

THE DARWINIAN REVOLUTION: FOUR CANADIAN SCHOLARS

THE DARWINIAN REVOLUTION:
THE RESPONSES OF
FOUR CANADIAN SCHOLARS

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ABSTRACT

The Origin of Species in 1859 produced a revolution in the history of ideas. Arguing that species were not immutable but evolved through a process of natural selection, Charles Darwin challenged the basic scientific, religious, and philosophical assumptions of his age. The debate over his hypothesis extended to Canada where it coincided with a period of remarkable growth for Canadian universities. Canada's physical environment supplied numerous examples of the struggle for survival in Darwin's concept of nature. Its universities provided a nexus for the formulation of scientific, theological, and philosophical responses to the Darwinian revolution. Principal John William Dawson of McGill University, President Daniel Wilson of the University of Toronto, Professor John Watson of Queen's University, and Chancellor Nathanael Burwash of Victoria College were four Canadian scholars whose responses to Darwin's hypothesis contribute to a better understanding of Canadian intellectual history in the last half of the nineteenth century.

The responses of John William Dawson and Daniel Wilson rejected Darwin's hypothesis for a theistic alternative. Beginning with an 1860 review of the Origin of Species, Dawson recorded an opposition which he maintained steadfastly for over thirty years. A noted geologist, he based his arguments on the geological record and on a defense of the inductive method in science. His writings on the subject, however, reveal that his religious faith prevented him from accepting the mutability of species. He held that nature reflected the operation of a divine plan

and not the mechanistic development which he found in Darwinism. Although Daniel Wilson asserted his initial acceptance of evolution when applied to physical development, Darwin's The Descent of Man in 1871 prompted him to reply in Caliban: The Missing Link that man's reason and moral sense indicate the need for a Divine Creator. His position on evolution was also influenced by the fear that, if correct, the evolutionary explanation of man would unite all men in a brotherhood which contradicted his concepts of racial distinctions and the difference between primitive and civilized man.

An attempt to reconcile the Darwinian hypothesis and religious faith was central to the responses of John Watson and Nathanael Burwash. Canada's most important nineteenth-century philosopher, John Watson defended in 1876 the primacy of man's reason rather than the Darwinian concept of instinct as an explanation of morality. In his philosophy of Speculative Idealism, he subsequently presented a teleological view of existence which was not compatible with the mechanistic operation of natural selection. Believing, however, that the universe was rational and possessed a spiritual unity, he argued by the time of his Gifford Lectures, 1910 - 1912, at the University of Glasgow that a proper understanding of the Darwinian hypothesis led man to look beyond mechanism for the underlying motive and power of human development. Theologian Nathanael Burwash shared Watson's belief that Darwinism and religion need not conflict, although his reconciliation also could not encompass natural selection. From his days as an undergraduate and young Methodist minister, the intuitive certainty of his faith provided him with the means of accepting modern science. In lectures at Victoria College which culminated

in his Manual of Christian Theology in 1900, Burwash found a place for a properly understood Darwinian hypothesis within the perfect harmony of the universe.

Natural Selection proved an insurmountable barrier for all four responses. All four embodied a concept of teleology in arguing against mechanistic development and reflected the need felt for a metaphysical answer to the questions raised by Darwin's hypothesis, especially concerning a theistic interpretation of man's mental and moral development. Dawson defended the two theologies' tradition. Watson and Burwash went beyond it to consider evolution as a revelation to man of the spiritual unity of the universe. Belief in the spiritual unity and teleological reality of the universe was complemented by a philosophical idealism most evident in Watson's response but found in the other three as well.

The enduring significance of each response is not equal and the four men exercised little influence upon the international debate on Darwinism. In part, this was due to their relative isolation in Canada. Their arguments, nevertheless, become distinctive within the intellectual context of late nineteenth-century Canada. A fervent and vigorous religious climate has had a fundamental effect upon the development of ideas in Canada. Through their responses to the Darwinian revolution, Dawson, Wilson, Watson, and Burwash revealed the continuing importance of their religious tradition and provided ideas which helped to ensure its survival during the perilous challenges of their age.

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THE DARWINIAN REVOLUTION

The publication of On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life by Charles Darwin on 24 November 1859 introduced the Victorian world to a hypothesis which challenged its basic scientific, religious, and philosophical assumptions. Immediately the book excited considerable popular and scientific interest. Darwin's comment in his Autobiography that "the first small edition of 1250 copies was sold on the day of publication"¹ may be somewhat misleading since, as Gertrude Himmelfarb has noted, this refers only to the purchase of the entire edition by book dealers.² It is clear, nevertheless, from the reviews which it received and from the fact that a second larger edition was published in January 1860 that Darwin's book was widely discussed during the winter of 1859 - 1860. Alvar Ellegard has documented in Darwin and the General Reader how the periodical press provided an opportunity for the rapid and general spread of opinion concerning the Origin of Species.³ By the time of the British Association meeting at Oxford in June 1860, which saw the famous exchange between Thomas Henry Huxley and the Bishop of Oxford, Samuel Wilberforce, on Darwin's hypothesis, the responses to the Origin of Species had

¹Sir Francis Darwin, ed., Charles Darwin's Autobiography (New York 1961), 60

²Gertrude Himmelfarb, Darwin and the Darwinian Revolution (London 1959), 395

³Alvar Ellegard, Darwin and the General Reader (Goteborg 1958).

generated sufficient controversy to establish definite lines between Darwinians and anti-Darwinians.

To appreciate the controversy created by the Origin of Species, it is necessary to understand the intention of Darwin's hypothesis. Jacques Barzun has noted that Darwin

was not dealing with the origin of life, but with the origin of more or less fixed differences in those living forms that naturalists call species. Nor was Darwin arguing, except indirectly, for evolution, which was then variously termed "the developmental theory" or "descent with modification." He was proposing merely to explain the mechanism by which such modification or development or evolution might occur.⁴

As the full title of his book indicated, Darwin was concerned with the explanation of a process. He concluded his "Introduction" to the Origin of Species with the following statement:

Although much remains obscure, and will long remain obscure, I can entertain no doubt, after the most deliberate study and dispassionate judgment of which I am capable, that the view which most naturalists until recently entertained, and which I formerly entertained - namely, that each species has been independently created - is erroneous. I am fully convinced that species are not immutable; but that those belonging to what are called the same genera are lineal descendants of some other and generally extinct species, in the same manner as the acknowledged varieties of any one species are the descendants of that species. Furthermore, I am convinced that Natural Selection has been the most important but not the exclusive, means of modification.⁵

Holding that species were neither independently created nor immutable, the Darwinian hypothesis posited natural selection as the most important mechanism by which "species have been modified during a long course of

⁴Jacques Barzun, Darwin, Marx, Wagner (Garden City, N.Y. 1958),
27

⁵Charles Darwin, Origin of Species (6th. ed., New York n.d.),
13-14

descent."⁶ The fifteen chapters which comprise the Origin of Species were an explication and defence of this process of specific modification.

