

DISCUSSION PAPER SERIES

CHARLES R. DARWIN
MY LIFE AND MY DEATH

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23 September 1990 Version¹

MY LIFE AND MY DEATH: 1809-1882
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MY LIFE AND MY DEATH: 1809-1882

Charles Robert Darwin died on April 19, 1882. Since that was more than 108 years ago and the passage of time does diminish certain faculties, I will be referring to these notes at hand as I go along. I trust that you will allow me this one small indulgence during this presentation. What I propose to do today is deal with the intellectual history of some ideas and the times and place some of my works within the context of the times.

I was born in Shrewsbury, England, some 160 miles northwest of London, and close to the border of Wales, on the 12th day of February 1809. If the date does sound somewhat familiar to some of you, this was the same day that your 16th President of the United States of America, Abraham Lincoln, was born in the state of Kentucky, some four thousand miles distant from Shrewsbury.

When I was in my prime, I was slightly more than six feet in height, but as the years began to weigh on my bones, I took on a stoop which became characteristic of my appearance and it made me look shorter.

In my youth I had a ruddy complexion as well as a rounded chin; I was beardless, even though I wore my reddish-brown sideburns down to my jawline, and I enjoyed walking, running, and riding. In my later years, I muchly enjoyed having novels read to me.

I liked dogs, used snuff all my life ("having learnt the habit at Edinburgh"² University, in Scotland), drank very little wine, and oh, incidentally, I had brown eyes with slight purple speckles.³ I first grew a beard, as was the custom, when I

¹ For "Anthropology Looks At..." on 4 October 1990, California State University, Chico.

² Nora Barlow, 1958, The Autobiography of Charles Darwin, page 84.

³ Irving Stone, 1980, The Origin: An Autobiographical Novel of Charles Darwin, page. 21.

was on board HMS BEAGLE on her circumnavigation of the globe in 1831-1836, but I did shave the beard before I returned to England. I began to grow my final beard in 1863 in order to avoid the burden of shaving and, eventually, I also became entirely bald.⁴

I resided in the village of Shrewsbury until 1825 when I was sixteen years of age and was the fifth of six children born to my mother, Susannah Wedgewood. I had three older sisters, by the names of Caroline (born in 1800), Susanne (born 1803), and Mariann, and an older brother (by five years) named Erasmus Alvey (after our paternal grandfather, the physician Erasmus Darwin).

My younger sister Emily Catherine was born in 1810, and until 1818 (when I was 9 1/2 years of age) Catherine and I were educated at home by our older sister Caroline; then I began to attend a boarding school one mile from home. In my infancy in Shrewsbury I had the nickname of "Babba" and later, whilst on the BEAGLE (when in my 20s), I was known as "Dear Old Philosopher" to the Officers and was called the "Flycatcher" by all!⁵

Our mother had died in July of 1817, when I was 8 1/2 years old and she was fifty-two years of age; although I have extremely little recollection of her, a colleague of mine has stated that he recalls that one day I, when I was still a child, I brought a flower to my school, stating that my mother had taught me how "by looking at the inside of the blossom, the name of the plant could be discovered."⁶ This was, of course, not to suggest that the name was neatly stitched therein, but that my Mother was in fact teaching me the rudiments of the Linnean system of classification.

My father, Robert Waring Darwin (1768-1848), was a prosperous and prominent physician in Shrewsbury and he did not see fit to re-marry after our mother's death in 1817. My father, incidentally, was the biggest man I think I have ever observed: he was some six feet two inches in height with a tremendous girth and the last time he weighed himself he was at some 24 stone, or, some 360 pounds in your measurement system. He continued to gain weight after that (although he no longer weighed himself)!⁷.

While healthy as a youth, after my 1831-1836 world-wide voyage on the BEAGLE, which I will go into in modest detail in a few moments, I was somewhat chronically ill, having contracted what was eventually termed Chagas' Disease. On the 26th of March 1835 in South America I was bitten by what has been called "the

⁴ Stanley E. Hyman, 1963, Darwin for Today, page 5.

⁵ R. B. Freeman, 1978, Charles Darwin: A Companion, page 72.

⁶ In Thomas H. Huxley, 1896, Darwiniana Essays, page 254.

⁷ Gertrude Himmelfarb, 1959, Darwin and the Darwinian Revolution, page 10.

Great Black Bug of the Pampas" or Triatoma infestans.⁸ Chagas' disease, not really diagnosed by the medical profession until this 20th century, can result in migraine, lassitude, stomach and heart problems, flatulance, and (as you can imagine) a general feeling of un-wellness.⁹

When my father died in his eighty-second year, on the 13th of November in 1848, I was not able to attend his funeral because of my own ill health.¹⁰ It must be pointed out that several of your contemporary authors have suggested that I suffered from psychosomatic problems resulting from either (a) problems with my father or (b) religious feeling about my various publications.

I should like to take this occasion to point out that I was bitten by a bug, infected by same bug, and I had the heartiest respect for my father who was a sensitive individual as well as a cautious and good man of business. Although a physician, my father's mind was not that which I would call "scientific" but he did have a vision of the universe which created a theory for that which he observed.

One of his golden rules, and one which I well remember and one which is extremely perceptive, and which I have attempted to follow, is "Never become the friend of anyone whom you cannot respect."¹¹ Such are some of the words I remembered from my father.

As I matured, I became, as you would probably say, independently wealthy, able to devote my time and energies, such as they were, to those problems which I found interesting to me. Upon my father's death I was left approximately 45,000 pounds; this amount, combined with the 13,000 pounds I had received from my father upon my marriage and the 5,000 pounds of dowry that my dear sweet Emma brought into our marriage in 1839, provided us with quite a bit of ready cash at all times.

When I died in 1882 I had nearly quadrupled my inheritance and my estate was estimated to be approximately 282,000 pounds. This was done, primarily, by investments in railroads.¹² Railroads, in my time, began to take over (from the extensive canal system) the transportation of goods and information throughout the British Isles. Until the development and distribution of telegraphy networks, railroads were it - and I was invested in that newest of communication devices.

⁸ Gavin De Beer, 1964, Charles Darwin: Evolution by Natural Selection, page 116.

⁹ Stephen J. Gould, 1982, "In Praise of Charles Darwin" in Darwin's Legacy: Nobel Conference XVIII Gustavus Adolphus College, St. Peter, Minnesota, Edited by Charles L. Hamrum, pp. 1-10, page 3.

¹⁰ Charles Darwin's Autobiography: With his Notes and Letters Depicting the Growth of the ORIGIN OF SPECIES, edited by Sir Francis Darwin [1848-1925], 1950 edition, page 52.

¹¹ Stanley E. Hyman, 1963, Darwin for Today, page 338.

¹² Ibid., pp. 3-4

In November of 1838 (the 11th), I proposed to my dear sweet cousin, Miss Emma Wedgewood (1808-1896) who was one year older than I. Emma was the daughter of Josiah Wedgewood II (the son of Josiah Wedgewood I who established the famous pottery works) and I affectionately called Emma's father "Uncle Jos" since we were indeed related through my maternal grandfather. Dear sweet Emma had "grey eyes, a firm [and], humorous mouth and rich chestnut hair."¹³ Earlier in 1838, Emma's older brother Jos had married my dear sister Caroline.¹⁴

Emma and I were married on the 29th of January 1839 and resided in London from that year until 1842. Our first child William Erasmus (1839-1914) was born in that capital of the British Empire (on December 27, 1839), an Empire by-the-way, which was to cover 1/3rd of the globe in Queen Victoria's time. Our daughter Annie (Anne Elizabeth) was also born in that same city on March 2 of 1841, but she was to die on the 23rd of April 1851 at the age of ten.

Residing in London provided me with the opportunity to attend professional scholarly meetings. My first lodgings in the city, for research purposes, were close to the British Museum.

On the 24th of January 1839 I was elected a Fellow of the Royal Society and five days later Emma and I married. We soon discovered, however, that we detested the city and I wrote "I long to be settled in pure air, out of all the dirt, noise, vice & misery of this great wen" (or cyst of a city).¹⁵ London was, indeed, an "odious dirty smoky town."¹⁶

Emma and I removed our ourselves and our family to the village of Down in Kent, England, 16 miles southeast from London, on Wednesday the 14th of September 1842. The census of 1841 pointed out that there were 444 residents of the village of Down in that year and by 1881 (one year before my own death), the population had swelled to 555.¹⁷

The capital of London "suited my health so badly that we resolved to live in the country, which we both preferred and have never repented."¹⁸ and we remained in Down the rest of our lives and the house grew in size and scope.

¹³ Edna Healey, 1986, Wives of Fame: Mary Livingstone, Jenny Marx, Emma Darwin, page 136.

¹⁴ Ibid., page 153.

¹⁵ Peter Brent, 1981, Charles Darwin: A Man of Enlarged Curiosity, page 326.

¹⁶ Ibid., page 223.

¹⁷ R. B. Freeman, 1978, Charles Darwin: A Companion, page 128.

¹⁸ Charles Darwin's Autobiography: With his Notes and Letters Depicting the Growth of the ORIGIN OF SPECIES, edited by Sir Francis Darwin [1848-1925], 1950 edition, page 50.

Our home was spacious, and, while under-furnished, was comfortable to raise a family; what furniture we did have was later described by my grand-daughter (Gwen Raverat) as "ugly in a way, but dignified and plain."¹⁹ Someone wrote that our home "had no profound social or architectural pretension, but was a square, honest, open-fronted structure, somewhat bare, with straightforward windows and an intimidating front door, built of worn, though serviceable brick."²⁰

In an 1842 letter to my sister Catherine I called the house at Down somewhat ugly!²¹ Initially we had two bathrooms, a study, a dining-room, and ample space to work and think and the house was gradually expanded upon; also, at first, we had no running hot water, but we did have serviceable outhouses!

Emma and I had a loving and caring family and I would think and walk and enjoy the splendor of our grounds and home in Down. Our home was situated on some 15 acres and the overall area was lovely and rural; we had cherry and walnut trees as well as scotch and silver fir. We had ten children in our years, but only seven children reached their age of maturity.²²

Our daughter Mary Eleanor was the first child born at our new home in Down, on the 23rd of September 1842, but she died within three weeks on the 10th of October. Henrietta Emma was born in 1843 (September 25), followed by George Howard in 1845 (July 9), then Elizabeth (8 July 1847), Francis, Leonard (1850-1943), Horace, and Charles. The following is some brief information on our ten children: William Erasmus (1839-1914), Anne Elizabeth (1841-1851), Mary Eleanor (1842), Henrietta Emma (1843-1927), George Howard (1845-1912), Elizabeth (1847-1926), Francis (1848-1925), Leonard (1850-1943), Horace (1851-1928), and Charles Waring (1856-1858).²³

I was alive and conducting research and writing until the 73rd year of my life and it was during the British winter of 1881-1882 that my heart began to give me problems. While visiting a friend in London in December 1881, I suffered a mild heart seizure.²⁴ On the 12th of February 1882, my 73rd birthday, I wrote to a friend

¹⁹ Julian Huxley and H.B.D. Kettlewell, 1965, Charles Darwin and His World, page 60.

²⁰ Peter Brent, 1981, Charles Darwin: A Man of Enlarged Curiosity, page 328.

²¹ C. Darwin to Catherine Darwin, dated July 1842, in More Letters of Charles Darwin: A Record of His Work in A Series of Hitherto Unpublished Letters, Francis Darwin, Editor, 1903, page 32.

²² Leonard Engel, (Editor), 1962, Voyage of the Beagle, by Charles Darwin [original 1839], p. xii.

²³ George Gaylord Simpson (Editor), 1982, The Book of Darwin, page 29.

²⁴ Walter Karp, 1968, Charles Darwin and the Origin of Species, page 149.

that "my course is nearly run."²⁵ Within two months, on Wednesday the 19th of April 1882, I had a fatal heart attack and I died.

My remains, however, are not in Down, but should you go to the British Isles one day, you will find a modest marker for me located in the chapel of St. Faith in Westminster Abbey, in London.²⁶ Upon my death in 1882, twenty Members of Parliament requested of the Dean of Westminster that I be buried in the Abbey, and my four-horse funeral carriage (accompanied by my sons Francis, Leonard, and Horace) made the 16 mile journey to London on the 25th of April 1882. If one considers how fiercely I had been attacked by certain of the orthodox clergy during my lifetime, it does seem somewhat unusual "that I once intended to be a clergyman"²⁷ and that I am, in fact, buried in the holiest-of-holy places in the British Empire!

