CRSQ
CREATION RESEARCH SOCIETY QUARTERLY

Charles Darwin's Faulty Scholarship—A Review

Jerry Bergman*

Abstract

Many have suggested that Charles Darwin was one of the greatest scientists in history. However, in reviewing some of Darwin's scholarship, I have identified numerous examples of fraudulent, unethical, and sloppy work. Many more examples of Darwin's faulty research exist, but the few instances cited in this review indicate that the high level of trust still put in Darwin's work is misplaced.

Introduction

Probably no other man in recent history has had such a profound effect on the world as Charles Darwin, the man who produced a theory of evolution as outlined in his *The Origin of Species* (Darwin, 1859). Although Darwin was a prolific writer, a number of researchers have concluded that much of his research on *Origins* was superficial. As a result he arrived at many incorrect conclusions.

E. Lucas Bridges, an author and missionary to Tierra del Fuego, concluded from his firsthand experiences and interviews with the Tierra del Fuego (or Yagan) natives that Darwin naively and uncritically accepted many of their verbal statements (see Bergman, in press). For example, Darwin uncritically accepted the statements by the Fuegians—without investigating the claim—that they were cannibals, a conclusion about which Darwin said he was "certain" (Bridges, 1948, p. 33). He specifically concluded that the different Tierra del Fuego tribes "when at war are cannibals." Darwin also presumed on the basis of concurrent "but quite independent evidence of the boy taken by Mr. Low, and of Jemmy Button ... that when pressed in winter by hunger, they kill and devour their old women before they kill their dogs" (Darwin, 1896a, p. 214). Darwin related that his informants killed their victims by holding them over smoke to choke them. He wrote that his informant had mockingly imitated the screams of their victims and then

> described the parts of their bodies which are considered best to eat. Horrid as such a death by the hands of their friends and relatives must be, the fears of the old women, when hunger begins to press, are more painful to think of; we were told that they then often run away into the mountains, but that they are pursued by the men and brought back to the slaughter-house at their own firesides. (Darwin, 1896a, p. 214.)

Darwin accepted these accounts as true without investigating them, concluding that the Fuegian way of life resulted in frequent famine, and "as a consequence, cannibalism accompanied by parricide" resulted (Darwin, 1839, p. 236). He then used these conclusions in developing his views on race, which were used to support the racism that developed later in areas such as Nazi Germany (Bergman, 1999; Weikert, 2004). Darwin's conclusions about the Fuegians supported the racism already common in Europe: "In their native habitat, the Fuegians seemed to epitomize the Europeans' image of the brutal and degraded savage" (Bowler, 1990, p. 58).

Darwin's Questionable Claims about Fuegian Cannibalism

Many scholars have repeated Darwin's account of Fuegian cannibalism, adding material from other sources, and even concluding that "frequent and inevitable questions on cannibalism" arose in connection with the Fuegians. An example of the "facts" that were used as support for the cannibalism claim includes:

* Jerry Bergman, Ph.D., Department of Biology, Northwest State College, Archbold, OH 43543, jbergman@northweststate.edu

Accepted for publication: February 3, 2006

> Mr. Low, a sealer who came aboard the *Beagle* in Tierra del Fuego, told them that when hunger set in during the winter months, the Indians would kill the old women of their tribe and eat them. He had interviewed a Fuegian boy who had said that the women were suffocated in the smoke of a campfire. When asked why they did not eat their dogs, the boy had replied, "Doggies catch otters, old women good for nothing: man very hungry." As a joke the boy had imitated the sounds of a woman screaming. Jemmy had confirmed the truth of this story, and an appalled Darwin ... [recorded it in his notes]. (Hazlewood, 2001, p. 114.)

Hazlewood's investigation of the relevant historical documents led him to conclude that there were serious problems with Darwin's account. He notes that the three Fuegians Darwin interviewed were

> uncomfortable talking about the subject, and when they did there were inconsistencies in their stories: they would not eat vultures because the birds might have fed on a human; they would not dump their dead in the sea because they might be eaten by fish, which might in turn be eaten by them. When cannibalism was talked about, Jemmy would refer to his people with shame and deny that he had ever eaten a human. He would prefer, he claimed, to 'eat his own hands ....' (Hazelwood, 2001, pp. 114–115.)

According to Hazlewood, the Fuegians were, in fact, averse to eating humans. Keynes (2003) noted that the practice of *tobacana*, a form of "kindly" euthanasia, could have produced a "misleading" conclusion that "gave rise to the mistaken notion that cannibalism was sometimes practiced in Tierra del Fuego" (p. 214).