Darwin defined natural selection as follows:

. . . if variations useful to any organic being ever do occur, assuredly individuals thus characterised will have the best chance of being preserved in the struggle for life; and from the strong principle of inheritance, these will tend to produce offspring similarly characterised.⁷

Varieties of species favoured with the structure, habits, or constitution useful in the struggle for survival will be preserved; less favourably endowed varieties will perish. Through the production of offspring with similar variations, such naturally favoured varieties improved and advanced until the differences between varieties of the same species were equal to the differences between varieties of the same genus. Over long periods of time, therefore, the process of natural selection produced new species. A major weakness in Darwin's argument was its inability to explain variation. As William Irvine has noted, "Darwin had not so much proved that natural selection does occur as that it must occur."⁸ Darwin would examine the question of heredity in detail in Variation of Plants and Animals under Domestication in 1868, but, despite a wealth of examples and observations, without any clear explanation of the process. In fact, the answer to the problem already lay in the experiments on genetics of Gregor Mendel which remained generally unnoticed until the end of the century. In The Descent of Man in 1871, Darwin admitted that he had

⁶ Ibid., 367

⁷ Ibid., 98

⁸ William Irvine, Apes, Angels and Victorians (Cleveland and New York 1959), 106

perhaps attributed too much to natural selection.⁹ He noted, however, that "I have at least, as I hope, done good service in aiding to overthrow the dogma of separate creations."¹⁰

Belief in the immutability of species was supported by the Genesis account of creation and the Idealistic conception of hierarchical order in the universe. Michael Ghiselin has traced this essentialist metaphysics from the Platonic view that reality exists in the essence, Idea or eidos, and the subsequent Aristotelian modification which connected essences with things, to the system of classification that equated classes and ultimate reality.¹¹ In The Great Chain of Being, Arthur O. Lovejoy identified two opposite modes of thought in the natural history of Aristotle and the Middle Ages relating to the concept of species.

The first made for sharp divisions, clear-cut differentiations, among natural objects, and especially among living beings. To range animals and plants in well-defined species, presumably (since the Platonic dualism of realms of being was also still influential) corresponding to the distinctness of the Eternal Ideas, was the first business of the student of the organic world. The other tended to make the whole notion of species appear a convenient but artificial setting-up of divisions having no counterpart in nature.¹²

Lovejoy asserted that the former concept of species had dominated the early modern period of biology. Acceptance of the fixity of species was fostered in biology by the attempt by the seventeenth century naturalist John Ray to establish a system of classification of species based upon

⁹Charles Darwin, The Descent of Man (New York n.d.), 441

¹⁰Ibid., 442, 912

¹¹Michael T. Ghiselin, The Triumph of the Darwinian Method (Berkeley and Los Angeles 1969), 50-52

¹²Arthur O. Lovejoy, The Great Chain of Being (New York 1960), 227

structural affinities and by the classification of species proposed in the eighteenth century by Carolus Linnaeus which was also based upon structure. In such works as his Systema Naturae, Linnaeus established the binominal system of generic and specific names to identify related groups of creatures. Linnaeus had maintained in the early editions of the Systema Naturae that "the number of species is the same as the number of forms created from the beginning."¹³ Although he modified his views sufficiently to remove this statement from later editions of his work, his taxonomy, which reflected the Aristotelian concept of essences, encouraged the church's emphasis upon the fixity of species in its interpretation of creation. Loren Eiseley has noted the comment of an anonymous writer: "Until the scientific idea of 'species' acquired form and distinction there could be no dogma of 'special' creation in the modern sense."¹⁴

Darwin added "An Historical Sketch of the Progress of Opinion on the Origin of Species, Previously to the Publication of the First Edition of the Work" to the third edition of the Origin of Species published in 1861. This brief sketch which considered "thirty-four authors. . . who believe in the modification of species, or at least disbelieve in separate acts of creation" demonstrated that the Darwinian concept of species had antecedents which could be traced back at least to the eighteenth century.¹⁵ Indeed, although Darwin dismissed classical references in his "Historical

¹³Himmelfarb, Darwin, 141

¹⁴Loren Eiseley, Darwin's Century (Garden City, N.Y. 1961), 24

¹⁵Darwin, Origin, 9

Sketch" except for a lengthy footnote which presented a foreshadowing of natural selection in Aristotle's Physicae Auscultationes, the mutability of species was suggested by such Greeks as Heraclitus and Anaximander. Moreover, as J. B. Haldane has commented, the Roman philosopher Lucretius recognized natural selection acting between species, if not in the transformation of species, in De rerum natura (v, 855) as a cause of extinction.¹⁶ It was, however, the Comte de Buffon (1707 - 1788) whom Darwin described as the first modern author to treat the subject of the modification of species "in a scientific spirit."¹⁷ Loren Eiseley has stated that

. . . as his work proceeded Buffon managed, albeit in a somewhat scattered fashion, at least to mention every significant ingredient which was to be incorporated into Darwin's great synthesis of 1859. He did not, however, manage to put these factors together.¹⁸

In his massive Histoire naturelle, Buffon included a challenge to the Linnaean classification of species. Reflecting upon his experiments on domestic plants and animals, he concluded:

These physical genera are, in reality, composed of all the species, which, by our management, have been greatly variegated and changed; and, as all those species, so differently modified by the hand of man, have but one common origin in Nature, the whole genus ought to constitute but a single species.¹⁹

Turning to nature in the wild, he suggested that environmental factors

¹⁶J.B.S. Haldane, "Natural Selection" in P.R. Bell, ed., Darwin's Biological Work (New York 1964), 102

¹⁷Darwin, Origin, 3

¹⁸Eiseley, Darwin's Century, 39

¹⁹Cited in John C. Greene, The Death of Adam (New York 1961), 151

such as climate and food supply had produced modifications in species over a period of time: "Time is the great workman of Nature."²⁰ Despite a caution promoted by his desire to avoid angering the powerful church in France, Buffon left little doubt that he believed that species were not immutable but might derive from each other or from a common ancestor.

Buffon's conception of species was supported by Erasmus Darwin (1731 - 1803), Charles Darwin's grandfather, in his Zoonomia published between 1794 and 1796. Erasmus Darwin speculated that all animals had derived from

a single living filament, which THE GREAT FIRST CAUSE endued with animality, with the power of acquiring new parts attended with new propensities, directed by irritations, sensations, volitions, and associations, and thus possessing the faculty of continuing to improve by its own inherent activity, and of delivering down those improvements by generation to its posterity. . . .²¹

Species were mutable and modification occurred through responses to external stimuli. Erasmus Darwin suggested that "lust, hunger, and security" were "the three great objects of desire, which have changed the forms of many animals by their exertions to gratify them. . . ."²² Charles Darwin expressed his disappointment upon a second reading of the Zoonomia, "the proportion of speculation being so large to the facts given."²³ Although the speculative nature of much of Erasmus Darwin's work is undeniable, it is nevertheless clear that, as Jacques Barzun has recognized, his speculations anticipated many nineteenth century ideas, including the

²⁰Ibid., 153

²¹Ibid., 170

²²Cited in Himmelfarb, Darwin, 143

²³Darwin, Autobiography, 29

inheritance of acquired characteristics and his grandson's theory of sexual selection.²⁴

The only reference which Charles Darwin made to his grandfather in the "Historical Sketch" appears in a footnote comment: "It is curious how largely my grandfather, Dr. Erasmus Darwin, anticipated the views and erroneous grounds of opinion of Lamarck in his 'Zoonomia'. . . ."²⁵ The Chevalier de Lamarck (1744 - 1829) in the first decade of the nineteenth century argued that species were mutable by their adaptation to environmental changes. Lamarck noted that

the conformation of individuals and of their members, their organs, their faculties, &c., &c. are entirely the result of the circumstances into which the race of each species has been thrown by nature.²⁶

Lamarck argued that changes in the environment altered bodily structure. Organs with functions useful to meet the new needs produced by the changed environment developed through use while organs which were no longer useful in the new environment atrophied. Through the inheritance of acquired characteristics, these changes in structure were transmitted to subsequent generations. Reaction in England to the French Revolution kept Lamarck's ideas from the British reading public until 1830 when Charles Lyell included in the second volume of his Principles of Geology a summary of Lamarck's reasons for believing in the mutability of species.²⁷ Lamarck's ideas gained further prominence in England with the publication

²⁴Barzun, Darwin, Marx, Wagner, 45

²⁵Darwin, Origin, 4

²⁶Cited in Greene, Death of Adam, 162

²⁷Eiseley, Darwin's Century, 54, 49

in 1844 of The Vestiges of the Natural History of Creation, a survey of evolutionary thought written anonymously by a journalist, Robert Chambers. The Vestiges aroused a storm of controversy and was attacked by most scientists, including Thomas Huxley who wrote a devastating review of the book. It was, however, extremely popular and did much to promote general interest in the concept of evolution.