Dear sweet Emma, who was to survive me until her death at the age of eighty-eight in 1896 (2 May 1802 - 2 Oct 1896), did not attend the formal funeral in London at Westminster Abbey and she preferred to mourn in private. She has been described, and perhaps correctly so, as a "stronger-minded, tougher person than Charles."²⁸

I was interred a few paces away from the final resting place of Sir Isaac Newton, Sir Charles Lyell, Michael Faraday, and William Herschel.²⁹ My pall bearers included the President of the Royal Society, the American Minister to the British Isles (Robert Lowell), the churchman Cannon Farrar, an earl, two dukes, and the three leading British biologists of the times who were my closest scientific friends: Thomas Huxley, Sir Joseph Hooker, and Alfred Russel Wallace.³⁰ Even Mr. Herbert Spencer thought the occasion of my internment at the Abbey "worthy enough [to attend] to suspend his objections to religious ceremonies."³¹

25 Julian Huxley and H.B.D. Kettlewell, 1965, Charles Darwin and His World, page 126.

26 Peter Brent, 1981, Charles Darwin: A Man of Enlarged Curiosity, page 520.

27 Gavin De Beer, 1964, Charles Darwin: Evolution by Natural Selection, page 276.

28 Gertrude Himmelfarb, 1959, Darwin and the Darwinian Revolution, page 441.

29 See Kardiner & Preble, 1961, They Studied Man, page 20; also see G. de Beer, Charles Darwin: Evolution by Natural Selection, 1964, page. 277

30 Julian Huxley and H.B.D. Kettlewell, 1965, Charles Darwin and His World, page 126.

31 Gertrude Himmelfarb, 1959, Darwin and the Darwinian Revolution, page 440.

I come to you today, however, not to simply mention the years of my birth and my death, and to talk about my wonderful family and friends, but to place into the context of my years some information on the item which I had the fortune to publish in 1859, commonly know to this day as On The Origin of Species by Means of Natural Selection, or the Preservation of Favored Races in the Struggle for Life.

Published more than 131 years ago, on the 26th of November 1859, when I was fifty years of age, the 1,250 copies of that first edition (at fifteen shillings) were sold out that very day. The book is still being read to these times (although I confess I personally receive no current royalties from it!), and in my own lifetime, I revised ORIGINS no less than five times, beginning (in fact) the second revision on the 8th of December 1859, twelve days after the first edition was sold out!

All told, ORIGINS went through six editions (all slightly different), the last of which was published on February 19, 1872. From 1859, until the the time of my death in 1882, some 25,500 English copies had been published in Britain.³²

Incidentally, please keep in mind that in my lifetime I had published some nineteen books in addition to ORIGINS. I had also written numerous letters to colleagues and friends as well as some ninety communications to learned societies of the time.³³ Writing is an important form of communication. If you are told that the secret of good writing is re-writing, please believe it; I am not saying that I was a good writer, but I did believe in re-writing! And this, please remember, was pre-word processor!]

On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life is the complete title of the work as it is known today, but keep in mind that titles change over the years. The passage of time, as well as the context of the times, is important for an understanding of my work and for an understanding of any created work of mankind, be it a scientific tome or a work of pure fiction.

I stress the importance of time for a very good reason: time means change. Change in duration from point in time "x" to point in time "x+1" and authors and opinions and interpretations of "facts" change over time!

When the first edition of ORIGINS was published in 1859, published I might add at the strong urging of my scientific associates, Hooker and Lyell (the former famous for the naming of your "Hooker Oak" in his 1877 visit to Chico and the latter immortalized by Mt. Lyell, so named in 1863 by the Whitney Survey Party of the

³² Morse Peckham, Editor, The Origin of Species by Charles Darwin: A Variorium Text, 1959, page 24.

³³ R. B. Freeman, 1965, The Works of Charles Darwin: An Annotated Bibliographic Handlist, page 1.

Sierra Nevada). I included the word "ON" in the original title. This simple proposition was dropped by the final, or 6th edition of 1872.³⁴

This, you might decide is an extremely trivial point: the word "ON" in the first edition and deleted by the final edition; but when taken in combination with some other "minor" points that I should like to make you aware of, it should give you pause about (a) what you may think you know about the ORIGINS and (b) what you think you may know about my point of view - my philosophy as well as my other works.

Before I get into a discussion of ORIGINS, I should like share additional information about myself with you, and perhaps provide you with some insight into my times. I was, you may know, a simple man, and my dear sweet Emma once described me a "the most transparent man" she ever saw.

In 1876, at the age of sixty-eight, I wrote my Autobiography. In it I stated that my five-year voyage on His Majesty's Ship BEAGLE, over the years of 1831-1836 "has been by far the most important event of my life and has determined my whole career"³⁵ and I also wrote that the ORIGIN of 1859 "is no doubt the chief work of my life."³⁶

I was but 22 years old in 1831 when HMS BEAGLE was to set out on a voyage of scientific exploration across the globe. Perhaps I was, like some of you out there, a young individual interested in many things, but my father wished that I should become a physician since his father, Erasmus, had been a physician (and somewhat of a genius in his time), and my own older brother Erasmus Alvey Darwin was studying to become a physician, then a physician I was scheduled to be!

The Darwin family attended Edinburgh University, in Scotland, with my father and his father and my older brother preceding my own two year stay there. I began Edinburgh when I was 16 in 1825, and stayed until 1827.

Alas, the two years at Edinburgh University demonstrated that I had neither the aptitude nor the interest in medicine that my father and grandfather had, and it was not for me. Educational institutions are interesting, and let me share with you some of my recollections from my 1876 Autobiography:

"The instruction at Edinburgh was altogether by lectures, and these were intolerably dull, with the exception of those on Chemistry....to my mind there are no advantages and many disadvantages in lectures compared with reading.

³⁴ Erwin G. Gudde, 1969, California Place Names: The Origin and Etymology of Current Geographical Names, page 186, and how in 1863 Mount Dana was named for the leading American Geologist and "Mount Lyell [was named], after the most eminent of English geologists."

³⁵ Stanley E. Hyman, 1963, Darwin for Today, page 1.

³⁶ Ibid., page 389.

... Dr. ... made his lectures on human anatomy as dull as he was himself, and the subject disgusted me."³⁷

Although I was later to become excited about geology, my lectures on this fascinating subject at Edinburgh were so incompetent and dull that I later recalled that they "completely sickened me of that method of learning" and it made me to resolve never to read a book on that subject.³⁸ It is indeed fortunate that we change our opinions over time, for it was the first volume of Sir Charles Lyell's work on geology that I was later to take with me on my voyage on the BEAGLE around the world in 1831-1836.

In 1827, however, I could not face up to telling my father the fact that medicine was not for me, since my older brother Erasmus had already made his decision to give up his study of medicine. It was only through my sisters did my father learn of my lack of interest in his chosen profession for me.³⁹

If medicine was not to be my life's calling, then father decided that I must become a clergyman and a degree from Cambridge was necessity for that chosen field. As one 20th Century author has perhaps somewhat ungraciously written, concerning my father's choice of career for me, it was not so absurd that the church should be for me, since (and I quote):

"The final recourse of Victorian society for the maintenance of misfits and dullards was the church. {and} Young men with no other discernable calling were graced with the highest calling of all. That the church was, at the same time, the refuge of the talented and brilliant did not in any way hinder it from performing the humble but useful service of relieving despairing fathers of surplus sons."⁴⁰

As I was growing up, the Church of England, or Anglican Church, did in fact interest me, and "The Church of England was the church, established by law, for the people of England and Wales."⁴¹

³⁷ Charles Darwin's Autobiography: With his Notes and Letters Depicting the Growth of the ORIGIN OF SPECIES, edited by Sir Francis Darwin [1848-1925], 1950 edition, page 19.

³⁸ Gertrude Himmelfarb, 1959, Darwin and the Darwinian Revolution, page 29.

³⁹ Julian Huxley and H.B.D. Kettlewell, 1965, Charles Darwin and His World, page 14.

⁴⁰ Gertrude Himmelfarb, 1959, Darwin and the Darwinian Revolution, page. 31.

⁴¹ Lee E. Grugel, 1979, Society and Religion During the Age of Industrialization: Christianity in Victorian England, page 22.

I was a religious man and at the age of 19, in the year-of-our Lord 1828, I did not "in the least doubt the strict and literal truth of every word of the Bible."⁴² Indeed, at this time in my life I was so convinced of the truth of my religious beliefs that I found myself:

"inventing day-dreams of old letters between distinguished Romans and manuscripts being discovered at Pompeii or elsewhere which confirmed in the most striking manner of all that was written in the Gospels."⁴³

Alas, once again, I found myself lacking in the skills for the church, even though when I began my three years of 1828-1831 at Christ's College, Cambridge, I was planning to read for the holy orders. Many things occurred at Cambridge and it is interesting to note that that English institution did not have a completely pure reputation, and it did, in fact, have a reputation for catering to young men with too much money and too little discipline. A pamphlet of that day can be cited, describing:

"in lurid detail the 'corrupt state' of the university: habitual drunkenness, gambling, and falling into debt; a profligacy so common that one could hardly find a female servant in a university lodging house who had managed to preserve her virtue; and a condition of moral laxity in which the highest aspiration was to be recognized as an authority of food and drink."⁴⁴

Now while much of this could be viewed as some of the evangelical ranting of the day, there was a modicum of truth to the above, as perhaps there is on any university campus to this day. While at Cambridge, for example, I was described as an "enthusiastic" member of the Gourmet Club and I did admit to my son, Francis Darwin, that once I did drink too much while at Cambridge; but I could write to Sir Joseph Hooker that I was only drunk only "three times in early life"⁴⁵ so I must not have been a heavy drinker to recall all three times! One of your 20th century authors has written the following interesting words about my undergraduate years:

"The fact is that Charles Darwin was in almost all respects a fairly standard example of the nineteenth century student, well off, active in field sports, working hard enough to avoid academic failure, but a long way from academic success...."⁴⁶

⁴² Julian Huxley and H.B.D. Kettlewell, 1965, Charles Darwin and His World, page 15.

⁴³ Gavin De Beer, 1964, Charles Darwin: Evolution by Natural Selection, pp. 28-29.

⁴⁴ Gertrude Himmelfarb, 1959, Darwin and the Darwinian Revolution, pp. 33-34.

⁴⁵ R.B. Freeman, 1978:, Charles Darwin: A Companion, page 89.

⁴⁶ Peter Brent, 1981, Charles Darwin: A Man of Enlarged Curiosity, page 80.

What I had, however, was a group of like-minded friends that I could relax and have discussions with. I was also fortunate to have certain instructors who were exciting and enthusiastic and I developed a tremendous desire to know more about natural history. Father, as perhaps you could imagine, became quite frustrated with me at times, stating on one occasion that "You care for nothing but shooting, dogs and rat-catching, and you will be a disgrace to yourself and your family."⁴⁷

I shall admit that, after the passage of some one-hundred-plus years, I am somewhat detestably tired of seeing these words in print concerning my father's view of my future! I will be willing to place a wager with anyone out there, that two-out-of-three books that deal with my history and changes have that damnable quotation from my dear father.⁴⁸

Yes, I was interested in shooting and riding, but I was was also interested in nature and in insects. At Cambridge I was fortunate to take botany lectures from Professor of Botany and clergyman John Stevens Henslow (1796-1861), whose daughter (Frances) would eventually marry Sir Joseph Hooker in August 1851.⁴⁹

While at Cambridge I also read the work of the German naturalist Friedrich Humboldt (1769-1859) and his Personal Narrative and I began to learn Spanish and planned a trip to Tenerife, the largest of the Canary Islands, off the northwest coast of Africa.⁵⁰ Much later, in 1881, I would describe Baron von Humboldt as "the parent of a grand progeny of scientific travellers"⁵¹ since his works not only inspired me, abut also inspired Mr. Alfred Russel Wallace.

I therefore began my interests in natural history while a student at Cambridge and while there, it was Professor Henslow who persuaded me to become interested in Geology, after my disastrous Edinburgh experiences. Henslow also arranged for me to accompany the Cambridge University Professor of Geology Adam Sedgewick on a field trip through Wales during the Summer of 1831.⁵²

In January of 1831, at the ripe "old age" of twenty-one, I passed my examination for the BA (Cantab.) in Theology, Euclid, and the Classics from

⁴⁷ Julian Huxley and H.B.D. Kettlewell, 1965, Charles Darwin and His World, page 16.