Bridges was a missionary who lived among the Fuegian people for some time and knew them very well. He explained that when Darwin first arrived in Tierra del Fuego, the natives had a very limited knowledge of the English language. As a result, they could not explain very much in English, and it was far easier for them to simply answer "yes" to many questions. Consequently, "the statements with which these young men ... have been credited were, in fact, no more than agreement with suggestions made by their questioners" (Bridges, 1948, p. 33). While this fact alone does not disprove Darwin's claim that the Fuegians were cannibals, it casts clear doubt on the idea. Bridges continued by noting that it is not hard to

> imagine their reactions when asked what was, to them, a ridiculous question, such as: "Do you kill and eat men?" They would at first be puzzled, but when the inquiry was repeated and they grasped its meaning and realized the answer that was expected they would naturally agree. The interrogator would follow this with: "What people do you eat?" No answer. "Do you eat bad people?" "Yes." "When there are no bad people, what then?" No answer. "Do you eat your old women?" "Yes."
>
> Once this game was started and their knowledge of English increased, these irresponsible youngsters, encouraged by having their evidence so readily accepted and noted down as fact, would naturally start inventing on their own. We are told that they described, with much detail, how the Fuegians ate their enemies killed in battle and, when there were no such victims, devoured their old women. When asked if they ate dogs when hungry, they said they did not, as dogs were useful for catching otter, whereas the old women were of no use at all. The unfortunates, they said, were held in the thick smoke till they choked to death. The meat, they stated, was very good ... This delectable fiction once firmly established, any subsequent attempt at denial would not have been believed, but would have been attributed to a growing unwillingness to confess the horrors in which they had formerly indulged. Accordingly, these young story-tellers allowed their imaginations full rein and vied with each other in the recounting of still more fantastic tales, emboldened by the admiration of the other two. (Bridges, 1948, p. 33.)

Bridges' information casts considerable doubt on the idea that Fuegians practiced cannibalism. However, the Fuegian cannibalism story is still promoted by Darwinists. For example, a genetics professor at University College, London, recently related Darwin's cannibalism statements as if they were valid (Jones, 2000, p. 26).

Accusations of Forgery

In the 1870s photographs were "understood to be a standard of truth in a wide variety of applications, from the popular to the scientific and documentary" (Prodger, 1998a, p. 143). Illustrations were considered more objective than drawings and paintings. Consequently, they were taken as very convincing support for a theory. In November of 1872, Darwin published his book *The Expression of the Emotions in Man and Animals* to prove that human emotions, and thus humans themselves, evolved from some lower animal type (Prodger, 1998a, p. 149). In this book, Darwin used photographs that have now become famous for several reasons. While Darwin's work was one of the first scientific books to use photographs (giving it a unique type of authority for that time period), it is also now acknowledged "that some of the photographs ... were doctored" (Judson, 2004, p. 49). This doctoring of photographs is often ignored in modern accounts of Darwin's work. One probable reason for ignoring this problem is that "strong is the compulsion to save the great men, to protect their reputation

and [the reputation] of science herself" (Judson, 2004, p. 49, bracketed words added). Had such activity been discovered in the research of Darwin's critics, however, they no doubt would not have been treated as gently.

Photographs in Darwin's book were of people's facial expression in showing what he considered genetically based "elemental and universal emotions," found in both man and beast. These facial expressions included grief, joy, anger, disgust, surprise, contempt, fear, horror, and shame (Prodger, 1998a, p. 62). To prove humans have a common ancestry with animals, Darwin wanted to demonstrate that the same emotional states were common, not only in human groups worldwide, but also in animals as well.

This view contradicted the beliefs of most Europeans at the time. Sir Charles Bell argued that there existed muscles in the human face that were without analog in the lower animals. He believed that these muscles were designed to display unique human emotions and were both evidence of a Creator and evidence against common descent. Darwin specifically attempted to disprove the conclusions of Bell and others that human expression reflects the design of a divine being, and to prove that the origin of these expressions lies in evolution (Prodger, 1998a). Darwin further tried to prove that the key to understanding human emotions was to understand these emotions as vestigial or residual habits inherited from our evolutionary ancestors. He used photographs of humans expressing emotions as proof of his theory:

> The photographs he selected for inclusion in *The Expression* were designed to interest and engage his readers, even at the expense of scientific objectivity. Consideration of the photographic illustrations in *The Expression* demonstrates that Darwin had the capacity to act as a shrewd strategist. (Prodger, 1998a, p. 146.)

Although Darwin admitted that some of the photographs were posed and others were modified, Paul Ekman, a social psychologist and Darwinist at the University of California at San Francisco, "found from the Darwin archives and correspondence that the alterations were more extensive than had been known" (Judson, 2004, p. 62). Furthermore, instead of photographing natural expressions elicited in normal human situations, many of the photographs, which it was implied or openly claimed were typical humans responding to real situations, were actually posed. Thus, Darwin went far beyond simply retouching them (although concealing the act of retouching clearly crosses scientific ethical boundaries).