The Vestiges presented the uniformitarian interpretation of geological history associated with the ideas of James Hutton (1726 - 1797) and Charles Lyell (1797 - 1875). Uniformitarianism held that geological changes occurred gradually through the continuous action of natural forces over long periods of time. Until the publication of Lyell's Principles of Geology, the dominant geological theory had been catastrophism. Catastrophists such as William Buckland in England and Georges Cuvier in France had argued that a series of sudden massive cataclysms had altered the surface of the earth, destroying each time the life which existed on it.²⁸ In his study, subtitled "An Attempt to Explain the Former Changes of the Earth's Surface by Reference to Causes Now in Operation", Lyell maintained that geological changes evident in the earth's history could be adequately explained by such existing causes as elevation, subsidence and erosion.²⁹ Against catastrophism, he demonstrated that supposedly global catastrophes were in fact local and that fossil evidence of the same animal form in successive strata proved that survival was possible through cataclysms.

Lyell also denied the associated doctrine of progressionism which

²⁸ Charles F. O'Brien, Sir William Dawson (Philadelphia 1971), 28-29

²⁹ Ibid., 29

asserted that increasingly advanced creations existed after each cataclysm, culminating in the existence of man. Progressionism clearly implied the supernatural intervention of successive creations. Lyell did not, however, accept the mutability of species as an alternative to progressionism: the relative sterility of hybrids convinced him that species have limits upon variation.³⁰ Rather he argued that the imperfection of the geological record did not provide sufficient evidence to prove progressionism. Lyell also argued that the different species which apparently appeared in different geological ages might be not newly generated but the result of migrations from other areas produced by climate and geographical changes. Lyell's position against progressionism was a difficult one to maintain. It did not, for example, explain the appearance of man. Eventually Lyell abandoned it to become a cautious supporter of evolution.

By the 1840s Lyell's case for uniformitarianism was sufficiently accepted by the scientific community to leave little doubt that it would supersede catastrophism. The establishment of uniformitarianism strengthened the case for the mutability of species. The concept of gradual change over long periods of time enlarged the time frame within which modifications of species might occur. Furthermore, by removing the cataclysmic total destruction of life, the need for special creation was replaced with the possibility of changes governed by natural causes. If natural causes explained the modification of environment, an analogous argument might be made for the modification by natural causes of life

³⁰Irvine, Apes, Angels, and Victorians, 74

forms within the environment. The triumph of uniformitarianism, however, seemed to threaten the correlation between science and the Bible sustained by catastrophism. No longer was a God required to intervene periodically with catastrophes such as the Deluge or with new creations after the catastrophes had occurred. Uniformitarianism also allowed a longer past history for the earth than either catastrophism or a conventional interpretation of Biblical chronology required or supported.

Responding to the challenge posed to religion by uniformitarian geology, a Scottish editor, Hugh Miller, wrote two popular books, Footprints of the Creator (1847) and Testimony of the Rocks (1857), which attempted to reconcile science and the Bible. The first book was a reply to Vestiges . . . of Creation while the second concerned the broader question of Biblical and scientific cosmogony.³¹ Miller argued that the "days" in the Genesis account of creation were each long periods of time. Although this interpretation of creative days had been suggested by others, the popularity of Miller's books indicated the general interest in answers to theological problems created by the new scientific ideas. Miller also argued that the Genesis account of creation was based upon a vision which God gave Moses. While Moses reported accurately what he had witnessed, he had been an "untutored observer" without the knowledge to report what his vision depicted in a manner which would satisfy the scientific demands of a later age. The concept of the "untutored observer" held true in general for descriptions of nature found in the Bible in Miller's opinion.³²

³¹O'Brien, Dawson, 41

³²Ibid., 41

Miller asserted that, "between the Word and the Works of God there can be no actual discrepancies."³³ The Word of God was revealed in the Bible but the works of God were observable in nature. Miller's writing was in the two theologies tradition which distinguished between knowledge of God obtained through revealed theology, the study of his word in the Bible, and natural theology, the knowledge of God obtained through the study of nature. The two theologies tradition dates at least from the seventeenth century when the naturalist John Ray attempted to discern God from an examination of nature. Evidence of design in nature was the standard argument presented by advocates of natural theology to demonstrate the existence and workings of God. In 1802 Archdeacon William Paley employed the design which he held was evident in nature to confirm the existence of God in his Natural Theology. Using his famous watch analogy, Paley compared nature to the workings of a watch and argued that, from the discovery of a watch, one deduced the existence of a watchmaker: God. The argument from design was further advanced in the Bridgewater Treatises, eight Books published between 1833 and 1836 to demonstrate "the Power, Wisdom, and Goodness of God, as manifest in the Creation. . . ."³⁴

Arguments from design sought to reconcile not only nature and the Bible but also man and nature. If the power, wisdom and goodness of God were manifested in the creation, the design evident in nature provided man with both edification and comfort. Paley wrote:

Nor ought we to feel our situation insecure. In every nature and every portion of nature which we can descry, we find

³³Cited in O'Brien, Dawson, 43

³⁴Eiseley, Darwin's Century, 177

attention bestowed upon even the minutest parts. We see no signs of diminution of care by multiplicity of objects, or of destruction of thought by variety. We have no reason to fear, therefore, our being forgotten, or overlooked, or neglected.³⁵

However, the view that nature manifested design did not, unlike the developmental theory of Lamarck, explain the existence of rudimentary organs which served no apparent purpose. The argument from design also had to contend with the problems of disease, deprivation and extinction. Buffon noted that

Nature turns upon two steady pivots, unlimited fecundity which she has given to all species; and those innumerable causes of destruction which reduce the product of this fecundity. . . .²⁶

Recognition of this struggle in nature was evident in Hugh Miller's Testimony of the Rocks which defended natural theology without supporting the benevolence of nature. Miller wrote: "The strong, armed with formidable weapons, exquisitely constructed to kill, preyed upon the weak."³⁷ He added that many of the weak were provided with defensive armour that enabled them to multiply and "escape, as species, the assaults of the tyrant tribes, and to exist unthinned for unreckoned ages."³⁸ This conflict between the strong and the weak in nature clearly anticipated the struggle for life used by Darwin in the Origin of Species.

