin? Or do they entirely follow one side?

19. Can you give the history of the production in any country of any new but now permanent variety, in quadrupeds or birds, which was not simply intermediate between two established kinds?

20. Do you know any cases of different breeds of the same species, (as of dogs &c.) being differently affected by contagious or epidemic diseases, and which difference cannot be attributed merely to a greater vigour in the one breed than in the other? In countries inhabited by two races of men, facts of this kind have been observed.

21. All information is valuable, regarding any crosses whatever, between different wild animals, either free or in confinement, or between them and the domesticated kinds; *equally so* between any different *breeds* of the same species, especially the less known kinds, as Indian with common cattle, different races of Camels, &c. Please to state all or any particulars, for what object the cross was made and whether it is habitually made; whether the female had offspring before; whether she produced as many of the half-breed at one birth, (if more than one be produced) as she probably would have done of the pure breed; whether the progeny were fertile *inter se*, or with their parents whether they resembled one stock more than the other and in what respects, and which; and whether the favoured side was the male or female. State, if known, whether the progeny differ when stock (A) is the father and (B) the mother, and from what it does where (A) is the father and (B) mother.[1] If the half-bred are fertile, *inter se* or with the parent stock, describe the offspring whether like their parents and all like each other, or whether they revert to either original stock, or whether they assume any new character?

C. DARWIN.

12, *Upper Gower Street, London.*

[1] The repetition of (A) father and (B) mother appears to be a slip. It is likely that CD meant to reverse the order to determine whether the male or female characters would be dominant in the progeny from the crosses.

References

Primary Resources

Books and Articles

Abercrombie, John. *Inquiries Concerning the Intellectual Powers and the Investigation of Truth,* 8th ed. London: John Murray, 1838.

Arkwright, William. *The Pointer and His Predecessors.* London: Arthur L. Humphreys, 1906. Reprint, Aberdeen: Aberdeen University Press, 1977.

Barrett, Paul, et al, eds. *Charles Darwin's Notebooks 1836-1844, Geology, Transmutation of Species, Metaphysical* Inquiries. Cambridge: Cambridge University Press, 1987.

Brownson, Orestes A.. "Darwin's Descent of Man," *Brownson's Quarterly Review,* July 1873, archived at http://orestesbrownson.com/ darwin.html>.

Bryden, H. A. *Hare Hunting and Harriers.* London: Grant Richards, 1903.

Burkhardt, F. H., et al, eds. *The Correspondence of Charles Darwin,* vols. I-XIV. Cambridge: Cambridge University Press, 1983-2004.

Daniels, W. B. *Rural Sports.* London: Bunney and Gold, 1807.

Darwin, Charles. *On the Origin of the Species,* 3d ed. Cambridge: Harvard University Press, 1964, 3d printing, 1975.

_____. *The Descent of Man and Selection in Relation to Sex,* 2d ed. London: John Murray, 1871.

_____. *The Expression of the Emotions in Man and Animals.* Chicago: University of Chicago Press, 1965.

Darwin, Francis, ed. *The Autobiography of Charles Darwin and Selected Letters.* Mineola: Dover Publications, Inc., 1958.

_____. *The Foundations of The Origin of the Species: Two essays written in 1842 and 1844 by Charles Darwin* (Cambridge,1909), http://pages.britishlibrary.net/charles.darwin/texts/foundations/ foundations_part1.html (accessed 1 December 2004).

Di Gregorio, Mario. *Charles Darwin's Marginalia,* vol. I. New York: Garland Publishing, Inc., 1990.

Eddowe's Shrewsbury Journal and Salopian Journal 26 April 1882.

Hume, David. *An Inquiry Concerning Human Understanding.* New York: Liberal Arts Press, 1955, from Vol. IV section IX of *The Philosophical Works of David Hume.* Constable, Edinburgh 1825.

Hunter, John. *Essays and Observations on Natural History, Anatomy, Physiology, Psychology, and Geology,* vols. 1-2. Edited by Richard Owen. London: John Van Voorst, 1861.

Hutchinson, William. *Dog Breaking: The Most Expeditious, Certain and Easy Method.* London: John Murray, 1848.

Idstone. *The Idstone Papers, Reprinted Articles From The Field.* London: The Field, 1874.

Laverack, Edward. *The Setter.* London: Longman's, Green & Co., 1871. Reprint, U.S.: Lynn Hamilton, 1999.

Morris, F. O. *Bible Natural History.* Manchester: J. Ainsworth, 1852.

Correspondence

Cobbe, F. P. to Charles Darwin, 28 March 1870, Darwin Collection, Cambridge University Library.

Cupples, George to Charles Darwin, 1 May 1868. Darwin Collection, Cambridge University Library.