Judson related that Darwin used several photographs by London photographer Oscar Rejlander because Rejlander "proved especially skillful at securing the expressions Darwin wanted" (2004, p. 63). Rejlander also had, at times, "posed for his own camera" (p. 63). Trodger determined that one picture of Rejlander's wife (See Figure 1) was artificially produced for Darwin in order to illustrate "a most convincing sneer" (Judson, 2004, p. 63).

Figure 1. Photograph purporting to be a "sneer," but was intentionally posed. The photograph was taken from the 1872 edition of Darwin's *Expression of the Emotions of Man and Animals*, p. 251.

Rejlander is most often identified with the "composite printing" technique (today called "trick photography") in which several negatives are

> combined to create a photographic print with elements of several pictures. As a result Rejlander was able to manipulate his images, and produce convincing photorealistic images that were actually artificially assembled in the darkroom. (Prodger, 1998a, p. 170.)

Rejlander put his skills in trick photography to use helping Darwin prove his thesis. The first, and most celebrated, photograph in Darwin's *The Expression* is of a weeping baby who actually turned out to be a drawing that Rejlander changed to make it look like a photograph (Judson, 2004). This photograph, titled "mental distress" (Darwin, 1979, p. 149), was a photographic copy of a drawing made from an original photograph (Prodger, 1998a). This allowed Rejlander to "highlight elements of the image Darwin sought to express ... the child's hair, cheeks, and brow ... seem slightly more lively and energetic in the drawn version" (Prodger, 1998a, p. 173). A major change was that the child was put into an unnaturally small chair by means of trick photography (see Figure 2), making the child look "larger-than-life" (Prodger, 1998a, p. 174). The goal was to create an "illustration that would have seemed persuasive to Darwin's readers" (Prodger, 1998a, p. 174).

Darwin nowhere mentioned in his writings that this photograph was actually a drawn and altered copy of a photograph that was "changed substantially from the photographic original" (Prodger, 1998a, p. 175). Ironically, T.H. Huxley (called *Darwin's Bulldog* because of his major role as an apologist of Darwin) was one of the main critics of Darwin's photograph manipulations (Prodger, 1998a, p. 177).

Figure 2. A "fake" photograph of an infant girl in a chair. The child was made to look much larger than life by using trick photography to put her in an unnaturally small chair for her size. See text for details. The photograph was taken from the 1872 edition of Darwin's *Expression of the Emotions of Man and Animals*, p. 148.

Figure 3. Photograph from the 1872 edition of Darwin's *Expression of the Emotions of Man and Animals* (p. 300). A careful inspection of the photograph reveals that electrodes on a mental patient were used to produce the "natural" expression of horror and agony.

It was also discovered that Darwin used eight photographs by Professor Duchenne, a Paris physiologist who actually used electrodes to stimulate groups of facial muscles in patients. Duchenne published a book that contained photographs of patients who were forced to endure such barbaric treatments (see Figure 3 for example). The patients included those diagnosed with epilepsy, spastic disorders, palsy, paralysis, and multiple sclerosis (Prodger, 1998a). From another set of more than 40 photographs of mental patients, Darwin selected a woman diagnosed as insane to use as an example of a normal expression (Prodger, 1998a).

There is a considerable difference between using electrodes to force facial expressions and capturing the results of genuine emotions in natural facial expressions. Likewise, substantial dissimilarity exists between artificial facial contortions touched up by an artist and capturing people on film in the natural act of expressing joy, disgust, or the many other human emotions. The purpose of using photography was to study facial expressions "without relying on the expertise of visual artists" (Prodger, 1998a, p. 141), and presumably their subjectivity as well. From the start, the camera "emerged as an authoritative source of information" to demonstrate scientific theory and concepts.

To obtain scientifically meaningful photographs, it should first be determined that the person in the photograph actually manifested joy, and only then should photographs of his or her facial expression be used to represent that emotion. To artificially produce what an observer *thinks* is a sneer is quite different from evaluating the results of expressing this genuine emotion as confirmed by the subject. This is critical because "Darwin believed that the objectivity of photographic evidence could be used to challenge" existing ideas about the expression of emotion, thus proving his theory of inheritance of emotional expressions from lower animals (Prodger, 1998a, p. 141).

In one engraved plate, Darwin (1896a, p. 306) used extensive cropping that removed a "substantial portion of the original image" (Prodger, 1998a, p. 166). In this case Darwin instructed the engraver to remove the hands of the experimenter and the electrodes that were used to stimulate the facial muscles of the subject (Prodger, 1998a). The altered picture is reproduced in Figure 4. Prodger (1998a) concluded that Darwin's changes in the pictures were required because the original

> photographs were too honest, in that they recorded the actual situation of the sitter in his laboratory environment. To engage his readers, Darwin cultivated an appearance of objectivity that actually misrepresented experimental events (p. 179).