By the middle of the nineteenth century, the ruthless harshness of nature was a conspicuous literary theme. Published in 1849, Matthew Arnold's poem "In Harmony with Nature" asserted that "Nature and man can

³⁵ Ibid., 176

³⁶ Ibid., 40

³⁷ Himmelfarb, Darwin, 195

³⁸ Ibid., 195

never be fast friends."³⁹ Arnold described nature as cruel, stubborn, fickle: "Nature forgives no debt, and fears no grave."⁴⁰ In 1850, the publication of Alfred Tennyson's "In Memoriam A.H.H." introduced the phrase "Nature, red in tooth and claw."⁴¹ "In Memoriam" asked the question:

Are God and Nature then at strife,
That Nature lends such evil dreams?
So careful of the type she seems,
So careless of the single life;⁴²

and then modifies it further:

'So careful of the type'? but no.
From scarped cliff and quarried stone
She cried, 'A thousand types are gone:
I care for nothing, all shall go.'⁴³

In 1852, The Westminster Review published "A Theory of Population Deduced from the General Law of Animal Fertility" by Herbert Spencer, who had the same year published "The Development Hypothesis", an essay supporting Lamarck's argument for the mutability of species, in The Leader. Spencer's article on population explained progress in terms which resembled natural selection:

For as those prematurely carried off must, in the average of cases, be those in whom the power of self-preservation is the least, it unavoidably follows, that those left behind to continue the race, must be those in whom the power of self-preservation is the greatest - must be the select

³⁹C. B. Tinker, H. F. Lowry, eds., The Poetical Works of Matthew Arnold (London 1950), 5

⁴⁰Ibid., 5

⁴¹Alfred Tennyson, Poetical Works (London 1953), 243

⁴²Ibid., 243

⁴³Ibid., 243

of their generation.⁴⁴

The emphasis upon population was significant. Both Spencer's article and Buffon's reference to unlimited fecundity evoke Thomas Malthus' earlier work, Essay on the Principle of Population which Charles Darwin read "for amusement" in October, 1838.⁴⁵ In his 1798 essay, Thomas Malthus argued that population increased in geometric progression but food production increased arithmetically, producing "struggles for existence."⁴⁶ It was only the providential intervention of disease, famine, and war which checked the growth of population. Malthus wrote about human life, but Darwin extended the concept of struggle for existence to plant and animal life. Darwin commented in his Autobiography that after reading Malthus

. . . it at once struck me that under these circumstances favourable variations would tend to be preserved, and unfavourable ones to be destroyed. The result of this would be the formation of new species. Here then I had at last got a theory by which to work.⁴⁷

Darwin wrote a thirty-five page sketch of his theory in 1842 and two years later he wrote a second sketch of 231 pages. Work on his study of barnacles, finally published between 1851 and 1854, and the desire to accumulate more evidence, produced a lapse of fifteen years between the sketch and publication of the Origin of Species. Even then, Darwin was careful to declare that his book was only an imperfect "Abstract" of a

⁴⁴Himmelfarb, Darwin, 185

⁴⁵Darwin, Autobiography, 58

⁴⁶Himmelfarb, Darwin, 134

⁴⁷Darwin, Autobiography, 58

projected longer work.⁴⁸ Darwin was prompted to publish by the discovery that the English naturalist Alfred Russel Wallace had arrived independently at virtually the same theory of natural selection. Wallace also attributed the inspiration for the idea of natural selection to a reading of Malthus. In September 1858, Thomas Huxley wrote to J. D. Hooker: "Wallace's impetus seems to have set Darwin going in earnest and I am rejoiced to hear we shall learn his view in full, at last. I look forward to a great revolution being effected."⁴⁹

The great revolution that Huxley anticipated arrived with the publication of the Origin of Species. Darwin's name quickly became the rallying cry for an emotional and intellectual battle which attracted the attention of the best minds on both sides of the Atlantic. It is possible to identify scientific and religious objections raised against the Origin of Species but it is often difficult to isolate the religious from the scientific in an appraisal of individual responses to Darwin's work. As William Irvine has stated:

Scientists themselves didn't know whether to reply to it [Origin of Species] with science or theology, and often maintained the most incoherent and contradictory opinions with the utmost vehemence.⁵⁰

The response of Professor Adam Sedgwick, Cambridge geologist and Anglican priest, to the Origin of Species illustrates the interplay of scientific and religious objections. A distinguished geologist, Sedgwick opposed Lyell's uniformitarian geology and had written attacks on Vestiges. . .

⁴⁸Darwin, Origin, 11

⁴⁹Irvine, Apes, Angels, and Victorians, 105

⁵⁰Ibid., 107

of Creation and utilitarianism. In a letter to Darwin thanking him for a copy of his book, Sedgwick accused Darwin of deserting the "true method of induction" since many of his conclusions were "based upon assumptions which can neither be proved nor disproved."⁵¹

Sedgwick also faulted Darwin's use of causation: natural selection was a "secondary consequence" and its cause required explanation. That causation, in Sedgwick's opinion, was "the will of God."⁵² He wrote:

There is a moral or metaphysical part of nature as well as the physical. A man who denies this is deep in the mire of folly. 'Tis the crown and glory of organic science that it does through final cause, link material and moral. . . .⁵³

Finally Sedgwick questioned Darwin's use of geology:

. . . in speculating on organic descent, you over-state the evidence of geology; and. . . you under-state it while you are talking of the broken links of your natural pedigree. . . .⁵⁴

In March 1860 he expanded upon these objections in a review of the Origin of Species published anonymously by The Spectator. Sedgwick identified major objections to Darwin's hypothesis when he emphasized induction, design ("the will of God") and the geological record in his letter and review. These objections would be used repeatedly in the arguments directed against Darwin's book. For example, the same objections were raised by the eminent anatomist Richard Owen in his review of the Origin of Species published anonymously by The Edinburgh Review in April 1860.

Commenting upon natural selection, Owen asserted that it

⁵¹ Adam Sedgwick to Charles Darwin, December 1859, in David L. Hull, Darwin and His Critics (Cambridge, Mass. 1973), 157

⁵² Ibid., 158

⁵³ Ibid., 158

⁵⁴ Ibid., 158

is no very profound or recondite surmise; it is just one of those obvious possibilities that might float through the imagination of any speculative naturalist; only, the sober searcher after truth would prefer a blameless silence to sending the proposition forth as explanatory of the origin of species, without its inductive foundation.⁵⁵

The review was a remarkable piece of puffery which drew extensively upon quotations from Owen's own writings to illustrate that he had long laboured on the same question, but as a "sober searcher after truth" had not been seduced by speculation. Owen chastised Darwin for not including adequate references

to the writings of his predecessors, from whom, rather than from the phenomena of the distribution of the inhabitants of South America, he might be supposed to have derived his ideas as to the origin of species.⁵⁶

Darwin found himself repeatedly misrepresented in the review, which he blamed upon envy caused by the popularity of his book.⁵⁷ He wrote to Charles Lyell: "It is painful to be hated in the intense degree with which Owen hates me."⁵⁸ Owen coached Wilberforce in the Bishop's crusade against the Darwinian hypothesis and engaged in an often vituperative debate with Huxley on the subject in lectures and in print for many years. In fact, however, Owen's position on the fixity of species, although expressed with a cautious ambiguity, was close to Darwin's and his opposition to the Darwinian hypothesis was aroused at least in part by the fear that

⁵⁵ [Richard Owen], "Darwin on the Origin of Species", Edinburgh Review (April 1860), in Hull, Darwin and His Critics, 196

⁵⁶ Ibid., 184

⁵⁷ Charles Darwin to J.S. Henslow, 8 May 1860 in Hull, Darwin and His Critics, 172

⁵⁸ Charles Darwin to C. Lyell, 10 April 1860, in Hull, Darwin and His Critics, 172

his own work would be eclipsed. A reviewer in the London Review, 1866, commented that Owen "denies the Darwinian doctrine, admits the accuracy of its basis, and claims to be the first to point out the truth of the principle on which it is founded."⁵⁹

The leading opponent in the United States of Darwin's hypothesis was the Harvard zoologist Louis Agassiz. In 1860 the American Journal of Science and Arts published an excerpt dealing with the Origin of Species from the advance proof sheets of the third volume of Agassiz' Contributions to the Natural History of the United States. Agassiz distinguished between "individual peculiarity" and specific difference. The differences which are perceived in individual members of species over successive generations relate to their individuality and do not affect the integrity of the species.