_____, to Charles Darwin, 11 May 1868, Darwin Collection, Cambridge University Library.

_____, to Charles Darwin, 20 June 1869, Darwin Collection, Cambridge University Library.

_____, to Charles Darwin, 11 May 1868, Darwin Collection, Cambridge University Library.

Darwin, Charles, to F. P. Cobbe, 28 September 1872, Darwin Collection, Cambridge University Library.

_____, to F. P. Cobbe, 28 November 1872, Darwin Collection, Cambridge University Library.

Secondary Sources

American Kennel Club Staff, ed. The Complete Dog Book, 19th ed. Foster City: Howell Book House, 1998.

Browne, Janet. *Charles Darwin: Voyaging.* Princeton: Princeton University Press, 1995.

_____. *Charles Darwin: The Power of Place.* Princeton: Princeton University Press, 2002.

Desmond, Adrian and Moore, James, *Darwin. The Life of a tormented Evolutionist.* New York: W. W. Norton Co., 1991.

Don Vann, J., and Van Arsdale, Rosemary. *Victorian Periodicals and Victorian Society.* Toronto: University of Toronto Press, 1994.

Gruber, Howard. "Going the Limit: Toward the Construction of Darwin's Theory (1832-1839)." In *The*

Darwinian Heritage, ed. David Kohn, 9-34. Princeton: Princeton University Press, 1985.

Hazelwood, Nick. *Savage*. New York: St. Martin's Press, 2000.

"History of the British Dog." In *Countrysports and Country Life,* <http://www.countrysportsandcountry-life.com/sections/pedigree_dog/history_of_dog/history.htm, [accessed 3 December 2004].

Hull, David. "Darwin's Science and Victorian Philosophy of Science." In *The Cambridge Companion to Darwin*, ed. J. Hodge and G. Radick, 168-191. Cambridge: Cambridge University Press, 2003.

Jones, George. *Greyhound History*, archived at http://www.barkbytes.com/ history/gryhnd.htm [accessed 1 December 2004].

Kohn, David, ed. *The Darwinian Heritage.* Princeton: Princeton University Press, 1985.

Mackenzie, John. *The Empire of Nature.* Manchester: Manchester University Press, 1988.

McKendrick, Neil. "The Role of Science in the Industrial Revolution, A Study of Josiah Wedgewood as a Scientist and Industrial Chemist." In *Changing Perspectives in the History of Science,* ed. Mikulus Teich and Robert Young, 274-319. Boston: Reidel Publishing Co., 1973.

Mitchell, Sandra D. "Anthropomorphism: Cross-species modeling." In *Thinking with Animals,* ed. R. Daston and G. Mitman, 100-118. New York: Columbia University Press, 2004.

Pauly, Daniel. *Darwin's Fishes : An Encyclopedia of Ichthyology, Ecology, and Evolution.* Cambridge: Cambridge University Press, 2004.

Pool, Daniel. *What Jane Austen Ate and Charles Dickens Knew.* New York: Simon & Schuster, 1993.

Richards, Robert. "Darwin on Mind, Morals and Emotion." In *The Cambridge Companion to Darwin,* ed. J. Hodge and G. Radick, 92-115. Cambridge: Cambridge University Press, 2003.

Ridley, Mark, ed., *The Darwin Reader,* 2d ed.. New York: W. W. Norton & Co., 1987.

Ritchie, Cameron. *The British Dog-It's History From Earliest Times*. London: Robert Hale, 1981.

Ritvo, Harriet. *Animal Estate*. Cambridge: Harvard University Press, 1987.

_____, "History and Animal Studies." *Society and Animals* 10, no. 4 (December 2002), 403.

Secord, James. "Darwin and the Breeders: A Social History." In *The Darwinian Heritage,* ed. David Kohn, 519-542. Princeton: Princeton University Press, 1985.

Stewart, Amy. "Darwin's Worms." *Wilson Quarterly* 28, no. 1 (Winter 2004), 48.

Thomas, Keith. *Man and the Natural World*. New York: Prometheus Books, 1983.

Turner, James. *Reckoning With the Beast.* Baltimore: Johns Hopkins University Press, 1980.

Vesey-Fitzgerald, Brian. *The Domestic Dog: An Introduction to Its History*. London: Routledge and Kegan Paul, 1957

Vorzimmer, Peter J., "Darwin's Questions About the Breeding of Animals (1839)." *Journal of the History of Biology,* no. 2 (1969), 269.

Wittgenstein's Philosophical Investigations, vol. II, xi, p. 223.

Wolfe, Carey, *Animal Rites: American Culture, the Discourse of Species, and Posthumanist Theory*. Chicago: University of Chicago Press, 2003.