⁴⁸ Ronald W. Clark, 1984, The Survival of Charles Darwin, page, 6.

⁴⁹ SW. B. Turrill, 1963, Joseph Dalton Hooker: Botanist, Explorer, and Administrator, page 99.

⁵⁰ Julian Huxley and H.B.D. Kettlewell, 1965, Charles Darwin and His World, page 17.

⁵¹ R. B. Freeman, 1978:, Charles Darwin: A Companion, page 168.

⁵² Leonard Engel, Leonard (Editor) 1962., Voyage of the Beagle (by Charles Darwin) [original in 1839] p. x.

Cambridge University and I had to make plans for myself. Whilst I did not graduate with Honors from Cambridge, more than forty years later (in 1877 to be exact) I was awarded an Honorary Doctorate in Laws from my Alma Mater as well as an M.D. from Leyden!⁵³ Not-at-all too shabby after being categorized as a potential "family disgrace" earlier in the century!!

While in Wales with Professor Sedgewick over the Summer of 1831, Professor Henslow had been invited by Captain Robert FitzRoy, of HM Royal Navy, to become the naturalist on board the HMS BEAGLE on a planned circumnavigation of the globe. Professor Henslow's wife did not wish him to partake of such an extensive voyage and Professor Henslow's brother-in-law, also a clergyman and a naturalist by the name of Leonard Jenyns was going to take Henslow's place, but at the last minute, he changed his mind. On the 24th of August 1831, Henslow wrote to tell me that he had informed Captain FitzRoy that I, Charles Darwin, was the most qualified individual to take the trip and I was recommended to become the volunteer naturalist (this meant without pay) on a world-wide research expedition, scheduled to leave England in that year of 1831.

The HMS BEAGLE did set sail from England on the 27th of December in 1831 and I was not to return to my own native soil for four years, nine months and two days, until the 2nd of October of 1836; on the 4th of October in 1836 I returned to Shrewsbury, and hence the occasion of this presentation some 154 years to the day of my arrival back with my family I had spent almost five years in sailing and gathering and recording information from various locations all over the globe. It was a magnificent trip.

An academic degree, combined with an interest in natural history, and a professorial recommendation, however, were almost not sufficient for me to embark upon the BEAGLE: my father was completely opposed and I would have followed his wishes not to go on the voyage of HMS BEAGLE had not uncle Jos Wedgewood interceded for me and convinced my father to allow me to go. The truth of the matter was that after my father stated his opposition to my embarking upon the BEAGLE, I did write to Professor Henslow on the 31st of August 1831, actually refusing the offer but on the very-next-day, Uncle Jos travelled thirty miles to visit Father and he convinced him that it would be wise for me to accept the position so on the following day I went off to see Henslow in Cambridge, and on the 5th of September 1831 I met with Captain FitzRoy in London.⁵⁴

When I finally met Captain FitzRoy in London on the 5th, I discovered that not only was my father opposed to my going on the BEAGLE, but Captain Robert FitzRoy, of that vessel, who was all of twenty-six years of age to my twenty-two years in 1831, almost caused me to stay behind as well: an amateur physiognomist, FitzRoy thought that the "shape of my nose" was too weak to take a lengthy sea voyage! I did take that voyage, but . . . perhaps I should not have.

⁵³ Bern Dibner, 1964 , Darwin of the Beagle, page 111.

⁵⁴ Charles Darwin's Autobiography: With his Notes and Letters Depicting the Growth of the ORIGIN OF SPECIES, edited by Sir Francis Darwin [1848-1925], 1950 edition, page 36.

Captain FitzRoy, incidentally was no simple Royal Navy Officer: how many sailors among you realize that it was Captain FitzRoy who gave us the expression "port" for mariners: "larboard" was the term used prior to our trip on HMS BEAGLE, but it was too easily confused with starboard! FitzRoy eventually was promoted to Rear-Admiral (1857) and he reached the rank of Vice-Admiral (1865); he also began a system of weather forecasting and storm warnings (a system that exists to this day in one form or another); he became head of HM Meteorological Office and from 1843-1845 he was the Governor of New Zealand, those islands that the British Empire claimed in the South Pacific (apparently so that France wouldn't get them). All-in-all, FitzRoy was an excellent captain and naval officer and in 1851 he was elected a Fellow of the Royal Society (and I was one of his co-sponsors).⁵⁵

After returning on the BEAGLE in 1836, as I say, in 1839 I married my dear sweet cousin Emma, and I never left England again. After residing briefly in London after our 1839 marriage we settled in Kent in 1842, where I would die 40 years later, in 1882.

Today, in 1990, with individuals so mobile in your society, and, indeed, mobile all across the globe, perhaps it is difficult to comprehend or the immobility that existed in my time; in the 19th century that I shared with millions of other people. This is why my personal trip, my five-year world-wide trip made such an impression on me, and began to provide me information about changes over time.

Please consider, if you will, there I was in 1831: a young man who, while I had made a previous trip to the continent proper in 1827 (accompanying my 1st cousin Joe Wedgewood and my sister Caroline⁵⁶), I was living on an island world which was relatively limited, where the highest mountain, if you dare to call it that, in the Scottish Highland barely exceeds 4,400 feet. Later in the 1830s, I would be climbing 12,000 feet into the Andes of South America⁵⁷ and I would write for the 23rd of April 1835 that:

"It was something more than enjoyment: I cannot express the delight which I felt at such a famous winding up of all my Geology in South America. I literally could hardly sleep at nights for thinking over my day's work. The scenery was so new & so majestic; everything at an elevation of 12,000 ft. bears so different an aspect from that in a lower country. I have seen many views more beautiful, but none with so strongly a character. To a Geologist also there are such manifest proofs of excessive violence; the strata of the highest pinnacles are tossed about like the crust of a broken pie."⁵⁸

⁵⁵ R. D. Keynes, editor, 1979, The Beagle Record: Selections from the Original Pictorial Records and Written Accounts of the Voyage of H.M.S. Beagle, pp. 7-8.

⁵⁶ R.B. Freeman, 1978, Charles Darwin: A Companion, pages 98 and 296.

⁵⁷ Bern Dibner, 1964 edition, Darwin of the Beagle, page 59.

⁵⁸ Ibid., pp. 116-117.

Perhaps I can best convey the "changes" from my 19th century to your 20th century by quoting from one of your 20th century historians who has written of the years at the end of my 19th century and the beginning of your 20th century. Barbara Tuchman wrote the following in 1966:

"...the industrial and scientific revolutions [of the 19th century] had transformed the world. Man had entered the Nineteenth Century using only his own and animal power, supplemented by that of wind and water, much as he had entered the Thirteenth, of, for that matter, the First."

"Much as we had entered the 13th century," or the first century, or the twelve-hundred to seventeen-hundred years in-between. Please consider those words. Tuchman continued about your century that mankind:

"entered the Twentieth with his capacities in transportation, communication, production, manufacturing and weaponry multiplied a thousandfold by the energy of machines. Industrial society gave man new powers and new scope...⁵⁹

My five-year voyage was the most exciting thing for me, my trip around the world: think - please think of how you have such a greater advantage than I did to travel - to go around the world. You can travel to the far corners of the globe - places that were exotic to me are as commonplace to you as . . . well, you can go around the world in days; in my time it was years!

In 1843, were I to consider a trip from England to Rome, Italy, I would have to allocate twenty-one days of my life-time to make that passage; by 1860, with the widespread introduction of railways, this was down to a "mere" 2 & 1/2 days! Now - hours! In 1860, a passage to North America from England by sailing vessel would take anywhere from two-to-eight weeks, but by 1889 the steamship had reduced it to a mere five days!⁶⁰

This is why my voyage of the BEAGLE, beginning at the age of 22 in 1831 was so exciting. The trip exposed me to many different things that I could never see in my immediate British environment and I was turned on by the world! Today, you can telephone Britain in a few minutes and you can get television pictures from around the world via satellite. I may be dead, but I do try to keep up with things!

In 1858, one year before my ORIGIN was first published, a simple 90 word telegraph message between your American President Buchanan and my Queen Victoria took 16 1/2 hours to cross the Atlantic via a newly-laid undersea cable. Sixteen & 1/2 hours for a ninety-word message. Incredible, but that was the best we could do then.

⁵⁹ B.W. Tuchman, 1966, pp. xvi-xvii, The Proud Tower: A Portrait of the World Before the War 1890-1914.

⁶⁰ Susan Schoenbaur Thurin, "Travel and Tourism" in Victorian Britain: An Encyclopedia. 1988, pp. 817-818.

But . . . enough of the "context" for the moment. You should get the picture of my times.

THE VOYAGE: 1831-1836

The BEAGLE was a wonderful vessel and we had numerous ports of call, most of which were on the continent of South America. Although I was somewhat miserably seasick for most days throughout the five-year voyage, the trip of the HMS BEAGLE gave me ample opportunity to collect various specimens from around the world and fill some twenty-four pocket notebooks with daily entries. I was also able to compose, and send off, some thirty-nine letters back to England.

While I personally viewed my voyage on HMS BEAGLE as one of the most important events of my lifetime, one of your 20th century authors has written, perhaps somewhat unsympathetically, that "except for the voyage of the BEAGLE... [my] adventure's were mostly intellectual" and my life "deliberately domestic."⁶¹ Well, although "intellectual adventures" may not have been to that individual's likings, one should possibly argue that "games of the mind" (or mind games or intellectual adventures) are some of the most exciting in the world. I enjoyed myself on the BEAGLE! And I encourage you to use your minds!!

The HMS BEAGLE was classified as a sloop-brig of the Royal Navy and she normally carried ten guns, although four were removed (in order to carry more stores) for our 1831-1836 voyage. (The guns, it should be pointed out, were rarely fired on our voyage so's not to disturb the twenty-two chronometers carried on board for navigational purposes!)

I had learned that the BEAGLE had just returned from a four-year voyage to South America, under the command of Captain FitzRoy, and was to be completely refurbished for our 1831 sailing. Equipped with over 6000 cases of vegetables, tinned meats, barrels of lime juice, medicines, and preservatives for specimens, we displaced more than 500 tons when we sailed in 1831: we also were carrying a total of 74 persons in a ninety-foot long/twenty-four foot wide vessel!⁶²

Incidentally, a fairly decent measure of the success of any leader is his, or her, ability to command the respect and allegiance of the individuals with whom he or she works; it must be pointed out, that fully two-thirds of the crew who had accompanied Captain FitzRoy on his previous exploratory voyage to South America in the years 1828-1830 had "signed-up" to accompany him, once again, on this current voyage. Although somewhat of a martinet, FitzRoy was a good Captain.

In addition to the crew of HMS BEAGLE, we also carried eight marines, an artist, and instrument maker, as well as three aborigines from Tierra del Fuego, who had been brought to England when the BEAGLE returned from that last expedition. These natives, as well as a missionary, were being transported out to that southernmost part

61 Philip Appleman, 1970, Darwin: A Norton Critical Edition, page xiii.

62 Miller & Van Loon, 1982, Darwin for Beginners, page 60.

of the continent of South America.⁶³ On his previous exploratory expedition to South America, in 1829, Captain FitzRoy saw fit to take four Fuegians as hostage back to England, and where one had died, the other three - Fuegia Basket, York Minister, and Jeremy Button were to be returned home. Whilst in England, Fuegia and Jeremy were married⁶⁴ and, it should be pointed out, that Captain FitzRoy "paid for their support and Christian education while they were in England."⁶⁵

Previously I had mentioned to you that I discovered that I was not the first choice of naturalist on the BEAGLE, considering that the position first had been offered to Professor Henslow (who declined) and then Professor Henslow's brother-in-law changed his mind about going on HMS BEAGLE. After my Uncle Jos had convinced my father to allow me to go, imagine my consternation when I finally met the good Captain FitzRoy in person on that 5th of September in 1831: it was at that time that I discovered that he wanted neither Henslow nor myself but preferred a personal friend to accompany him on the BEAGLE after all!