Whatever minor differences may exist between the products of this succession of generations are all individual peculiarities, in no way connected with the essential features of the species, and therefore as transient as the individuals; while the specific characters are forever fixed. . . .⁶⁰

Moreover, such individual peculiarities are not transmitted through inheritance but disappear with the individual. Individuals transmit instead "all that is specific or generic, or, in a word, typical in them. . .".⁶¹ Agassiz upheld the evidence of design in nature.

⁵⁹London Review, 12, 1866, 516, in Alvar Ellegard, Darwin and the General Reader, 50

⁶⁰Louis Agassiz, "Professor Agassiz on the Origin of Species", American Journal of Science and Arts, Second Series, 30 (1860), in R. J. Wilson, ed., Darwinism and the American Intellectual (Homewood, Ill. 1967), 18-19

⁶¹Ibid., 19

. . . there runs throughout Nature unmistakable evidence of thought, corresponding to the mental operations of our own mind, and therefore intelligible to us as thinking beings, and unaccountable on any other basis than that they owe their existence to the working of intelligence; and no theory that overlooks this element can be true to nature.⁶²

Agassiz defined species as "categories of thought in the Supreme Intelligence" which have "as truly an independent existence and are as unvarying as thought itself after it has once been expressed."⁶³ Species existed as ideas in the mind of God as Aristotelian essentialism maintained. Agassiz also argued that the geological record did not support Darwin's hypothesis. There were no fossil remains leading to the earliest evidence of highly organized marine animals in the Cambrian period.

Agassiz asserted that

Species appear suddenly and disappear suddenly in successive strata. That is the fact proclaimed by Palaeontology; they neither increase successively in number, nor do they gradually dwindle down; none of the fossil remains thus far observed show signs of a gradual improvement or of slow decay. . . .⁶⁴

Darwin had been unable to produce any facts from the geological record to prove his case that species were mutable. Agassiz stated, "Instead of facts we are treated with marvellous bear, cuckoo, and other stories."⁶⁵

Agassiz' main opponent in the Darwinian controversy and Darwin's chief defender in the United States was the botanist Asa Gray, who also taught at Harvard. In a series of public debates on the subject, Gray triumphed over the arguments presented by Agassiz against the Origin of Species, an argument on species which had begun before the publication of Darwin's book. At a meeting of the American Academy of Arts and Sciences

⁶² Ibid., 16

⁶³ Ibid., 19

⁶⁴ Ibid., 15

⁶⁵ Ibid., 12

on 11 January 1859, Gray had supported the concept of the mutability of species while Agassiz defended the creation of immutable species. Gray asserted that Darwin's hypothesis need not be incompatible with the belief that design confirming the existence of God was evident in nature. In an 1860 review of the Origin of Species, Gray asked:

What is to hinder Mr. Darwin from giving Paley's argument a further a-fortiori extension to the supposed case of a watch which sometimes produces better watches, and contrivances adapted to successive conditions, and so at length turns out a chronometer, a town clock, or a series of organisms of the same type?⁶⁶

Gray extended his support of design to the concept of natural selection in such articles as "Natural Selection not Inconsistent with Natural Theology" published by the Atlantic Monthly in 1860. Upholding the need for "a Divinity that shapes these ends", Gray wrote:

Mr. Darwin, in proposing a theory which suggests a how that harmonizes these facts into a system, we trust implies that all was done wisely, in the largest sense designedly, and by an Intelligent First Cause.⁶⁷

He believed that this Divinity in nature was responsible for controlling and directing the variations on which natural selection acts.⁶⁸ Gray's position on teleology was that it was possible to reconcile design with the Darwinian hypothesis, thus answering one of Agassiz' fundamental criticisms.

In The Structure of Scientific Revolutions, Thomas S. Kuhn has

⁶⁶Asa Gray, "Review of Darwin's Theory on the Origin of Species", American Journal of Science and Arts, Second Series, 29 (1860), in Wilson, Darwinism, 34

⁶⁷Ibid., 36, 31

⁶⁸Irvine, Apes, Angels and Victorians, 108

asserted that neither the mutability of species nor the possibility of man's descent from apes was as important to Darwin's critics as the fact that the Origin of Species "recognized no goals set either by God or nature."⁶⁹ Kuhn noted that the evolutionary theories proposed before Darwin's had presented evolution as a goal-directed process.

The "idea" of man and of the contemporary flora and fauna was thought to have been present from the first creation of life, perhaps in the mind of God. That idea of plan had provided the direction and the guiding force to the evolutionary process.⁷⁰

Similarly David L. Hull has noted:

Teleology had been part of the conceptual framework of Western science from ancient Greece until the time of Darwin. . . . The change in scientific thought marked by the appearance of the Origin of Species was so fundamental that it certainly deserves the title of a conceptual revolution.⁷¹

The Origin of Species posited development that moved from primitive beginnings but not towards a specific goal.⁷² Natural Selection eliminated the concept of design or plan in nature and, therefore, removed the fundamental assumption of Paley's natural theology. Kuhn wrote:

The belief that natural selection, resulting from mere competition between organisms for survival, could have produced man together with the higher animals and plants was the most difficult and disturbing aspect of Darwin's theory.⁷³

Loren Eiseley has suggested that Darwin replaced "a naively simple" form

⁶⁹Thomas S. Kuhn, The Structure of Scientific Revolutions (Chicago 1967), 171

⁷⁰Ibid., 170-171

⁷¹Hull, Darwin and His Critics, 55

⁷²Kuhn, Scientific Revolutions, 171

⁷³Ibid., 171

of the design argument that saw design as the "creation of an animal or plant for a special purpose and for all time" with a "broad and more sophisticated teleology" which argued for "directivity in the process of life even though that directivity may be without finality in a human sense."⁷⁴ Such supporters of evolution as Asa Gray, Thomas Huxley and, later in the century, Henri Bergson have suggested that Darwin's hypothesis might be considered teleological. The inescapable fact remains, however, that the Origin of Species challenged the Paleyite concept of design by demonstrating that science neither required nor supported teleology. Acceptance by members of the scientific community of this elimination of teleology would indeed prove that the revolution which Huxley believed would be produced by the Origin of Species had been effected.

The question of teleology suggests that it is possible to use the Kuhnian concept of paradigms to analyze the opposition to the Origin of Species. While the meaning of paradigm as Thomas S. Kuhn has employed it has been open to discussion, his statements that the term is related closely to "normal science" and that paradigms "provide models from which spring particular coherent traditions of scientific research" indicate that paradigms may represent sets of established assumptions and practices which unite the scientific community during a given period of time.⁷⁵ Scientific revolutions occur when an old paradigm is replaced by a new one in response to a crisis produced by the inability of the

⁷⁴Eiseley, Darwin's Century, 198

⁷⁵Kuhn, Scientific Revolutions, 10

old paradigm to explain anomalies made evident by new discoveries or new theories. The existence of competing paradigms during periods of transition splits the scientific community into two worlds, isolated by inability to understand each other's goals, methods, or language. Kuhn cites Darwin's statement:

I by no means expect to convince experienced naturalists whose minds are stocked with a multitude of facts all viewed, during a long course of years, from a point of view directly opposite to mine.⁷⁶

Conversion to the new paradigm is a slow process and, as Kuhn has noted:

Lifelong resistance [to the new paradigm] particularly from those whose productive careers have committed them to an older tradition of normal science, is not a violation of scientific standards but an index to the nature of scientific research itself.⁷⁷

Certainty about the existing paradigm is what makes normal science possible; once a new paradigm has been accepted and has become "normal science", it will elicit the same kind of certainty. Belief in teleology was part of the paradigm which Darwin's hypothesis threatened to supersede. Another aspect of this old paradigm was its conception of the inductive method.