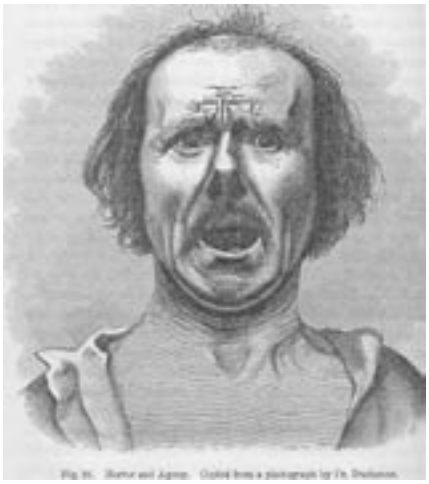


Figure 4. A drawing from the photograph in Figure 3. The caption in the 1872 edition of Darwin's *Expression of the Emotions of Man and Animals* says, "Fig. 21 Horror and Agony. Copied from a photograph by Dr. Duchenne." Note that the electrodes shown on the subject in Figure 3 are not shown on this etching. The etching is from the 1872 edition of Darwin's *Expression of the Emotions of Man and Animals*, p. 306.

Darwinists have actually tried to justify what they call the compromises that Darwin made in preparing his illustrations. As Prodger admitted, though, much of the criticism against Darwin is justified by contemporary standards. Some even argued, in an attempt to justify Darwin, that "the rules about photographic objectivity did not exist then, partially because photographers frequently manipulated their work to enhance its visual appeal and clarity" (Prodger, 1998a, p. 174). These arguments are an invalid defense, however, because what Darwin was not striving for visual appeal or clarity, such as is done for an art show, but photographic evidence that purported to represent internal emotions accurately to support evolutionism.

The fact is, "far from scientifically factual, these photographs formed part of a narrative strategy designed to advance his theoretical concerns" (Judson, 2004, p. 141). In other words, Darwin used fraud to try to prove his evolution theory. And as Haeckel's drawings, although "so widely known, [and] so influential, were faked" (Judson, 2004, p. 83) so, too, were Darwin's photographs; and Darwin's forgeries were no less blatant than Haeckel's. As is also true with Haeckel's drawings, Darwin's "photographic illustrations were carefully contrived to present evidence Darwin considered important to his work.... He knew that photography ... [was] powerfully persuasive" (Prodger, 1998a, p. 144).

Although the technology did not exist in 1896 to produce ideal photographs, Darwin was clearly amiss in not providing exact details how his photographs were done. It is inexcusable to use photographs that were "contrived" and then offered as accurate representations of research on emotions. It is also of note that Darwin claimed he arrived at his three principle conclusions only at the close of his observations on facial expression in 1896, yet Ekman found that all three principles are in his notebooks written in 1838–1839 (Darwin, 1998).

Current Research on Human Emotional Expression

Some of Darwin's obvious observations about the expression of emotions have proven correct. For example, he accurately showed that, although culture was influential, many basic emotional expressions were universal among humans. Much of the research on facial expressions, however, does not support Darwin's basic conclusion that virtually all human facial expressions are inherited in a Lamarckian fashion and are similar to many primates (for examples see Ekman, 1973). In addition, we now know some of his other basic conclusions "are completely wrong" (Darwin, 1998; Rosenstein and Oster, 1997; Lenoir, 1998).

In support of the evolutionary role of expressive behavior, Darwin concluded that the major expressions in animals, including humans "are not learned but are present from the earliest days and throughout life are quite beyond our control" (1979, p. 352). Current researchers have found that the empirical evidence does not support Darwin's general position; rather social factors have a critical influence on the

> non-verbal expression of emotional states both with and without purposeful or voluntary intent. There appear to be cultural conventions concerning stereotypic displays of pain that enable people to enact them with ease. Facial displays of many subjective states are subject to the influence of "display rules" that are internalized in the course of socialization. (Craig, et al., 1997, pp. 162–163.)

Craig et al. (1997) also reported that his research found that the ingestion of sour, salty, and bitter solutions caused "negative facial expression components in all three regions of the face" (p. 163). In contrast to Darwin's conclusions, though, their injection did not result in the widely open, 'squarish' mouth facial expression that Darwin claimed were characteristic of the "cry face" (Craig et al., 1997, p. 163).

Darwin was also guilty of anthropomorphism, even claiming that monkeys express vexation, jealousy, grief, sadness, disgust, anger, pleasure, and other clear human emotions. Although animals may experience certain emotions, it is often difficult, if not impossible, for humans to scientifically determine what specific emotions an animal is feeling (Darwin, 1998). Pet owners and farmers know that dramatic differences exist in animal and human expressions. Except to frighten enemies, most animals other than certain primates are largely expressionless. Furthermore, some of Darwin's examples appear open to many other interpretations (for example, see Ekman, 2003, p. 3). Darwin also relied heavily on anecdotal accounts by others rather then gathering empirical data himself. As a result, in his introduction to Darwin's Third Edition of *Expression of the Emotions in Man and Animals*, Ekman concluded that Darwin "often dealt with faulty data" (Darwin, 1998, p. xxxii). In conclusion, as stated in the introduction to the St. Martin's edition of Darwin's *Expression*, "some of his conclusions are probably correct, others almost certainly incorrect" (Rachman, 1979, p. ii).