Fortunately, a few moments before my appointment with the Captain, his friend informed him that he was unable to leave his job for the lengthy voyage, and I had my interview! I obviously overcame the Captain's concerns with my nose, and we eventually departed England on the 27th of December 1831.⁶⁶

There is a small, or brief, parenthetical statement due here: one which should cause some of you to consider the value of the individual's role in anything, or everything! I have already mentioned that (#1) Professor Henslow was initially invited but (#2) his wife did not wish him to go and (#3), I had problems with my father until (#4) Uncle Jos had intervened on my behalf. Later, I was to learn the following, and please, please listen carefully on the role of the individual in all of this:

"...in London, FitzRoy had asked Captain Francis Beaufort, R.N., hydrographer to the navy, not for a geologist but for a naturalist to sail with him on his second voyage [to begin towards the end of 1831]. Beaufort passed on the request to his friend the Reverend George Peacock, later Lowndean Professor of Astronomy at Cambridge. Peacock first asked his naturalist friend Leonard Jenyns an Anglican clergyman, if he would take the post. But Jenyns (who later changed his name to Bloomfield), a close friend of Darwin's, held a living in Cambridgeshire and felt he could not abandon it for a voyage round the world. Peacock then passed on the request to Henslow. A number of other

⁶³ Leonard Engel (Editor) 1962., Voyage of the Beagle (by Charles Darwin) [original in 1839] p. xii.

⁶⁴ Julian Huxley and H.B.D. Kettlewell, 1965, Charles Darwin and His World, page 21 as well as Alan Moorehead, 1969, Darwin and The Beagle, pp. 38-39.

⁶⁵ Walter Karp, 1968, Charles Darwin And The Origin of Species page 29.

⁶⁶ Leonard Engel (Editor) 1962., Voyage of the Beagle (by Charles Darwin) [original in 1839] p. xi.

young men appear to have been approached and to have turned down the offer. ... Darwin [eventually] jumped at the offer passed on by Henslow."⁶⁷

From individual A-to-B-to-C-and eventually me, D!

And, as your 20th Century author, Stephen H. Gould has written, I really wasn't the "naturalist" that went aboard the BEAGLE in 1831! ⁶⁸ Gould pointed out that it was really the BEAGLE's surgeon, Robert McKormick, who originally held the official position as "naturalist" on-board the BEAGLE.

FitzRoy, it has turned out, wanted a travelling-companion for the voyage around the globe - a gentleman to accompany him, and I was to be the "gentleman naturalist" on board, with McKormick to be the official naturalist. Unfortunately, while on HMS BEAGLE, I had the Captain's ear on numerous occasions - I also had no navy duties to do - and in April of 1832, Mr. McKormack left the BEAGLE and was "invalided out" back to Britain; and I was then the naturalist on board HMS BEAGLE.

Captain FitzRoy, I am sorry to say, eventually came to deeply regret his decision to allow me to take part in the voyage of HMS BEAGLE. The Captain was a deeply evangelical and religious individual and a member of the conservative Tory party and while I still had religious feelings when I began the trip on the BEAGLE, I was a member of the more liberal Whigs. In general, the Tories "generally represented the conservative elements [in British society] especially the small rural landholders, while the Whigs tended to represent commercial interests."⁶⁹

The Whig party was opposed to slavery (which was abolished in 1833), wished for the extension of suffrage, and had major disagreements with the Tories; these disagreements, unfortunately, were reflected upon several personal occasions between the Captain and myself during the voyage! With his Evangelical beliefs, Captain FitzRoy was bringing back the Fuegians to spread the Christian word in South America; Captain FitzRoy was also convinced "that he would find scientific proof that the Book of Genesis was literally true" and he wanted a naturalist on board HMS BEAGLE for this purpose, as well as companionship.⁷⁰

With the passage of time, after our return on the BEAGLE and with my various publications, Captain FitzRoy gradually became obsessed with the idea that it he was responsible for my published views; he was so indignant of my 1859 publication of On The Origin of Species, that, when the first public debate concerning the 1859

⁶⁷ Ronald W. Clark. 1984, The Survival of Charles Darwin: A Biography of a Man and an Idea, pages 17-18.

⁶⁸ S.J. Gould, 1977, Ever Since Darwin: Reflections in Natural History, pages 28 - 31.

⁶⁹ Grugel, Lee E., 1979, Society and Religion During the Age of Industrialization: Christianity in Victorian England, page 8.

⁷⁰ Walter Karp, 1968, Charles Darwin and the Origin of Species, page 29.

publication was held at Oxford in 1860, FitzRoy, then an Admiral in the Royal Navy, appeared at the meeting and waved a Bible and shouted that he had warned Darwin "against holding views contrary to the word of God." FitzRoy, alas, committed suicide in 1865 by cutting his own throat.⁷¹

If I may, let me please read to you a nice capsule summary that a 20th Century author of yours made in 1964 concerning the times that I was living and thinking in:

"The political and social temper of English life at this time was conservative, in reaction to the excesses of the French Revolution [of 1789]. Biologists of Darwin's time [looking around - that's me], including the [Swiss-American] Louis Agassiz and Richard Owen, believed that different forms of life were created separately. Only a century before, geologists had believed that the earth was only four thousand years old and although geologists of Darwin's time, such as Charles Lyell, had proved by study of rock formations that the earth was older, there was no real notion of the truly vast age of the earth."⁷²

Sir Charles Lyell was indeed an amazing individual, and his geological words were an inspiration to me on my trip. What Lyell gave to me, and to other who would read him, was the gift of time; viewing the tremendous passages of time that had occurred on the planet.

I started out the voyage on HMS BEAGLE with his first volume of Principles of Geology (1830), presented to me by FitzRoy⁷³ and the second volume of his three-volume magnum opus reached me in Montevideo, South America, on the 26th of October 1832 and I continued to read it whilst on the BEAGLE.⁷⁴

On board the BEAGLE, beginning in 1831 when I was a young man of twenty-two years of age, I considered myself to be quite a religious individual and, indeed, I often bore the brunt of a good deal of laughter "from several of the officers for quoting the Bible as final authority on some moral point."⁷⁵ Over time, however, I had gradually come to see

"that the Old Testament from its manifest false history of the world, with the Tower of Babel, the rainbow as a sign, etc., etc., and from its attributing to God the feelings of a revengeful tyrant, was no more to be trusted than the sacred books of the Hindoos, or the beliefs of any barbarian."⁷⁶

71 Stanley E. Hyman, 1963, Darwin for Today, page 2.

72 Jay E. Greene, 1964, 100 Great Scientists, page. 246.

73 R.B. Freeman, 1978:, Charles Darwin: A Companion, page 194.

74 Gavin De Beer, 1964, Charles Darwin: Evolution by Natural Selection, page 41.

75 Bern Dibner, 1964 , Darwin of the Beagle, page 82.

76 Ibid., p. 82-83 and see Nora Barlow, 1958, The Autobiography of Charles Darwin 1809-1882, pp. 78-79 and 85.

I went out across the world and observed phenomena of nature that did not fit into any theories which I held and which were currently in vogue. Theories about geology, biology, and in passing religious theories, did not fit in with what I was in fact observing and recording in the world-wide expedition on the BEAGLE.

When we finally arrived at the Galapagos Islands on the 15th of September 1835, some 500 to 600 miles, on the equator, to the west of the current South American nation of Ecuador, I took notes and was eventually was to write that "nothing could be less inviting than the first appearance" of these islands that we were to cruise for a little more than a month. Galapagos means "tortoise" in Spanish and there are more than two dozen islands in the entire cluster, with their total combined land mass being approximately 2,800 square miles. The islands themselves are approximately 175 miles across, and there are really six major islands, with the largest one, Albemarle, being some sixty miles long..

Your own Butte County, as a point of comparison, is only some 1,646 square miles in its entirety. Tehama County, to the north of us is similar in size (2,953 square miles) as is Santa Barbara County (2,748 square miles) in the southern part of this magnificent state.

Perhaps the most vivid description of the islands themselves actually comes from your American Author Herman Melville, who stopped in the Galapagos on the whaler ACUSHNET, shortly after the visit of the BEAGLE. Melville wrote:

"Take five-and-twenty heaps of cinders dumped here and there in an outside city lot--imagine some of them magnified into mountains, and the vacant lot the sea; and you will have a fit idea of the general aspect of the Encantadas, or Enchanted Isles. A group of rather extinct volcanoes than of isles; looking much as the world at large might, after a penal conflagration."⁷⁷

Quite a dramatic description, but a quite accurate and fascinating one. We stayed a month and we gathered specimens of all sorts of life. Tortoises that weighed up to 500 pounds, as well as iguanas, and lizards that abounded on all of the islands-- and a variety of small finch.

Let me read to you a statement made by a 20th century author, Sir Nigel Calder; and I like to read this, because even though I was a fair naturalist, it is quite clear that the facts of nature "do not speak for themselves" for someone has to do the interpreting.

In a 1973 publication, Sir Nigel wrote of a 1835 meeting that we had in the Galapagos Islands with Mr. Lawson, the Englishman who was then the Vice-Governor of that group:

"When the Vice-Governor remarked that he could tell from which island any tortoise had been brought, Darwin pricked up his ears. **HE HAD BEEN CARELESSLY MIXING UP HIS SPECIMENS FROM DIFFERENT ISLANDS, NEVER DREAMING THAT THE ISLANDS WOULD HAVE BEEN**

⁷⁷ Nigel Calder, 1973, The Life Game: Evolution and the New Biology, page 44.

'DIFFERENTLY TENANTED'; he quickly mended his way [Calder continued]. He examined the mockingbirds collected by himself and his shipmates, and FOUND TO HIS ASTONISHMENT THAT ALL THE BIRDS FROM ONE ISLAND BELONGED TO ONE SPECIES AND ALL FROM ANOTHER TO A DIFFERENT SPECIES. BUT HE HAD HOPELESSLY MUDDLED MOST OF HIS SPECIMENS OF THE FINCHES THAT WERE TO MAKE THE GALAPAGOS AND HIMSELF JOINTLY FAMOUS. [All STRESS added.]

"BUT HE HAD HOPELESS MUDDLED MOST OF HIS SPECIMENS OF THE FINCHES THAT WERE TO MAKE THE GALAPAGOS AND HIMSELF JOINTLY FAMOUS."

Oh yes, what a mess that was! But who would have thought? Sir Nigel continues in an excellent vein:

"Who can blame him? They [the finches] are small birds, the males being black and the females brown. When you glimpse them flitting among the thirsty trees of the Galapagos it is hard to acknowledge the impact such modest birds had on the human mind and its religious beliefs."⁷⁸

We departed the Galapagos and headed across the Pacific Ocean to Australia, thence across the Indian Ocean, and eventually back to England, and the "mixed-up finches" were handed over to John Gould, an ornithologist, or specialist in birds. It was Mr. Gould who confirmed a "perfect gradation in the size of the beaks in the different species" for there were some birds with massive beaks, like nutcrackers, while there were other finches with beaks so delicate, they could be used as tweezers; and there were many forms of beaks which were intermediate to these. I wrote in the first published account on the voyage of the BEAGLE in 1839:

"Seeing this gradation and diversity of structure in one small intimately related group of birds, one might really fancy that from an original paucity of birds in this archipelago, one species had been taken and modified for different ends."⁷⁹

Towards the end of the voyage of the BEAGLE, even while still at sea, I began to question the fixity of species that was then prevalent in biological thought and I wrote:

"When I recollect the fact, that from the form of the body, shape of scale, and general size, the Spaniards can at once pronounce from which Island any tortoise may have been brought; when I see these Islands in sight of each other and possessed of but a scanty stock of animals, tenanted by these birds but slightly differing in structure and filling the same place in Nature, I must suspect they are only varieties.

⁷⁸ *Ibid.*, page 45-46.

⁷⁹ Leonard Engel (Editor) 1962, Voyage of the Beagle (by Charles Darwin) [original in 1839] page 381.

The only fact of a similar kind of which I am aware is the constant asserted difference between the wolf-like Fox of East and West Falkland Islands. If there is the slightest foundation for these remarks, the Zoology of Archipelagoes will be well worth examining; **FOR SUCH FACTS WOULD UNDERMINE THE STABILITY OF SPECIES [STRESS ADDED].**⁸⁰

The non-fixity of species, and a "fancy" about different tenanted islands - these all continued to nag me and within two years of my return to England in 1836, I had begun to take detailed and copious notes on the transmutation of species.