The concept of paradigms, of course, was not understood in Darwin's time and not all accept it today. Moreover, in our time, it is understood that a paradigm has validity only to the degree that it renders the available evidence intelligible. It does not purport to be an absolute generalization, but recognizes that scientific laws are relative and ultimately have nothing to say about the "why" as opposed to the "how" of the material world. Failure to comprehend this distinction accounts for the continuing belief in the ability of scientists to

⁷⁶Ibid., 150

⁷⁷Ibid., 150

undermine religious convictions or doctrines. Since Darwin and his contemporaries, especially the latter, did not appreciate the relativity of scientific statements, they clung dogmatically to their positions. Those who were on his side were the more convinced because they attached an exaggerated importance to inductively based generalizations; those who were opposed were equally dogmatic because they shared the same assumptions about the validity of scientific conclusions when properly formulated. If they had seen the matter from Kuhn's perspective, they would have found it much easier to differentiate between scientific, philosophical, and religious explanations or generalizations.

In Darwin and His Critics, David L. Hull has noted that scientists who argued that Darwin had not proved his hypothesis accepted such theories as Newton's theory of universal gravitation as demonstrated by induction.⁷⁸ Hull's explanation for this disparity reflects the Kuhnian concept of paradigms.

It is certainly true that Darwin had not proved a complete induction, but neither had Newton or any of his followers. . . . The major difference was that Newton's theory was accepted. It was part of the received doctrine.⁷⁹

Hull argued that the philosophies of science constructed by Sir John Herschel, William Whelwell and John Stuart Mill employed physical theories as paradigms which established unrealistic standards of proof.⁸⁰ For example, the mathematician William Hopkins in 1860 had used the gravitational theory and the undulatory theory of light as standards of proof

⁷⁸Hull, Darwin and His Critics, 29

⁷⁹Ibid., 29

⁸⁰Ibid., 16, 29

in his appraisal of Darwin's hypothesis. Hull noted that neither of these physical theories had been proved because both were false and that neither theory was typical of physics.⁸¹ He concluded that

Given Hopkins' parochial selection of physical theories and his unrealistic interpretation of them, evolutionary theory was bound to be judged inadequate, no matter how fair he might be.⁸²

Recent students of Darwin's methodology such as Ernst Mayr, Gavin De Beer, and Michael Ghiselin have emphasized its modernity.⁸³ In The Triumph of the Darwinian Method, Ghiselin commented:

Unless one understands this - that Darwin applied, rigorously and consistently, the modern, hypothetico-deductive scientific method - his accomplishments cannot be appreciated. His entire scientific accomplishments must be attributed not to the collection of facts, but to the development of theory.⁸⁴

Ghiselin has provided an answer to criticism of the proof advanced by Darwin: "The Origin of Species is less to be valued for the answers it gives than for the questions it asks."⁸⁵

Within a decade of the publication of the Origin of Species, the mutability of species was generally accepted by the scientific community.

M.J.S. Hodge has noted:

Any doubt that common descent - as distinct from natural selection - would prevail ended with George Bentham's presidential address (May 25, 1868) to the Linnean Society

⁸¹ Ibid., 274

⁸² Ibid., 274

⁸³ Ernst Mayr, "Introduction" in Charles Darwin, On the Origin of Species: A Facsimile of the First Edition (Cambridge, Mass. 1964); Gavin de Beer, Charles Darwin: Evolution by Natural Selection (Garden City, N.Y. 1964); Michael T. Ghiselin, The Triumph of the Darwinian Method (Berkeley and Los Angeles 1969).

⁸⁴ Ghiselin, Darwinian Method, 4

⁸⁵ Ibid., 235

and Charles Lyell's new edition, the 10th, of his Principles of Geology (1st. vol. 1867; 2nd vol. 1868).⁸⁶

Both Bentham, a botanist, and Lyell came out in clear support of evolution. Alvar Ellegard stated that in the period 1864 - 1869, "almost everybody, Darwinian or not, was ready to attest that the scientific world had in general come to accept evolutionary views."⁸⁷ This opinion was supported by The Spectator in 1868 which commented that Darwinian principles more or less claimed "a large majority both of the general public and, in this country, of scientific naturalists."⁸⁸ However, both Hodge and Ellegard made a distinction between acceptance of evolution and acceptance of natural selection. Ellegard wrote: "The majority of the general public, and a good many scientists, refused to accept the Natural Selection theory, while allowing themselves to be converted to evolutionism."⁸⁹ Nevertheless, Darwin was sufficiently satisfied with the acceptance of his hypothesis to essay the subject of man.

In February 1871 the publication of The Descent of Man and Selection in Relation to Sex presented the conclusion implicit in the Origin of Species "that man is the co-descendant with other species of some ancient, lower, and extinct form. . . ."⁹⁰ According to Darwin

[W]hen I found that many naturalists fully accepted the doctrine of the evolution of species, it seemed to me advisable to work up such notes as I possessed, and to

⁸⁶ M.J.S. Hodge, "England" in Thomas F. Glick, ed., The Comparative Reception of Darwinism (Austin and London 1972), 3

⁸⁷ Ellegard, General Reader, 57

⁸⁸ Ibid., 59

⁸⁹ Ibid., 17

⁹⁰ Darwin, Descent of Man, 390

publish a special treatise on the origin of man.⁹¹

In fact, Darwin wrote this work only with great reluctance. He had hoped that the subject of man might attract Alfred Russel Wallace. Despite the fact that Darwin offered him all his notes and bibliography, Wallace refused to undertake the project. His reason for declining was that he was busy writing a travel book, but it soon became obvious that Wallace did not accept an evolutionary explanation for man's descent. In April 1869, The Quarterly Review published Wallace's article "Sir Charles Lyell on Geological Climate and the Origin of Species" which argued that human intelligence could only be explained by the direct intervention of Cosmic Intelligence.⁹² Wallace reluctantly concluded that neither natural selection nor any of Darwin's other explanations could account for the emergence of man as an intelligent and spiritual creation. Therefore, after completing his Variation of Animals and Plants under Domestication, Darwin began his three-year task of writing The Descent of Man.

In The Descent of Man, Darwin asserted: "He who is not content to look, like a savage, at the phenomena of nature as disconnected, cannot any longer believe that man is the work of a separate act of creation."⁹³ He argued that "man is descended from a hairy, tailed quadruped, probably arboreal in its habits, and an inhabitant of the Old World."⁹⁴ Moreover, this development extended to man's intelligence and moral sense: there

⁹¹Darwin, Autobiography, 65

⁹²Irvine, Apes, Angels, and Victorians, 186-187

⁹³Darwin, Descent of Man, 909

⁹⁴Ibid., 911

was a difference in degree, not in kind, between the mind of man and of the higher animals, and the foundation of man's moral sense was the social instincts evident in animals.⁹⁵ Most of The Descent of Man, however, deals not with man but with the process of sexual selection, "the advantage which certain individuals have over others of the same sex and species solely in respect to reproduction."⁹⁶ Darwin wrote:

It is certain that amongst almost all animals there is a struggle between the males for the possession of the female. This fact is so notorious that it would be superfluous to give instances. Hence the females have the opportunity of selecting one out of several males. . . .⁹⁷

He noted that females select "the more attractive, and at the same time vigorous males" and produce a larger number of offspring than less vigorous and less attractive pairs.⁹⁸ Ghiselin has called sexual selection "Darwin's most brilliant argument in favor of natural selection of which it is a corollary."⁹⁹

The most vehement critic of Darwin's new book was the Roman Catholic biologist St. George Mivart, who accepted the mutability of species but attempted to reconcile a teleological concept of evolution with Catholicism. Mivart argued:

We maintain that while there is no need to abandon the received position that man is truly animal, he is yet the only rational one known to us, and that his rationality constitutes a fundamental distinction - one of kind and not of

⁹⁵ Ibid., 494

⁹⁶ Darwin, Descent of Man, 568

⁹⁷ Ibid., 571

⁹⁸ Ibid., 578

⁹⁹ Ghiselin, Darwinian Method, 215

degree.¹⁰⁰

Mivart's criticisms were answered by Thomas Huxley and by mathematician and philosopher Chauncey Wright in the United States. However, undoubtedly prepared by the Origin of Species, the reading public generally did not respond with shock to The Descent of Man. When criticism or reservations were expressed, they were usually tempered with respect for Darwin's scientific reputation. Huxley commented:

A happy change has come over Mr. Darwin's critics. The mixture of ignorance and insolence which, at first, characterised a large proportion of the attacks with which he was assailed, is no longer the sad distinction of anti-Darwinian criticism.¹⁰¹

While critics of the Darwinian hypothesis would continue to express their opposition, they were clearly on the defensive by 1871. The Descent of Man represented the logical completion of the argument, and the revolution, begun twelve years earlier in the Origin of Species.

¹⁰⁰(St. George Mivart) "Darwin's Descent of Man", Quarterly Review (July 1871) in Hull, Darwin and His Critics, 381-382

¹⁰¹Irvine, Apes, Angels, and Victorians, 197

II

THE CANADIAN RECEPTION OF DARWINISM

The Origin of Species presented a view of nature which was already familiar to nineteenth-century Canadians. Life in the vast, sparsely settled country was close enough to nature to provide numerous indications of the struggle for survival cited in support of the Darwinian hypothesis. In his "Conclusion" to the Literary History of Canada, Northrop Frye has written:

The environment, in nineteenth-century Canada, is terrifyingly cold, empty and vast, where the obvious and immediate sense of nature is the late Romantic one, increasingly affected by Darwinism, of nature red in tooth and claw.¹

Sandra Djwa's study of the poet E. J. Pratt has described the effect which the Darwinian concept of nature had upon Pratt growing up in Newfoundland at the end of the century.² Pratt witnessed man's continuing struggle against nature in this particular environment and to him it represented "the ironic enigma of Nature in relation to the Christian view of the world."³ The Precambrian rocks of the Laurentian Shield served as a constant reminder of the antiquity of the world, and the native people whose existence in Canada dated from long before the first European arrived gave the newer settlers from the Old World living examples of man in a natural and primitive state.

¹Northrop Frye, "Conclusion" in C. F. Klinck, ed., Literary History of Canada (Toronto 1967), 843

²Sandra Djwa, E. J. Pratt: The Evolutionary Vision (Montreal 1974).

³Ibid., 5

If Canada's physical environment supplied immediate evidence of Darwin's view of nature, its universities provided a nexus for the formulation of scientific, theological, and philosophical responses to the questions raised by the Darwinian revolution. The interplay of these responses was especially important in the history of Canadian ideas since it occurred at a time when the perception and teaching of both science and theology were changing in Canadian universities. The fact that the publication of the Origin of Species coincided with the completion of University College in Toronto may be taken as symbolic of the close association between the discussion of Darwin's hypothesis and the development of universities in Canada. The last half of the nineteenth century was a period of remarkable growth for Canadian universities from small, limited institutions with uncertain futures to diversified and relatively secure institutions at the turn of the century. While McGill University perhaps presented the most dramatic illustration of this growth, it was also evident in the development of Queen's University and the University of Toronto.

Science was becoming a more significant part of university education in the late nineteenth century than it had been previously. Surveying scientific enquiry in England, David Hull has noted:

Men who occupied themselves with what we now call science have been around for a long time but they tended either to be of independent means or else to make their living in other professions, frequently becoming clergymen. Nor was science a very significant part of university education prior to the nineteenth century. All this was changing when Charles Darwin published the Origin.⁴

⁴David Hull, "Darwinism and Historiography" in F. Glick, ed., The Comparative Reception of Darwinism (Austin and London 1972), 397

This professionalization of science was evident in Canada where amateur naturalists were being replaced by academic specialists. The teaching of science was encouraged by the demand for graduates in such subjects as engineering and geology to meet the practical needs of the country. Growing Canadian interest in science was also indicated by the development of societies to promote scientific enquiry. The Montreal Natural History Society, founded in 1827, published the influential Canadian Naturalist. The Royal Canadian Institute was established in Toronto in 1849 and its Journal became an important vehicle for scientific discussion. In 1859, the Nova Scotia Literary and Scientific Society was established. Articles on science frequently appeared in such periodicals as The Canadian Monthly and National Review, The Bystander, and, at the end of the century, the Queen's Quarterly.

In 1859, Dr. James Bovell published Outlines of Natural Theology for the Use of the Canadian Student, which presented, as the title suggested, a Paleyite interpretation of the current state of scientific knowledge. Bovell was a Church of England priest and a medical doctor who had been a founder of the Trinity University medical faculty and later was a member of the Toronto School of Medicine. Earlier in the century, Henry Taylor, an author from Lower Canada, wrote An Attempt to Form a System of the Creation of our Globe, of the Planets, and the Sun of our System, which argued that the Genesis days of creation were successive cycles of time.⁵ Published in Toronto in 1836, Taylor's work

⁵A. Vibert Douglas, "Scientific Writings" in Literary History of Canada, 448

went through nine editions by 1854.⁶ Other attempts in British North America to reconcile science and religion included Thomas Trotter's Treatise on Geology (1845), Moses Harvey's The Harmony of Science and Revelation (1856), and T. W. Goldie's Mosaic Account of Creation of the World and the Noachian Deluge Geologically Explained (1856). Paley's own writings and the writings of such popularizers as Hugh Miller were also available in Canada. The first printed calendar, 1854 - 1856, for the University of Trinity College, Toronto, listed Paley's Evidences of Christianity as a subject for examination in Arts.⁷

During the last half of the nineteenth century, the preoccupation with religion which has always been a distinctive undercurrent in Canadian life came to the surface as theologians attempted to meet the new philosophical and scientific challenges of their age. Religious concern extended to such laymen as Goldwin Smith who believed that the theory of evolution threatened to undermine the religious beliefs upon which the stability of society depended.⁸ Such works as David Strauss' The Life of Jesus Critically Examined, Ernest Renan's Life of Jesus, and J. R. Seeley's Ecce Homo advocated a higher criticism of the Biblical record which raised questions already implicit in the scientific advances of the time. In his history of the Presbyterian Church in Canada, John S. Moir called the higher criticism the "most important theological development of the late Victorian period" but Moir added:

⁶Ibid., 449

⁷T. A. Reed, ed., A History of the University of Trinity College (Toronto 1952), 53-54

⁸Goldwin Smith, No Refuge but in Truth (Toronto 1909), 9

Only after it had been thoroughly disputed abroad did higher criticism reach Canada, and here its exponents presented their findings as academic hypotheses rather than as new and sensational dogmas.⁹

Moir also argued that the theory of evolution had a minimal effect upon Canadian religious belief in the nineteenth century.¹⁰ While it is true that much of the debate was university centred, this should not lessen the importance of higher criticism and the theory of evolution for theology in Canada. The academic nature of the debate ensured that a generation of theological students would be exposed to the arguments and literature relating to fundamental issues concerning the relationship of science and religion in the modern age. By the 1890s, for example, the outlook of Salem Bland had been influenced by his reading of the historical critics of scripture and various works on evolution, including Darwin's.¹¹