Claims about Ancon Sheep

The first person known to use the Ancon sheep as evidence for macroevolution was Charles Darwin. He discussed them at least three times in his published books. In *The Origin of Species* (1859), Darwin speculated that animal variations could have "arisen suddenly, or by one step" in a single generation. An example that he used to support his rapid "one step" macroevolution is known

"to have been the case with the Ancon sheep" (1859, p. 30). This conclusion was left unchanged in all six editions of Darwin's famous book.

In another work, Darwin (1896b) concluded that whole new breeds could have originated suddenly by evolution, and he gave the example of "a ram-lamb" born in Massachusetts that had "short crooked legs and a long back, like a turnspit-dog" (p. 104). Darwin then claimed that from this lamb "the *otter* or *ancon* semi-monstrous breed" was produced (Darwin, 1896b, p. 104). He concluded that these

> sheep are remarkable from transmitting their character so truly that Colonel Humphreys never heard of 'but one questionable case' of an ancon ram and ewe not producing ancon offspring. When they are crossed with other breeds the offspring, with rare exceptions, instead of being intermediate in character, perfectly resemble either parent. (Darwin, 1896b, p. 104.)

According to Hull (1999) after a long discussion of artificial selection and "sports" such as Ancon sheep, Darwin reasoned that "if breeders could do so much with so little, one can only imagine how powerful natural selection must be" (p. 1). This example discussed by Darwin has been cited by evolutionists ever since, partly because it perfectly fit the expectations of many evolutionists. Moody (1953, p. 306) called it "the appearance of a new, inheritable characteristic." Schwartz and Vogel (1994) concluded that the "Ancon sheep are important to the history of biology because Charles Darwin used them to support his argument that animals inherit parental traits without blending" (p. 764).

The Ancon sheep soon became a classic example of evolution by mutations and was important data relating to the origin of species (Bayles and Burnett, 1946). Thomas Huxley proclaimed that the Ancon sheep were one of the best-known examples of "evolution by selection" (Huxley, 1915, p. 264). This example of "rapid evolution" soon became an icon of evolution, repeated for decades in hundreds of textbooks and references. This new sheep "breed," however, is now known to be nothing more than a mutation that causes a lethal disease known as achondroplasia (Bergman, 2003).

Julia Pastrana

A final example of Darwin's faulty research was the case of Julia Pastrana, a so-called ape woman who was offered by many early Darwinists as evidence of a living transitional form. In his discussion of her, Darwin incorrectly claimed she had four rows of teeth. Gylseth and Toverud (2003) commented that what Darwin had written about Julia's character may have been correct. About her anatomy, however,

> scientifically he was wrong because, if anyone had bothered to ask her, she could have immediately responded that she certainly did not have any extra rows of teeth in her mouth (though she did have gum problems) ... Real people don't have four rows of teeth. (Gylseth and Toverud, 2003, p. 39.)

An English dentist examined the casts of Julia's jaws described by Darwin and concluded, in contrast to Darwin's claim, that she in fact had

> a few unusually large teeth projecting from greatly thickened and irregular alveolar processes ... [but] she *did not* possess an excessive number of teeth in double rows ... the overgrowth of her gum and alveolar process was responsible for her prognathism and what is described as simian appearance. (Gylseth and Toverud, 2003, p. 40, emphasis added.)

Gylseth and Toverud (2003) also noted that "Darwin was likewise wrong in stating that Dr. Purland made the casts: it was actually a dentist by the name of Weiss" (p. 40). His mistakes about who made the dental cast and the true nature of Julia's teeth are illustrative of Darwin's tendency for making many any such minor mistakes. If a creationist had made these mistakes, evolutionists would have mercilessly condemned him.

Research on Darwin's Many Errors

Darwin himself, in his *The Origin of Species* book, made thousands of changes to correct errors and improve the accuracy of this book in later editions. One study found that the number of revisions Darwin carried out was so great in his six editions that it is impossible to comprehend without a variorum text (a variorum text contains variant readings of different editions of a text so that they can be compared to determine changes). The study noted that of

> the 3,878 sentences in the first edition, nearly 3,000, about 75 per cent, were rewritten from one to five times each. Over 1,500 sentences were added, and of the original sentences plus these, nearly 325 were dropped. Of the original and added sentences there are nearly 7,500 variants of all kinds. In terms of net added sentences, the sixth edition is nearly a third again as long as the first. (Peckham, 1959, p. 9.)