Even though I was struck by the variety of life forms in the Galapagos, and this contributed to my thinking about "changes" in species, not everyone sees the same things: Louis Aggasiz (1807-1873), the distinguished Swiss-American scientist, specializing in ichthyology and geology, was "without a doubt, the greatest and most influential naturalist of nineteenth-century America" according to your famous 20th century naturalist, Stephen Jay Gould.⁸¹ Gould has the following to say about Aggasiz in a 1983 publication:

"A Swiss by birth, he [Aggasiz] was the first great European theorist in biology to make America his home. He had charm, wit, and connections aplenty, and he took the Boston Brahmins by storm. He was an intimate of Emerson, Longfellow, and anyone who really mattered in America's most patrician town. He published and raised money with equal zeal and virtually established natural history as a professional discipline in America; indeed [Gould continues], I am writing this article in the great museum [at Harvard University] that he built."⁸²

Gould points out, however, that brilliant as Aggasiz was, he had a certain way of viewing the world and in June of 1872, thirty-three years after my BEAGLE publication, and thirteen years after the first edition of ORIGINS, Aggasiz made a scientific visit to the Galapagos Islands, seeing the same natural phenomena that I observed more than forty-years earlier in the 1830s.

I saw nature and change and thought about it; Aggasiz saw nature and stability - and, I guess, thought about it in his own way: Aggasiz did not see change over time and he did not see natural selection.

Although Aggasiz was to die shortly after his visit to the Galapagos, his 1860 remarks on my ORIGINS was still probably his opinion in 1872: "I shall therefore consider the transmutation theory [of Darwin] as a scientific mistake, untrue in its facts, unscientific in its method, and mischievous in its tendency."⁸³

⁸⁰ Gavin De Beer, 1964, Charles Darwin: Evolution by Natural Selection, page 82.

⁸¹ Stephen Jay Gould, 1983, Hen's Teeth and Horse's Toes: Further Reflections in Natural History, page 108.

⁸² Ibid.

⁸³ R. B. Freeman, 1978:, Charles Darwin: A Companion, page 18.

Facts do not speak for themselves, and as the 20th Century Historian Arnold J. Toynbee has written:

"Facts are not really like boulders that have been detached and shaped and deposited exclusively by the play of forces of non-human nature. They are like flaked and chipped flints, hewn stones, bricks or briquettes. Human action has had a hand in making them what they are, and they would not be what they are if this action had not taken place. ... Facts are, in truth, exactly what is meant by the Latin word facta from which the English word is derived. They are 'things that have been made'⁸⁴

THE IN-BETWEEN YEARS: 1836 TO 1858

I returned back to England on the 2nd of October 1836 and went to Shrewsbury on 4 October 1836, 154 years ago this day. I settled in, proposed, married, and eventually departed for London. My dear sweet Emma wrote that when I was looking for a house to rent for us in London over this period of time, that "it is as well that I am coming to look after you, my poor old man" (and I was all of 27), "for it is quite evident that you are on the verge of insanity" and I, who had circumnavigated the globe, was threatened with an advertisement by Emma which would state: "Lost in the vicinity of Bloomsbury, a tall thin gentleman quite harmless."⁸⁵

On the 16th of February 1838 I was appointed Secretary of the Geological Society of London, a position I held until my health was too poor to allow me to go on any further expeditions. My last geology excursion was in 1842, when I went to Wales to observe the evidence of glacial action.⁸⁶

There were births and deaths for Emma and I but, or and, we eventually left the city. Several publications resulted from those in-between years of 1836 to 1859, and the most important one was probably the joint paper in 1858 that I did with Alfred Russel Wallace (1823-1913) entitled "On the tendency of species to form varieties: and on the perpetuation of varieties and species by natural means of selection" in The Linnean Society Papers. Wallace's paper was entitled "On the Tendency of Varieties to Depart Indefinitely From the Original Type."

Neither Wallace nor myself were present at the meeting, Wallace was still in Malaysia and I, unfortunately, was in the village of Down, where our infant child had

⁸⁴ Arnold J. Toynbee, A Study of History: Reconsiderations, Volume 12, 1964: 250.

⁸⁵ Edna Healey, 1986, Wives of Fame: Mary Livingstone, Jenny Marx, Emma Darwin, page 155.

⁸⁶ Gavin De Beer, 1964, Charles Darwin: Evolution by Natural Selection, page 109 and page 117.

just died from scarlet fever which had broken out in the village.⁸⁷ The joint papers were presented by Sir Charles Lyell and Sir Joseph Hooker and actually read by the Secretary to the assembled society.

In addition to this brief paper, there were several other major works which were published which seemed to demonstrate to the public (as well as my scientific colleagues) that I was in fact "an accurate, thorough, and reliable naturalist" and I was also a "descriptive biologist of great finesse, capable also in experimental inquiry."⁸⁸ Publications that came out during these years included my travels on HMS BEAGLE (in 1839), The Structure and Distribution of Coral Reefs (1842), Geological Observations on the Volcanic Islands (1844), as well as Geological observations on South America (1846).

It should be pointed out that as I have mentioned that my 1859 ORIGINS has changed over time, my first 1839 HMS BEAGLE description actually bore the somewhat ponderous (and appropriately 19th Century) title of: Narrative of the Surveying Voyage of His Majesty's Ships Adventure and Beagle. Between the years 1826 and 1836. Describing Their Examination of the Southern Shores of South America. And the Beagle's Circumnavigation of the Globe. Vol. III. Journal and Remarks. 1832-1836. In the 1845 edition, this became Journal of Researches and-so-forth, and later editions saw other permutations such as Naturalists's Voyage Round the World; eventually the book has become simply The Voyage of the Beagle.

In July of 1837, I opened my first notebook (which was to eventually culminate in ORIGINS in 1859) and started gathering all of the facts that I could on variations in plants and animals, both under domestication and existing in the wilds of nature. By 1844 I had enlarged my notes into a sketch of the conclusions which I thought probable and those notes and research resulted in the 1859 ORIGINS.⁸⁹

Incidentally, also in England in 1844, John Henry Newman began to write down his general views which were to greatly influence the Christian world: on July 14 of 1844, the individual to be later known as Cardinal Newman, who was to publish his Apologia pro Vita Sua (in 1864)...⁹⁰ and Robert Chambers (1802-1883) was to publish, anonymously at first, Vestiges of the Natural History of Creation. "which

87 Bert James Loewenberg, 1959, Darwin, Wallace and the Theory of Natural Selection, page.31.

88 Charles C. Gillispie, "Charles Darwin" in International Encyclopedia of the Social Science, edited by David L. Sills, Vol. 4, , page. 7.

89 Charles Darwin, 1859, On The Origin... [1872 edition] page 27.

90 Jaroslav Pelican, "Darwin's Legacy: Emanation, Evolution, and Development" in Darwin's Legacy: Nobel Conference XVIII Gustavus Adolphus College, St. Peter, Minnesota, Edited by Charles L. Hamrum, pp. 176-93, page 77.

played a major role in introducing the British reading public to the concept of evolution."⁹¹

The "true" insight into my research, however, came in October of 1838 and it has been well-documented by many of my chroniclers and a statement from Louis Pasteur (1822-1895) is appropriate: "In the field of observation, chance only favors those who are prepared."

In October of 1838, "reading a work--just for amusement," I found my theory. I was reading a particular essay dealing with population! As I wrote in my AUTOBIOGRAPHY:

"In October, 1838, that is fifteen months after I had begun my systematic enquiry, I happened to read for amusement Malthus on Population, and being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that **UNDER THESE CIRCUMSTANCES FAVOURABLE VARIATIONS WOULD TEND TO BE PRESERVED, AND UNFAVORABLE ONES TO BE DESTROYED.** The result of this would be the formation of a new species. **HERE THEN I HAD AT LAST GOT A THEORY BY WHICH TO WORK....** [all STRESS added].⁹²

In 1798, at the age of 36, the English Economist Robert Malthus (1766-1834), a 1788 graduate of Cambridge and a Church of England clergyman, saw fit to publish (anonymously) An Essay on the Principles of Population.

It was, and it can be stated no other way, a gloomy little essay, for what Malthus stated was that the growth in a population would always exceed the growth in the available food supply and that human numbers would have to be kept down by war, disease, plagues, crime, famine, or the like. The initial 1798 publication of Malthus' book was greeted by a storm of outrage, and in the subsequent and enlarged edition of 1803, its tone was slightly modified--but it was, to say the least, a pessimistic item.

One must be sure to look at that 1798 publication, and their necessary revisions. All told, Malthus went through several revisions, within the context of the times, and it was probably the 1826 edition that I was most familiar with (since this is the annotated edition which, to this day, is preserved in the Cambridge University Library).⁹³

⁹¹ Diana Postlethwaite, "Robert Chambers (1802-1871) in Sally Mitchell, (Editor), 1988, Victorian Britain: An Encyclopedia, page 130.

⁹² Charles Darwin's Autobiography: With his Notes and Letters Depicting the Growth of the ORIGIN OF SPECIES, edited by Sir Francis Darwin [1848-1925], 1950 edition, page 54.

⁹³ R. Keynes, "Malthus and Biological Equilibria" in Malthus Past and Present, edited by Dupaquier et al. (pp. 359-364), page 360.

You must realize that the Reverend Malthus was observing the unbridled checks of the Industrial Revolution in England: technology was upon him, population was increasing, and there were problems in the lands.. The population for all of Europe, as an example, was but 140 million in the year 1750, and had doubled to 266 Million a century later; in London of 1750, two-out-of-every three children born that year, did not survive to their fifth birthday!

Malthus was also writing in reaction to some of the authors across the Channel: indulge me please, if you will, in a bit of intellectual history. I shall not go back to the publication of the African Saint Augustine (354 A.D. -430 A.D.) and his celebrated c. 410 A.D. publication of The City of God, written to maintain the faith of Christians after the sack of Rome by the Goths, but I shall briefly mention three major French authors of the 19th century which played a role in Malthus' work - and eventually my work, and the work of Alfred Russel Wallace (1823-1913), who was ALSO inspired by a reading of Malthus whilst employed as a naturalist in the Malay states in the 1850s.

Earlier today I mentioned the importance of reading: I was inspired by Malthus; Wallace was inspired by Malthus; and Malthus was inspired by the publication of Condorcet (1743-1794) who wrote a book entitled Outline of the Intellectual Progress of Mankind, published one year after his death in 1795. Now this, you can hear and see, is a very "positive" upbeat title; Condorcet, along with Turgot (1727-1781) and Montesquieu (1689-1755), and perhaps Auguste Comte (1798-1857), were perhaps the most influential individuals of their times and, perhaps, to your times.

In 1734, Montesquieu wrote Considerations of the Causes of the grandeur & the Decadence of the Romans and in 1748 he wrote on The Spirit of the Laws. In the first he gave us ideas on failure and development of a mighty empire, and in the second he spoke to the importance of laws for all humanity--a mighty forerunner, or later discovered/described as "cultural relativity" 20th century anthropologists.

In 1750, Turgot initiated the first steps to set of "stages" of progressive cultural development, beginning with the hunting stage, which was followed by pastoral life, thence to agriculture and the formation of government. In 1794 Condorcet was writing on the Outline of the Intellectual Progress of Mankind and the fact that mankind could discover the laws of social life and develop social improvements according to these laws.⁹⁴ Condorcet was hiding from the French reign of terror and it was a very optimistic book, which was not M. Condorcet's fate: he was caught and died in a police cell.⁹⁵

Malthus had had enough of this positive approach of the French thinkers! Malthus saw population over time increasing at a geometric rate: 1, 2, 4, 8, 16, 32, etc. and food increasing over that same period of time at an arithmetic rate: 1, 2, 3, 4, 5, and this is what I began to think about when I opened that first notebook for the ORIGIN in 1838.

⁹⁴ Sidney Pollard, 1968, The Idea of Progress: History and Society, pp. 88-94.

⁹⁵ Frank E. Manuel, 1962, The Prophets of Paris, page 59.

There was a struggle, and if it must be admitted, it was a concept -- this "struggle" -- that had appeared in other writings that I was familiar with: Sir Charles Lyell's Principles of Geology had accompanied me on the BEAGLE, and in it I could read, or anyone of the times could read, the following:

"In the universal struggle for existence, the right of the strongest usually prevails; and the strength and durability of a race depends mainly on its prolificness, in which hybrids are acknowledged to be deficient."⁹⁶

In addition to research in geology and the natural sciences which was occurring in the 1830s and 1840s, which I was well aware of, and which certainly had a bearing on my times, events were occurring in what could be called "strictly non-scientific matters" which influenced my public and private reception.

In the field of religious writing there appeared in Germany in 1835-1836 Leben Jesu by D.F. Strauss, translated into English in 1846 by the gifted author George Eliot. Her translation, entitled The Life of Jesus, had a great impact on the times, for Strauss "treated the gospels as myth rather than history"⁹⁷ Thus, in addition to the "support" received from Malthus' ideas on the struggle amongst populations, and Lyell's ideas on gradual development in geology, the authority of the Christian Bible itself was being challenged by independent biblical scholars. Strauss

"portrayed Jesus as a remarkable man who happened to satisfy the messianic hopes of poor and discontented Jews. His life and deeds as recorded in the New Testament, Strauss contended, did not portray the actual, historical Jesus but a mythical Christ whose nature and supernatural powers had been invented by those who passionately desired a Messiah. While Strauss did not actually state that the New Testament was untrue, he did claim that it should not be read as a factual record of events/ Miracles did not happen in the nineteenth century and neither could they have taken place in the first century."⁹⁸

ON THE ORIGIN: 1859

The 1937 Hungarian-American Nobel Prize winner for Physiology/Medicine, Albert Szent-Gyorgyi, stated that a scientist should "see what everybody else has seen and then think what nobody has thought" and two authors in this century have honored me by writing that "nobody did this better than Charles Darwin, who first

⁹⁶ Cited by R. Keynes, "Malthus and Biological Equilibria" in Malthus Past and Present, edited by Dupaquier et al. (pp. 359-364), page 360.

⁹⁷ Robert Langbaum (Editor), 1967, The Victorian Age: Essays in History and in Social and Literary Criticism, page 68.

⁹⁸ Lee E. Guegel, 1979, Society and Religion During the Age of Industrialization: Christianity in Victorian England, page 62.

realized that the evolution of life took place by Natural Selection."⁹⁹ While this might, perhaps, be construed as a fatuous statement to read to you, for numerous other individuals had seen many similar things that I saw in my travels, their statement does have a certain nice conciseness to it: "see what everybody else has seen and then think what nobody has thought."

Change is definitely the name of the game when it comes to an understanding of my works and an understanding of life itself: change through time. In 1859 I published the first edition of On The Origin of Species by Means of natural Selection or the Preservation of Favoured Races in the Struggle for Life and please note the following changes which took place over the SIX editions of the same volume, from 1859 until 1872:

SENTENCES IN THE VARIOUS 'ORIGIN' VOLUMES:

Year	Edition	Copies	OUT	Re-Done	Added	Total	% Change
1859	1st	1,250				3,878	
1860	2nd	3,000	9	483	30	3,899	7%
1861	3rd	2,000	33	617	266	4,132	14%
1866	4th	1,500	36	1,073	435	4,531	21%
1869	5th	2,000	178	1,770	227	4,580	29%
1872	6th	3,000	63	1,669	571	5,088	-21-29%

In the edition for 1869, for example, I utilized the somewhat famous phrase of "Survival of the Fittest" (taken from Herbert Spencer [1820-1903]) and by the edition of 1872, and all subsequent reprints from that edition, the word "On" was dropped from the title. In 1859, I wrote the following about "man" in the volume:

"In the distant future I see open fields for far more important researches. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation. Light will be thrown on the origin of man and his history" (page 448).

By the 6th edition of 1872 I had re-written the above passage as the following:

"In the future I see open fields for far more important researches. Psychology will be securely based on the foundation already well laid by Mr. Herbert Spencer, that of the necessary acquirement of each mental power and capacity by gradation. Much light will be thrown on the origin of man and his history."

What made ORIGINS of 1859 such a controversial (and popular) publication? I did not write of mankind, but what I did was to show, or demonstrate, and with an immense amount of data that every educated person - and layman could comprehend - was that while human beings consciously practise domestic selection, nature (in essence) practises natural selection.

⁹⁹ J. Livingston and L. Sinclair, 1967, Darwin and the Galapagos, n.p.

Natural selection meant that, means that, the population which is best adapted to the environment, be it bird or plant or domesticated horse or cow or pig, survives. Those which survive pass on their characteristics, remember, I was yet to know about genes, those which survive pass on their characteristics to the next generation, and so it goes.

What do I finally believe in concerning a "Creator" that I mentioned in the 6th and final edition of ORIGINS? If you will read my words pertaining to the "Creator" and my closing words in that volume, you will learn that this is what I wrote:

"Thus, from the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows. There is a grandeur in this view of life, with its several powers, having been originally breathed by the Creator [STRESS added] into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved."

In my autobiography of 1876, I wrote that at the time of ORIGINS I could be viewed as a theist, or one with the conviction of the existence of God but in 1876 "it has very gradually with many fluctuations become weaker. ... I cannot pretend to throw the least light on such abstruse problems [as the existence of God and]. The mystery of the beginning of all things is impossible by us; and I for one must be content to remain an agnostic."¹⁰⁰ Please note, I was not an atheist, but an agnostic, a term coined by my good friend, Thomas Huxley in 1869. An agnostic is defined (if I may read the following to you) as:

"a person who believes that the human mind cannot know whether there is a God or an ultimate cause, or anything beyond material phenomena."¹⁰¹

My agnostic philosophical position, however, while I did accept it in my lifetime, was a bit of a problem for my dear sweet wife Emma, who maintained a deep orthodox religious conviction throughout her life and my agnostic beliefs did "make her sad" and uneasy for my sake.¹⁰²

Please remember, that I was not lacking in faith; the faith that I held, however, was that of a 19th century scientist. There are some things, therefore, which are simply not knowable. I was certainly not an atheist who rejected all religious beliefs and denied the existence of God; I was, however, unwilling to accept supernatural explanations for the phenomena around me; perhaps, afterall, I should

¹⁰⁰ Stanley E. Hyman, 1963, Darwin for Today, page 371.

¹⁰¹ Victoria Neufeldt and David B. Guralnik, Editors, 1988, Webster's New World Dictionary of American English, Third College Edition, page 26.

¹⁰² Gavin De Beer, 1964, Charles Darwin: Evolution by Natural Selection, page. 269.

have accepted a philosophical position from elsewhere in the world for I am told that a Shinto saying is "belief is for mortals, proof is for the Gods."¹⁰³

Thomas Henry Huxley, described at times by some as "Darwin's Bulldog," was my friend and colleague. Just before ORIGINS was published, Huxley penned me a note stating "I think you have demonstrated a true cause for the production of species" and I was greatly relieved when I received his utmost approval.¹⁰⁴

As you well know, because of my illness I was essentially confined to Down and really did not take part in the great public and scientific debate that came about with the publication of ORIGINS. Late in June of 1860, the British Association for the Advancement of Science held its annual meeting at Oxford University. At the meeting, in addition to numerous scholarly papers, Professor Daubney, from Botany, presented a paper with the title of "On the Final Causes of the Sexuality of Plants, With Particular Reference to Mr. Darwin's Work on Origin of Species" and it was well-received, but a debate was due.

Mr. Huxley was in attendance at the meetings and was all set to depart, but he was encouraged by Robert Chambers, 1844 author of The Vestiges of Creation, to stay around until Saturday, June 30th, when a paper was to be presented by Dr. Draper (from New York in your United States) entitled "On the Intellectual Development of Europe Considered With Reference to the Views of Mr. Darwin." Described as being "duly and dully delivered" to an audience of over 700 individuals in the West Room of the Oxford Museum, the paper was politely received - but more discussion was desired. In attendance in this crowd of 700, in addition to my colleague and friend Thomas Huxley, was none other than the Reverend Samuel Wilberforce (1805-1873), who was the Bishop of Oxford.

Now the Reverend Wilberforce was a Fellow of the Royal Society and a knowledgeable individual in his own right. He reviewed ORIGINS for the London Quarterly Review in 1860, and while he began the review by writing about my scientific attainments, my insight and carefulness as an observer, and my clear and lively writing style, he was eventually to describe the 1859 ORIGINS as "the most illogical book ever written" and on another occasion "the most unphilosophical work he ever read."^{105,106}

On the 30th of June, after Dr. Draper's presentation, the Reverend Samuel Wilberforce was invited to speak to the crowd and for thirty minutes he spoke his opinion about the foolishness of my approach; "Soapy Sam" as he was called - because of his ability to speak so clearly - was being well-received by the crowd but . . .

¹⁰³ Beresford Osborne, 1979, Bushido, page 145.

¹⁰⁴ Cyril Bilby, 1972, Scientist Extraordinary: The Life and Scientific Work of Thomas Henry Huxley 1825-1895, page 38.

¹⁰⁵ R. B. Freeman, 1978, Charles Darwin: A Companion, page 303.

¹⁰⁶ Also see Samuel Wilberforce, "Review" in Darwinism: Critical Reviews... Edited by Daniel N. Robinson, page 93.

somewhat unfortunately for the good Prelate, he ended his presentation with a fatal error, by making a personal inquiry into Huxley's ancestry: Wilberforce turned to Huxley, and with apparent smiling insolence he asked "was it through his grandfather or his grandmother that he [Huxley] claimed descent from a monkey?"¹⁰⁷

Now an observer present at that meeting - not Huxley himself - described that Reverend Wilberforce spoke for his thirty minutes "with inimitable spirit, emptiness and unfairness"¹⁰⁸ and when Huxley heard Wilberforce's insolent question, he turned to his companion next to him and stated "The Lord hath delivered him into mine hands." Thomas waited until he was invited to speak, and he rose and gave his statement. Nine weeks after the event, Thomas wrote to a colleague:

"It was great fun--I had said that I could not see what difference it would make to my moral responsibility if I had an ape for a grandfather, and saponaceous Samuel thought it was a fine opportunity for chaffing a savan. However he performed the operation vulgarly & I determined to punish him--partly on that account & partly because he talked pretentious nonsense. So when I got up I spoke pretty much to the effect--that I had listened with great attention to the Lord Bishop's speech but had been unable to discover either a new fact or a new argument in it--except indeed, the question raised as to my personal predilections in the matter of ancestry--that it would not have occurred to me to bring forward such a topic as that for discussion myself, but that I was quite ready to meet the Right Rev. prelate even on that ground--

If then, said I, the question is put to me would I rather have a miserable ape for a grandfather or a man highly endowed by nature and possessed of great means & influence & yet who employs those faculties & that influence for the mere purpose of introducing ridicule into a grave scientific discussion--I unhesitatingly affirm my preference for the ape.

Whereupon there was inextinguishable laughter among the people--and they listened to the rest of my argument with the greatest of attention. Lubbock & Hooker spoke after me with great force"¹⁰⁹

Thomas was well-received and the public debate on evolution of species was allowed to go on for years. It should be pointed out, however, that not everyone was pleased with Thomas' remarks for it is reported that

"when the Bishop of Worcester told his wife what had happened [at Oxford that day], she is said...to have replied, 'Descended from the apes! My dear, let us

107 Ashley Montagu, Editor, Frontiers of Anthropology, 1974, page 158.

108 Cyril Bibby, 1972, Scientist Extraordinary: The Life and Scientific Work of Thomas Henry Huxley 1825-189, page 40.

109 Ashley Montagu, Editor, Frontiers of Anthropology, 1974, pp. 158-159.

hope that it is not true, but if it is, let us pray that it will not become generally known."¹¹⁰

Change was the name of the game in ORIGINS; change as well as the accumulation of data. Earlier I had mentioned that some 25,500 copies of ORIGINS had been published in Britain by the time of my death in 1882. Elsewhere, by at least 1876, ORIGINS had been:

"translated into almost every European tongue, even into such languages as Spanish, Bohemian, Polish, and Russian. ... Even an essay in Hebrew has appeared on it, showing that the theory is contained in the Old Testament! The reviews were very numerous; for a time I collected all that appeared on the ORIGIN and on my related books, and these amount (excluding newspaper reviews) to two hundred and sixty-five; but after a time I gave up the attempt in despair. ... The success of the ORIGIN may [if I may be so bold], I think, be attributed in large to my having long before written two condensed sketches and to my finally having abstracted a much larger manuscript, which was itself an abstract. By this means I was enabled to select the more striking facts and conclusions. I had also, during many years, followed a golden rule, namely, that whenever a published fact, a new observation, or thought came across me which was opposed to my general results, to make a memorandum of it without fault and at once; for I had found by experience that such facts and thoughts were far more apt to escape from the memory than favorable ones. Owing to this habit, very few objections were raised against my views which I had not at least noticed and attempted to answer."¹¹¹

What would I perhaps do differently today were I to publish ORIGINS right now? First, what would I do the same? Travel and get wide experiences are a must. I would also utilize a word processor!