Most authors rewrite their materials to improve clarity (handled more effectively now with computers), but many of Darwin's changes involved actual errors. Barrett et al. (1987, pp. 1136–1137), listed 70 "errors" in the text of Darwin's *The Descent of Man*, and Darwin himself listed 25 errors (p. 1135). An example is found on page 68 of *The Origin of Species* where Darwin claimed that no rhinoceroses are destroyed by beasts of prey. However, as Galton pointed out, "it is rare to find a Rhinoceros" that has *not* been attacked by "beasts of prey" (see Darwin, 1991, pp. 417, 427).

Some of his other major conclusions

also turned out to be wrong, such as his prediction that the "Negro races" would go extinct and that men were more highly evolved than women (Bergman, 2002). Among the many other examples of Darwin's flawed research, probably the most serious were his acceptance of the inheritance of acquired characteristics theory (Lamarckian Genetics) and his pangenesis idea, the view that evolution occurs by cells sending information to the gametes, which changes the next generation. Darwin's many erroneous conclusions need to be studied further to determine how generalized the examples cited here are. Simonton (1999) adds that

> Darwin himself illustrates what can be dug up with only a little effort. For many Darwinists, he appears to represent the model scientist, the bona fide perfectionist ... But if we delve carefully into his lifetime output, this idealized portrait begins to reveal many blemishes. He was capable of publishing erroneous interpretations and even silly conjectures. An early paper provided such a completely mistaken explanation for a particular geological formation that it came to cause Darwin considerable embarrassment. Later, despite his extremely detailed work on the cirripedes, he was forced to admit that he had "blundered dreadfully about the cement glands." (p. 157.)

When the *The Origin of Species* manuscript was completed, it was sent to Dr. and Mrs. Hooker to proofread. Mrs. Hooker found parts of it so obscure that Darwin trembled, and "vowed to clarify his ideas in the proofs" (Peckham, 1959, p. 15). Darwin was to continue these clarification efforts through six more editions and for 12 more years (Peckham, 1959). Even Darwin, when he finally saw the first edition of *The Origin of Species* in print, found the style "incredibly bad" and made so many corrections that he wrote to his publisher, John Murray, and offered to pay a major part of the cost of making the many corrections needed (Peckham, 1959, p. 15). By "June 21st he had corrected only 130 pages, and by the next day only 20 more" (Peckham, 1959, p. 15). The many corrections were a "long and dreary struggle." The endless corrections, the despairing efforts to achieve clarity, the knowledge of what was involved "the last minute changes of fact and interpretation—all these had worn him out" (Peckham, 1959, p. 15).

The problem of errors was so great that the sixth edition of *The Origin* had to be completely retypset and, as a result, "a good many typographical errors were introduced which Darwin failed to catch" (Peckham, 1959, p. 23). By 1878, six years after the sixth edition was completed, all the typographical errors were finally corrected and this edition is now considered Darwin's "final text" (Peckham, 1959, p. 24).

Darwin admitted that he had "much difficulty" in expressing himself "clearly and concisely," which caused him to lose much time but forced him to "think long and intently about every sentence" (Darwin, 1958, pp. 136–137). Furthermore, Darwin admitted that his "power to follow a long and purely abstract train of thought is very limited" and that his memory was so poor that he has "never been able to remember for more than a few days a single date or a line of poetry" (Darwin, 1958, p. 140). In and of themselves these admissions show a spirit of honesty and humility on Darwin's part. Nonetheless, as a result of these self-admitted shortcomings, there is a strong likelihood that numerous errors may have been introduced and continue to persist in his writings.

Other changes he made include excising "much theological language" from later editions of the *Origin* (Peckham, 1959, p. 10). A few historians allege that part of Darwin's concern was that he was fully aware his work would cause controversy because the direct intervention of God in creation was "for most Victorians, even scientists, the only possible explanation for 'the origin of all animal forms.' This fantasy was precisely the last stronghold of British Natural Theology" (Peckham, 1959, p. 14). Most likely Darwin knew that his evolution theory would undermine this belief in God's intervention during creation, the last possible reason to believe in natural theology—and in God.

Darwin also evidently became less confident about his theory as he aged, and this was reflected in his books. Jones stated that "in his old age, faced with a wave of inconvenient discoveries, Darwin began to complicate his ideas" to deal with the "inconvenient discoveries" that argued against his theory (Jones, 2000, p. xxv). Jones notes that "in 1859 Darwin was more confident" about his theory. At that time, Darwin (1859) wrote "I can see no difficulty in a race of bears being rendered, by natural selection, more and more aquatic in their structure and habits, with larger and larger mouths, till a creature was produced as monstrous as a whale" (p. 184). In the sixth edition, Darwin's "swimming bear ... conceals itself with irony" (Jones, 2000, p. xxv). Hedtke (1983) even concludes from his study that Darwin acknowledged the fatal weaknesses of his theory in the sixth edition of *The Origin*, published in 1872.