For the biological world, or the world of natural history, I would stress the importance of thinking in terms of populations, in thinking in terms of the range of variation within a given population. I would continue to stress the environment and adaptation to the environment.

As a 20th century anthropologist once remarked: "The unit of survival [or adaptation I should like to add] is organism plus environment. We are learning by bitter experience that the organism which destroys its environment destroys itself."¹¹²

I would do some of the things differently and I would do some of the things the same: but I would obviously and definitely incorporate information on genetics and Deoxyribonucleic (or DNA) research into a 1990 ORIGINS. As Loren Eisely pointed out

¹¹⁰ Cyril Bibby, Cyril, 1972, Scientist Extraordinary: The Life and Scientific Work of Thomas Henry Huxley 1825-1895, page 41.

¹¹¹ Stanley E. Hyman, 1963, Darwin for Today, pp. 389-390.

¹¹² Gregory Bateson, Steps to an Ecology of Mind, 1972: 483.

in an intriguing chapter title on the 1865 work of Gregor Mendel, there was, in my time, "The Priest Who Held The Key To Evolution" but that is, in fact, another story!¹¹³

Trying to summarize pre-1859 and post-1859 opinion of biology, someone has created the following chart which is worth reproducing:

1859

UNITS

Before	After
Types--original, immutable and static	Breeding populations, variable and changing

VARIATION

Deviations from type--accidental, or pathological	Genetic variation is basis for anomalous, change and adaptation by natural selection (differential reproduction)
---	--

INHERITANCE

Blending inheritance	Particulate inheritance (Mendelian genetics)
----------------------	--

RELATIONSHIP OF UNITS

Types arrayed hierarchically on a unilinear scale of perfection, that is, "Great Chain of Being."	Variable populations, diverging multidimensionally
---	--

TIME DEPTH

Recent creation of world	Geological eras in millions of years. ¹¹⁴
--------------------------	--

One of your 20th century jazz musicians made the following statement which is interesting to consider - Charlie Mingus said "Anybody can make the simple complicated. Creativity is making the complicated simple." I am not saying that I was creative - other have already stated that - but I came up with a simple organizing principle to organize the data: evolution.

COMMENTS AND CONCLUDING REMARKS

So, to begin summarizing the statements of a man dead these 108 years. Again, I was born in 1809 and one of your 20th century chroniclers has written that "by

¹¹³ Loren Eiseley, 1958, Darwin's Century: Evolution and the Men Who Discovered It, pp. 205- 231.

¹¹⁴ Human Variations and origins: An Introduction to Human Biology and Evolution (1967) edited by W.S. Laughlin & R.H. Osborne, page 5.

curious coincidence, the year 1809 witnessed the births of more extraordinary leaders than perhaps any other single year in history."¹¹⁵ I perceive that apparently I was a leader, called the "Newton of Biology" by this individual.

Also in the year of 1809, the aforementioned President Lincoln was born, as well Tennyson, your American poet Edgar Allan Poe, and the noted jurist Oliver Wendell Holmes, as well as the poets Elizabeth Barret Browning and Edward Fitzgerald, and the composer Felix Mendelssohn! In that year of 1809, the English political writer Thomas Paine died, the 1776 author of Common Sense, and Ludwig Beethoven finished his Piano Concerto No. 5 in E-Flat Major, Opus 73, known as "The Emperor" concertos.¹¹⁶

There have been those who have stated that I greatly influenced those around me, and brought forth ideas which were to revolutionize the times from 1859 until this time. On the other hand, there are those who state that I was but a product of the times, and that "evolutionary ideas" were in the air - much like the vapors or cold germs. Earlier I had mentioned a 20th century author who declared that the "political and social temper of English life" in my times was conservative.¹¹⁷

If the truth be known, it was obviously a combination of many factors. As the 20th century anthropologist, Ashley Montagu, from Princeton University, in your state of New Jersey has stated it, I grew to manhood "in a period during which wars seemed to be the natural concomitant of living."¹¹⁸

In my youth, Britain was warring with France in Portugal and Spain (1808-1814); Napoleon had been defeated at Waterloo, Belgium, in 1815; there were wars in the Middle East and Far East (Singapore, Persia, China), wars in the Crimea (1854-1859), fighting in India, your American Civil War of 1861-1865, and so on; in short, some could, and have, successfully argued that it was a miserable time! The industrial revolution was upon us in my 19th century, and it could be viewed by some as "the best of times, it was the worst of times" as the good Charles Dickens wrote in his 1859 celebrated Tale of Two Cities, dealing with the times (of course) of the previous century.

"By the early years of Queen Victoria, the impact of the growing industrial State on the people could no longer be ignored. Information was now available in sufficient quality for the true state of [British and eventually world] affairs to be realised. because it was now becoming possible for facts and ideas to be exchanged with ease and rapidity over wide areas. Mechanical power enabled men to produce the printed word in unlimited quality. The development and improvement of road-travel by coach and chaise reached its zenith with the accession of the young Queen [in 1837], only to be superseded

115 Robert B. Downs, Books That Changed the World, 1956: 162

116 Bernard Grun, 1963, The Timetables of History. n.p.

117 Greene, Jay E., 1964, 100 Great Scientists, page 246.

118 Ashley Montagu, 1952, Darwin: Competition & Cooperation, page 19.

almost at once by the still more rapid and efficient railway system. ... The dissemination of fact and news as such was accompanied by the equally important work of the writers."¹¹⁹

Although this is very positive, another of your 20th century authors has pointed out the following:

"The consequences of the Industrial Revolution and the Napoleonic Wars falling on English rural life, when that life itself was undergoing fundamental change, made the twenty years after Waterloo [fought in 1815 you might recall] the saddest and most miserable in the history of the countryside."¹²⁰

This, you will remember, is the time when I was growing into a young man. The author continued:

"Everything conspired against the farmer and the labourer. Rates and taxes to pay for the war were of crushing severity, the coming of peace, however welcome in itself, brought a ruinous drop in prices, and an equally ruinous drop for the time being in the demand for wheat. Much arable land 'tumbled down' to pasture, or rather reverted to the wilderness; and the general technical level of farming dropped all over the country. These rigorous years eliminated the weaker men, those with little capital, small ability, or without the vision to look ahead and adopt new measures to meet new conditions.

The environment was changing!

"Only the vigorous and skillful survived the storm. As usual, the greatest sufferers were the labourers and farmhands. At the trials which followed the rick-burning and riotings of the early 'thirties, the better part of the nation was horrified at the picture of squalor and abject misery which was disclosed, and the Poor Law Amendment Act of 1834, whatever its ultimate results, had deepened and increased the suffering.

"The turn of the tide came about 1840. By that time control was in the hands of the survivors: intelligent, hard-working, forward looking men [and women!], who laid the foundation of the 'Golden Age' of English farming which developed between 1850 and 1875."¹²¹

"...Nature, red in tooth and claw" came not from my pen, but from that of Alfred, Lord Tennyson, my Cambridge colleague over the period 1827-1829. In 1850,

¹¹⁹ R. J. Evans, 1950, The Victorian Age: 1815-1914, page 87. [Also "The first electric telegraph in England was set up between Paddington and Slough in 1844, and one of its earliest triumphs was to make possible the apprehension of a criminal on a train between the two stations. *ibid.*

¹²⁰ R. J. Evans, 1950, The Victorian Age: 1815-1914, page 89.

¹²¹ Ibid., pp. 89-90.

the year that he became Poet Laureate of England, he also published In Memorium, and this is the source of that phrase.¹²²

Neither did I coin the phrase "survival of the fittest" but I borrowed it from the social thinker and philosopher, Mr. Herbert Spencer (1820-1903). This phrase, by-the-way, did not appear in the first 1859 edition of ORIGINS, but was only incorporated for the first time in 1869 in the 5th, and all subsequent editions of ORIGINS; my times were active and exciting ones.

Your 20th century anthropologist Montagu has some good words which I shall quote to you:

"...it is often assumed that social thought after 1859 was largely the social reflection of Darwin's biology. The truth is that Darwinian biology was largely influenced by the social and political thought of the first half of the nineteenth century...."

I also call to your attention that Montagu states that I "provided the nineteenth century with a philosophy of industrial progress."¹²³ So I was a reflection of my times, and when I was fifty years old, in 1859, when the first edition of On The Origin of Species was published.¹²⁴

Another of your 20th century authors, born in Paris in 1907 and eventually a Professor of History and then the Dean of the Graduate Faculties at Columbia University in New York City, has seen fit to give his 1941 publication the title of Darwin, Marx, Wagner: Critique of A Heritage.¹²⁵ ORIGINS, of course, was first published in 1859, but also in that year the great German composer Wagner completed the score for his magnificent Tristan and Isolde, and the German author Karl Marx (living in England) published his Critique of Political Economy (January 1859), and began his first words for Das Kapital, , subsequently published in 1867.¹²⁶

One has written that Karl Marx "venerated" me and called himself a "sincere admirer" of my work; I do know that Marx wished to dedicate the English translation of Volume two of Das Kapital to me, but this was a request which I "courteously

¹²² Tennyson, Alfre Lord, 1850, In Memorium {reprinted in Tennyson in Memorium, edited by Susan Shatto and Marion Shaw, 1982: 80}.

¹²³ Ibid., page 32.

¹²⁴ Also in 1859, Edward Fitzgerald, also fifty years of age, published his Rubaiyat of Omar Khayam. The year 1859 was an intriguing year.

¹²⁵ Jacques Barzin, Darwin, Marx, Wagner: Critique of A Heritage, 1941.

¹²⁶ Jacques Barzun, 1960 (revised 2nd edition), Darwin, Marx, Wagner: Critique of a Heritage [first published in 1941], page xii.

refused"¹²⁷ for I did not wish to imply approval of a work I had not read. In fact, in 1880, I wrote the following to Herr Marx:

"It seems to me (rightly or wrongly) that direct arguments against Christianity and Theism hardly have any effect on the public; and that freedom of thought will best be promoted by that gradual enlightening of human understanding which follows the progress of science. I have therefore always avoided writing about religion and have confined myself to science."¹²⁸

Why do we do what we do? How do we come to do it? My colleague and friend, Thomas H. Huxley, wrote upon the occasion of the 1859 publication that "How exceedingly stupid not to have thought of that"¹²⁹ and someone else (Samuel Butler [1835-1902], in perhaps a less kindly manner, wrote the following about some others:

"Buffon planted, Erasmus Darwin and Lamarck watered, but it was Mr. Darwin who said 'That fruit is ripe,' and shook it into his lap."¹³⁰

Your 20th century anthropologist, Loren Eiseley, has perhaps stated it with more neutrality: "Charles Darwin, like every other worker in the field of science, used the knowledge and the accumulated stores of information of his predecessors."¹³¹ Perhaps this smacks of some hubris on my part, but he continued with his following sentence that "To their efforts he added his own vast resources and the originality of a powerful, far-reaching mind." That my mind may have been "powerful" can be debated and my "far-reaching mind" did have numerous limitations, but I approached my world with an open mind; I used my faculties, such as they were, and searched out for explainable answers.

Other individuals of my time were experiencing "not the shock of discovery but rather the shock of recognition."¹³² So much data was being gathered, so many other individuals were thinking along similar lines, that my work fit quite right in!

127 Julian Huxley and H.B.D. Kettlewell, 1965, Charles Darwin and His World, page 80.

128 Cited in S. J. Gould, 1977, Ever Since Darwin: Reflections in Natural History, pp. 26-27.

129 Cited in Cyril Bibby, 1972, Scientist Extraordinary: The Life and Scientific Work of Thomas Henry Huxley 1825-1895, page 38 [TRACK DOWN TO VOLUME I, L&L, ~p.175!].

130 Gertrude Himmelfarb, 1959, Darwin and the Darwinian Revolution, page 448.

131 Loren Eiseley, 1979, Darwin and The Mysterious Mr. X, page 74.

132 Gertrude Himmelfarb, 1959, Darwin and the Darwinian Revolution, page 448.

Why do we write and communicate as we do?

I must admit, I was fortunate. I was extremely fortunate in many many respects. A 20th Century author has made an interesting comment on my times, describing me as an intellectual; perhaps I was, perhaps I wasn't - but I was indeed fortunate.