Conclusions

Darwin is often regarded as one of the most highly esteemed scientists who ever lived (Simonton, 1999). Yet, a balanced view of his work requires an evaluation of his scholarly shortcomings. These few examples of the many Darwinian errors that exist illustrate the fact that many of his conclusions were based on faulty data, thus were incorrect. His research was often very superficial and strongly biased toward his thesis. In the case of the Fuego Indians he was also very gullible in relying on informants who were, for several reasons, not only inaccurate,

but wrong. It is quite true that much of what is presently known in the life sciences was not known when Darwin wrote his major works. However, this does not excuse his incomplete, misleading, and erroneous conclusions reviewed in this paper. An excellent summation of Darwin's many mistakes by Simonton (1999) concluded that his mistakes have been forgotten or forgiven. For example, Darwin's erroneous

> geological paper on Glen Roy is politely ignored by geologists, and his work on the barnacles has been superseded by more accurate monographs. Darwin's theory of pangenesis has been reduced to a tiny footnote in the history of evolutionary theory. What remains in posterity's eyes is a sanitized Darwin whose career seems quite un-Darwinian—no variation and selection, no trial and error, no hits and misses. Yet I hope that this misperception will eventually enter the historical record as just another false idea that did not survive cultural selection. This unjustified glorification of genius must be buried and fossilized along with the dinosaurs. (p. 157.)

Acknowledgments

I wish to thank Bert Thompson, Ph.D., Clifford Lillo, MA, John Woodmorappe, MA, MS, George Howe, Ph.D., Jody Allen and Emmett Williams, Ph.D., for their helpful comments on earlier drafts of this manuscript.

References

Barrett, P.H., D.J. Weinshank, P. Ruhlen, and S.J. Ozminski (editors). 1987. *A Concordance to Darwin's the Descent of Man, and Selection in Relation to Sex*. Cornell University Press, Ithaca, NY.

Bayles, E.E., and R.W. Burnett. 1946. *Biology for Better Living*. Silver Burdett, New York, NY.

Bergman, J. 1999. Darwinism and the Nazi race holocaust. *Creation ex Nihilo Technical Journal*. 13:101–111.

Bergman, J. 2002. The history of the human female inferiority: ideas in evolutionary biology. *Biology Forum* 95:379–412.

Bergman, J. 2003. The Ancon sheep: just another loss mutation. *Creation ex Nihilo Technical Journal* 17:18–19.

Bergman, J. Was Charles Darwin a racist? *Creation Research Society Quarterly* (in press).

Bowler, P. 1990. *Charles Darwin; the Man and His Influence*. Blackwell, Cambridge, MA.

Bridges, E.L. 1948. *Uttermost Parts of the Earth*. Hodder and Stoughton, London, UK.

Craig, K.D., S.A. Hyde, and C.J. Patrick. 1997. Genuine, suppressed, and faked facial behavior during exacerbation of chronic low back pain. In Ekman, P., and E. Rosenberg (editors), *What the Face Reveals: Basic and Applied Studies of Spontaneous Expression Using the Facial Action Coding System (FACS)*, pp. 161–177. Oxford University Press, New York, NY.

Darwin, C. 1839. *Journal of Researches into the Natural History and Geology of the Counties Visited during the Voyage of the H.M.S. Beagle*. New Edition. D. Appleton Publishing, New York, NY.

Darwin, C. 1859. *The Origin of Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life*. John Murray, London, UK.

Darwin, C. 1872a. *The Origin of Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life* (6th edition). D. Appleton Publishing, New York, NY.

Darwin, C. 1872b. *The Expression of Emotions in Man and Animals*. John Murray, London, UK.

Darwin, C. 1896a. *The Expression of Emotions in Man and Animals: The Works of Charles Darwin. Vol. 10*. AMS Press, New York, NY.

Darwin, C. 1896b. *The Variation of Animals and Plants under Domestication*. D. Appleton Publishing, New York, NY.

Darwin, C. 1958. *The Autobiography of Charles Darwin*. (Edited by Nora Barlow.) Norton Publishing, New York, NY.

Darwin, C. 1979. *The Expression of Emotions in Man and Animals*. Julian Friedmann Publishers, London, UK. Introduction by Professor S.J. Rachman. A reprint of the 1872 edition.

Darwin, C. 1991. *The Correspondence of Charles Darwin Volume 7 1858–1859. Supplement to the Correspondence 1821–1857*. Cambridge University Press, New York, NY.

Darwin, C. 1998. *Expression of the Emotions in Man and Animals* (3rd Edition). Oxford University Press, New York, NY. (Introduction by P. Ekam, and Appendix by P. Prodger.)

Ekman, P. (editor). 1973. Darwin and facial expression: a century of research in review. Academic Press, New York, NY.

Ekman, P. 2003. Introduction to emotions inside out:130 years after Darwin's the expression of the emotions in man and animals. In Ekman, P., J.J. Campos, R.J. Davidson, and F.B.M. de Waal (editors). *Annals of the New York Academy of Sciences* 1000:1–6.