That same author pointed out that I had neither a prescribed social role nor an on-going working position: I simply applied myself to those problems which I found intriguing. I was not a dilettante aristocrat, and, interestingly enough in this setting today, I "was not an academic, [supposedly] established by title upon the intellectual scene."¹³³ No, there was never a personnel committee I had to sit upon nor an academic affairs committee to meet with to justify my somewhat unorthodox ideas!!]

Over the years between the publication of ORIGINS in 1859 and the Descent of Man in 1871, numerous events occurred in England which had an influence on my eventual reception to your times: the 1860 meeting at Oxford has already been mentioned and also in that year, seven English Churchmen published an item entitled Essays and Reviews, wherein certain orthodox religious doctrines were questioned. In addition:

"In 1862 Bishop Colenso started to publish his doubts about the Pentateuch. In 1863 Sir Charles Lyell produced his evidence on the antiquity of man, which seemed to be inconsistent with the account of creation in the Bible. In 1863 Renan's humanizing Vie de Jesus appeared. In 1865 J. R. Seeley of Cambridge published another humanizing work on Christ called Ecce Homo. In 1870 the British Association at Exeter generally accepted evolution. [AND] In 1871 Darwin published his DESCENT OF MAN. Thus in these ten to twelve years orthodox religion received a series of body blows, which seemed to be aimed at its existence."¹³⁴

When my Descent of Man was published in 1871, the "controversy" was almost over in my times! A 1984 author has a nice summary statement of my 1871 publication:

"Despite its more explicitly materialistic interpretation of man's essence, Descent was not met with the rancor that earlier had engulfed Origin. In barely more than a decade the concept of evolution--even human evolution--had become installed as a familiar feature on the landscape of popular ideas. If the scientific community's judgement of the work did not always convey unbridled admiration, rarely did it concede less than sober respect. The reviews of Descent were for the most part favorable (Mivart's aside, of course), and the tone of criticism politely muted. A number of reviewers took the

¹³³ Peter Brent, 1981, Charles Darwin: A Man of Enlarged Curiosity, page 335.

¹³⁴ G. Kitson Clark, 1967, An Expanding Society: Britain in 1830-1900, pp. 95-96.

occasion to deliver the satisfying news that science posed no threat to religion after all.¹³⁵

I don't quite think that "orthodox religion received a series of body blows" in this time, but religious interpretations were changing; however, Colenso was excommunicated by his Archbishop, Ecce Homo was described as "the most pestilential book ever vomited from the jaws of hell," and you have been apprised of Bishop Wilberforce's opinion of me.

In addition to research and publications in geology and the natural sciences which was occur after 1859, the discipline of "Anthropology" was also coming into its own. Although the term anthropology itself, a combination of ANTHROPOS + LOGOS, appeared as early as 1573, in a work by Magnus Hundt, the following was written by a 1964 chronicler of my work:

"Anthropology existed before Darwin, but he provided it with its central theme. Meanwhile some anthropologists, jurists, historians, and philosophers did not wait for [my 1871] Descent of Man to act on the cue that Darwin had given them in the Origin [of 1859], and the following pioneer studies in evolutionary cultural anthropology reflect the effect of his work: Sir Henry Maine's Ancient Laws (1861), N. D. Fustel de Coulange's La cite antique (1865), J. F. MacLennan's Primitive Marriage (1865), Sir Edward Tylor's Researches into the Primitive History of Mankind (1865), Sir John Lubbock's Origins of Civilization and the Primitive Condition of Man (1870), all of which were published after the first edition of the Origin in 1859 and before the Descent of Man in 1871."¹³⁶

Information on "non-Western" individuals and cultures was coming fast and furious, perhaps even greater than the publications of Captain James Cook in the 18th century. In the Valley of the Neander, in Germany, even prior to ORIGINS, a fossil skull was found; in 1861, Charles Etienne Brasseur de Bourbourg published his edition of Popul Vuh: Le Livre Sacre et des mythes de l'antiquite americaine, and this excited the scholarly world about your Mesoamerican civilization.¹³⁷ Research in individuals all over the globe was going on at a record-breaking pace!

Someone has compiled a great deal of information on my writings, and it has been estimated that in my lifetime I had published some "seven thousand pages, about three million words."¹³⁸ This has got to be a slightly impressive number, has it not? (Almost as much as the good Dr. Asimov of your time?)

¹³⁵ Kenneth Korey (Commentator), 1984, The Essential Darwin, page 286.

¹³⁶ Gavin De Beer, 1964, Charles Darwin: Evolution by Natural Selection, page 217.

¹³⁷ Jack J. Himelblau, 1989, Quiche Works in Creation: The Popuh Vuh As A Narrative Work of Art, page 1.

¹³⁸ Ibid., p. 5.

How to be remembered? I have been described in one of your 20th century encyclopedias as "an affectionate husband and father . . . and a steadfast friend to several eminent scientists" of my time.¹³⁹

I wrote a somewhat "famous" note to myself, wherein I carefully weighed the pro's & cons of marriage - and I ended my note with the following: Marry - Marry - Marry Q.E.D., and the words that I wrote to me dear sweet Emma in a letter nine days before we were married in 1839 held true for all of our years: "...I think you will humanize me, and soon teach me there is greater happiness than building theories and accumulating facts in silence and solitude."¹⁴⁰

Emma, as you may know, was an extremely religious woman: she attended church on a regular basis and one of our daughters has written that in Emma's youth "religion must have largely filled her life, and there is evidence in the papers she left that it distressed her in her early married life to know" that I did not share her faith.¹⁴¹

Dear sweet Emma expressed her concerns to me, and in a letter she sent me shortly after we were married in 1839, Emma wrote that "everything that concerns you concerns me and I should be most unhappy if I thought we did not belong to each other forever."¹⁴²

It is a well known fact that I was deeply moved by this, and Emma found her letter to me among my notes after I had died, and she was well able to read my following words: "When I am dead, know that many times, I have kissed and cried over this."¹⁴³

When I had my final and fatal heart attack on the 19th of April 1882, I made no deathbed statement as to my faith, but had I been asked the question by someone - "Darwin, have you made peace with God?" - I would perhaps have chosen to respond with the words of Thoreau on his deathbed who stated: "I didn't know we had quarreled."¹⁴⁴

139 Ralph Colp Jr., "Darwin, Robert Charles (1809-1882)" in Victorian Britain: An Encyclopedia, edited by Sally Mitchell, 1988, pp. 208-210, page 209.

140 C. Darwin to Emma Wedgewood, dated Jan 20th 1839, in More Letters of Charles Darwin: A Record of His Work in A Series of Hitherto Unpublished Letters, Francis Darwin, Editor, 1903, page 29.

141 Nora Barlow, 1958, The Autobiography of Charles Darwin 1809-1882, page 239.

142 Ibid., page 237.

143 Ibid.

144 Huston Smith, 1958, The Religions of Man, page 328.

My daughter, perhaps, gave me one of the greatest of pleasures when she penned these words after my death:

"My first remembrances of my father are of the delights of his playing with us. He was passionately attached to his own children, although he was not an indiscriminate child-lover. ... He cared for all our pursuits and interests, and lived our lives with us in a way that very few fathers do. But I am certain that none of us felt that this intimacy interfered the least with our respect and obedience. ... Another characteristic of his treatment of his children was his respect for their liberty, and for their personality. Our father and mother would not even wish to know what we were doing or thinking unless we wished to tell. He always made us feel that we were each of us creatures whose opinions and thoughts were valuable to him, so that whatever there was best in us came out in the sunshine of his presence."¹⁴⁵

Such, I truly hope, is an honored way to be remembered as an individual.

Ah, well do I remember, that as Emma and I grew older in the 19th century, so our children did advance in their years: our son William became a wealthy banker, Horace an engineer, and George went into astronomy.

One day, simply because there was no holding back the passage of time, I do remember that the boys decided that they were too old to call me "Papa" anymore and would call me "Father" instead. I wrote that "I would sooner be called Dog" but time doth serve as a great equalizer of us all.¹⁴⁶

As you know, I was never a teacher, *per se*, and had no legions of graduates or undergraduate students to listen to my boring presentations; should I, however, had been fortunate enough to be in any classroom, I would have wished to convey the importance of individuals finding their own patterns in the data. Looking for the patterns of nature; for the patterns of human behavior.

As someone wrote about a leading 20th century Californian, Frank Oppenheimer of the San Francisco Exploratorium, to wit:

"Letting people find the patterns in nature, Oppenheimer believed, empowered them and helped them make informed decisions in an increasingly technical age."

The world of Oppenheimer, just as mine, and just as yours, if it is not knowable, it is "at least understandable."¹⁴⁷

¹⁴⁵ [Sir] Francis Darwin, 1950, Charles Darwin's Autobiography: With His Notes and Letters Depicting the Growth of the Origin of Species, pp. 96-98.

¹⁴⁶ Walter Karp, 1968, Charles Darwin And The Origin of Species, page 139.

¹⁴⁷ Gerald George, "Touchy-Feely Science," being a Book Review of The Exploratorium: The Museum as Laboratory, by Hilde Hein [1990], in the San Francisco Chronicle Review, July 15, 1990, page 11.

Finally, to conclude: my good friend and colleague, Thomas Huxley, often called "Darwin's Bulldog" by some - but whom I once affectionately termed as "general agent"¹⁴⁸ wrote my obituary for the April 27, 1882 issue of Nature and in addition to stating many interesting things, he ended the obituary with the following, stating that the words applied to Socrates "Apology [and I quote]:

"...rings in our ears as if it were Charles Darwin's farewell:--'The hour of departure has arrived, and we go our ways--I to die and you to live. Which is the better, God only knows.'"¹⁴⁹

EPILOGUE: C. F. Urbanowicz

And so ends Charles Darwin and Charles F. Urbanowicz picks up for just a moment: this idea to present Darwin to you in this manner is not necessarily a brand-new one on my part--years ago I came across a book by UC Berkeley Professor of Zoology Richard M. Eakin (1975) entitled Great Scientists Speak Again. Darwin, as well as Mendel (1822-1884), Pasteur (1822-1895), and several others were portrayed by Eakin's for his Zoology 10 class (and you may consult the volume to compare his Darwin with my Darwin).

Darwin is was an interesting individual and it is wonderful to read about his influence in so many areas; one intriguing parallel I came across late in my reasearch concerned John Muir (1838-1914), of Yosemite fame, and Charles Darwin:

"In 1837, at the age of twenty-eight, Darwin jotted in his notes, 'animals . . . may partake of our origin in one common ancestor--we may all be melted together.' At twenty-nine, Muir left home to explore the natural world and eventually to express himself even more expansively: 'When we try to pick out anything by itself, we find it hitched to everything else in the universe.' Yosemite became to Muir what the Galapagos Islands were to Darwin: a place where personal experience and visionary thought came together to influence broader concepts pursued for decades thereafter in other parts of the world. Both men looked closely at the primordial struggle for existence long observed by others; both saw not something life-threatening and destructive, but a creative, life-giving process. Darwin liberated biologists from looking at a species a fixed entities. Muir freed first himself, then generations of his disciples, from the venerated tradition of adapting land to human needs, urging instead a new ethic of adapting human behavior toward preserving the natural state of the earth."¹⁵⁰

¹⁴⁸ Leonard Huxley, 1909, Life and Letters of Thomas Henry Huxley, Vol. 1, page 183.

¹⁴⁹ Thomas H. Huxley, 1896, "Charles Darwin" in Darwiniana Essays [1970 AMS Press, Inc. Reprint Edition], pp. 244-247, page 247.

¹⁵⁰ Galen Rowell (Editor), 1989, The Yosemite [The original John Muir Text], page 19.

One final quote, not used earlier today, but appropriate:

"Darwin taught us all to see more clearly what everyone had seen, and Darwin also taught us to think, along with him, what no one else had thought. No branch of science is more dominated by a single theory, by a single great idea, than is the whole of biology by the idea of evolution by Natural Selection." (J. Livingston and L. Sinclair, 1967, Darwin and the Galapagos n.p.)

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¹⁵¹ Although this item is only available on inter-library loan, if one consults the computerized catalogue in the Meriam Library, there are approximately 100 books dealing with Darwin available to the interested reader.

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[10 point New York = 25 Sep'90]

	Main Text	Footnotes
Charac	103,676	14,210
Words	17,577	2,147
Lines	1,620	404
Para	512	303