Ekman, P., and E. Rosenberg. 1997. *What the Face Reveals: Basic and Applied Studies of Spontaneous Expression Using the Facial Action Coding System (FACS)*. Oxford University Press, New York, NY.

Gylseth, C.H., and L.O. Toverud. 2003. *Julia Pastrana: The Tragic Story of the Victorian Ape Woman*. Sutton Press, Gloucestershire, UK.

Hazlewood, N. 2001. *Savage: the Life and Times of Jemmy Button*. Thomas Dunne Books/St. Martin's Press, New York, NY.

Hedtke, R. 1983. *The Secret of the Sixth Edition*. Vantage Press, New York, NY.

Hull, D.L. 1999. Strategies in meme theory: a commentary on Rose's paper: controversies in meme theory. *Journal of Memetics: Evolutionary Models of Information Transmission* 3:1:1–23.

Huxley, T. 1915. *Lay Sermons, Addresses,*

and Reviews. D. Appleton Publishing, New York, NY.

Jones, S. 2000. *Darwin's Ghost: the Origin of Species Updated*. Random House, New York, NY.

Judson, H.F. 2004. *The Great Betrayal: Fraud in Science*. Harcourt, Orlando, FL.

Keynes, R. 2003. *Fossils, Finches and Fuegians: Charles Darwin's Adventures and Discoveries on the Beagle, 1832–1836*. Harper Collins, London, UK.

Lenoir, T. (editor). 1998. *Inscribing Science: Scientific Texts and the Materiality of Communication*. Stanford University Press, Stanford, CA.

Moody, P.A. 1953. *Introduction to Evolution*. Harper, New York, NY.

Peckham, M. (editor). 1959. *The Origin of Species by Charles Darwin: A Variorum Text*. University of Pennsylvania Press, Philadelphia, PA.

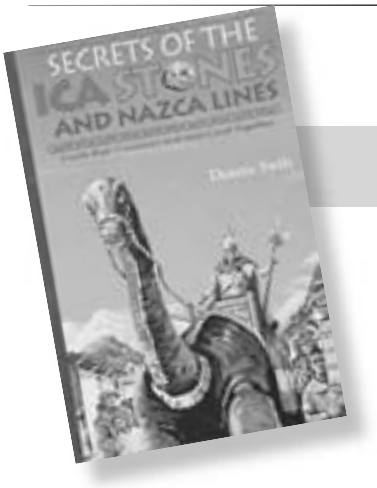
Prodger, P. 1998. *An Annotated Catalogue of the Illustrations of Human and Animal Expression from the Collection of Charles Darwin: An Early Case of the Use of Photography in Scientific Research*. Edwin Mellen Press, Lewiston, NY.

Rosenstein, D., and H. Oster. 1997. Different facial responses to four basic tests in newborns. In Ekman, P., and Rosenberg, E. (editors), *What the Face Reveals: Basic and Applied Studies of Spontaneous Expression Using the Facial Action Coding System (FACS)*, pp. 302–319. Oxford University Press, New York, NY.

Schwartz, K., and J. Vogel. 1994. Unraveling the yarn of the Ancon sheep. *Bioscience* 44:764–768.

Simonton, D.K. 1999. *Origins of Genius: Darwinian Perspectives on Creativity*. Oxford University Press, New York, NY.

Weikart, R. 2004. *From Darwin to Hitler: Evolutionary Ethics, Eugenics, and Racism in Germany*. Palgrave Macmillan, New York, NY.



Book Review

Secrets of the Ica Stones and Nazca Lines

by Dennis Swift

Self Published, 2006, 144 pages, $11.00.

[Book review editor's note: The assertions in this book need further documentation. However, the Ica topic is of sufficient interest to merit review.]

Recently I posed this question to a leading creation science spokesman: "Why do you think that some within the creation science community aren't willing or interested in using artifacts like the Paluxy tracks and the Ica Stones?" His response was twofold. He mentioned that this evidence seems almost "too good" to be true. He also explained that these artifacts go straight to the jugular of the evolutionary, deep time paradigm. Consequently evolutionists do everything they can to discredit this type of evidence. Many creation apologists who have a difficult enough time getting a hearing would rather not be saddled with defending this highly controversial line of evidence.

Author Dennis Swift started out a skeptic (pp. 9, 10) and spent many years researching the Ica Stones and other controversial artifacts. This book is written in a laymen's style and reads like an adventure story. The primary focus is on the Ica Stones and secondarily on the Nazca Lines. While the section on the latter is interesting it serves primarily as collaborative evidence for the Ica Stones.They are engraved highly carbonized andesites (p. 18) found in pre-Columbian burial sites in central Peru ranging in size from four ounces to 1000 pounds. Some 11,000 are housed in a museum in Ica, Peru. This museum is part of a mansion owned by the late Javier Cabrera Darrquera. The engraved images on the stones include