Evolutionary principles were expressed in much of Canada's literature during the late nineteenth century. The writings of such poets as Bliss Carman, Archibald Lampman, and Charles G. D. Roberts demonstrated a concern with the questions raised by evolution. Evolution also lent itself to the popular genre of the nature and animal story. Writers explored, sometimes to extremes, the notion of survival of the fittest and man's kinship with his animal brothers. In Wild Animals I Have Known published in 1898, Ernest Thompson Seton wrote:

⁹John S. Moir, Enduring Witness: A History of the Presbyterian Church in Canada (Toronto n.d.), 174

¹⁰Ibid., 175

¹¹Richard Allen, The Social Passion (Toronto 1971), 9

We and the beasts are kin. Man has nothing that the animals have not at least a vestige of: the animals have nothing that man does not in some degree share.¹²

The animal stories of Charles G. D. Roberts often present a stark picture of the struggle for survival. "The Last Barrier" by Roberts described the winnowing of salmon caused by the barrier of a waterfall:

The Falls were such that vigorous fish had no real trouble in surmounting them. But they inexorably weeded out the weaklings. No feeble salmon ever got to the top of that straight and thunderous pitch.¹³

The "sweeping evolutionary concerns" of E. J. Pratt, who was a generation younger than Roberts, have been examined by Sandra Djwa in E. J. Pratt: The Evolutionary Vision.¹⁴ Djwa held that "the conflict between Darwinian nature and Christian ethics" was "Pratt's central concern."¹⁵

The discussion of the Darwinian hypothesis occurred at a critical time in Canada's development as a nation. The years following Confederation were marked by a considerable flurry of intellectual activity. In 1868, the Canada First Movement was founded by men who "attempted to arouse a stronger consciousness of uniqueness among Canadians and to impart meaning to the phrase, 'new nationality'."¹⁶ Similar goals motivated writers and educators. There was, however, a defensive quality to much of this activity which made it somewhat self-conscious. Factional

¹²Cited in Literary History of Canada, 626

¹³Charles G. D. Roberts, The Last Barrier (Toronto 1958), 83

¹⁴Djwa, Pratt, 11

¹⁵Ibid., 11

¹⁶Carl Berger, The Sense of Power (Toronto 1970), 49

and sectional problems threatened the country's existence almost immediately after its creation. The realm of ideas might provide Canada with that unifying force which politics seemed unable to give. This was the hope which Claude Bissell has noted in his survey of literary development in Post-Confederation Central Canada:

To many observers, the factional manoeuvring that had preceded Confederation and the grave problems that immediately followed it made it apparent that national unity had to be founded on something more stable than the niceties of political compromise. Was it not possible, they asked, to sink political divergence in a disinterested concern for the cultural life of the new nation?¹⁷

During such uncertain periods, traditional values and patterns of ideas often assume a new importance. Canada's intellectual development in the post-Confederation years reflected a reliance upon such traditional elements even while it searched for national uniqueness. This created such apparent paradoxes as the compatibility of nationalism and imperialism in the minds of many Canadians. One result of this was that Canadians were especially sensitive to such new ideas as Darwin's theory of evolution which threatened, in the opinion of many, to challenge and alter the intellectual and spiritual roots of the nation.

The threat perceived in Darwin's theory of evolution was evident in the writings of Goldwin Smith at the turn of the century. In a letter to Lord Mount Stephen in 1902, Smith wrote:

Darwin has proved that there was no fall of man. If there was no fall, how can there have been an incarnation or a redemption, and what becomes of the whole edifice of

¹⁷ Claude Bissell, "Literary Taste in Central Canada During the Late Nineteenth Century", Canadian Historical Review (1950), 238-239

orthodox Christianity?¹⁸

Later in the same year, Smith wrote to Lord Mount Stephen: [✶]

The collapse of religion is sure to be felt in the disturbance of morality. When this is combined with hunger for gain and luxury, the next generation is likely to see lively times.¹⁹

Smith considered the implications of Darwinism and the higher criticism for the future of religious belief and the stability of society in such works as Guesses at the Riddle of Existence (1897), The Founder of Christendom (1903), In Quest of Light (1906), and No Refuge but in Truth (1908). In Guesses at the Riddle of Existence, Smith held that "Darwin's discovery has effaced the impassable line which we took to have been drawn by a separate creation between man and the beasts who perish."²⁰ He wrote:

These are troublous times. The trouble is everywhere: in politics, in the social system, in religion. But the storm-centre seems to be in the region of religion. The fundamental beliefs on which our social system has partly rested are giving way.²¹

Smith noted: "It is natural to fear that unless a substitute for religion can, within a measurable time, be found, a period of some moral confusion will ensue."²²

¹⁸Goldwin Smith, to Lord Mount Stephen, 1 February 1902, in T. A. Haultain, ed., A Selection of Goldwin Smith's Correspondence (London 1913), 379

¹⁹Goldwin Smith to Lord Mount Stephen, 5 April 1902, in Haultain, Smith's Correspondence, 379

²⁰Goldwin Smith, Guesses at the Riddle of Existence (New York 1897), 101

²¹Ibid., 96

²²Ibid., 196-197

Despite his apparent pessimism, Smith retained some hope for the future of religious faith. In In Quest of Light, he stated, "We are happily casting off superstition, but there may be still some scope for faith. Not for the faith which would reject or supplant reason, but for the faith which is the evidence of things unseen."²³ He believed that it was then impossible to make a definitive judgement on the validity of the concept of evolution since future scientific discoveries might provide further clarification: "Physical science itself is still advancing, and there may be Darwins after Darwin."²⁴

I find myself between two fires: The Darwinian and the Dominican. But I fancy that my position is that of a good many thoughtful men who have renounced superstition but are not ready to go the whole length of materialism without further light. Even on social grounds the prospect of a reign of commercialism without conscience is enough to make us pause.²⁵

It was also obvious that, in Smith's opinion, man's mental and moral development had not been explained by any theory of physical evolution.

In No Refuge but in Truth, he wrote:

I accept evolution, if it is the verdict of science as to the origin of physical species, the human species included; though it certainly seems strange that, the chances being so numerous as they are, no distinct case of evolution should have taken place without our ken. But the theory apparently does not pretend to account for the development of man's higher nature. That there is a gap in the continuity of development or any supernatural intervention has never been suggested by me; but it does appear that there is an ascent such as constitutes an essential difference and calls for other than physical explanation.²⁶

²³ Goldwin Smith, In Quest of Light (Toronto 1906), 7

²⁴ Ibid., 72

²⁵ Ibid., 16

²⁶ Goldwin Smith, No Refuge but in Truth (Toronto 1909), 39

Goldwin Smith counseled that, assuming adequate proof, the findings of modern science must be accepted and he recognized that many of these findings had a serious effect upon man's religious faith: "To know what remains to us of our traditional belief we must frankly resign that which, however cherished, the progress of science and learning has taken away."²⁷ Nevertheless, as his comments on the development of man's higher nature indicate, man's moral instincts and perceptions suggested to Smith that "To some power, and apparently to some moral power, we must owe our being."²⁸

The religious response to modern science was discussed in an editorial, "On Educational Work", which appeared in 1876 in the Canadian Methodist Magazine, edited by the Rev. W. H. Withrow. Emphasizing the unity of truth, the editorial noted "a disastrous divorce" between religion and science and suggested that this situation was due in part to the ignorance of the ministry.²⁹

Sometimes the pulpit has been guilty of caricatures and attempted refutations of Spencer, Tyndall, Darwin, and Huxley, which were calculated to produce only shame and sorrow, or disgust and indignation. They betray either gross ignorance or flagrant dishonesty - ignorance of the real teaching of the men denounced, or dishonest perversion of those teachings. More intimate mutual acquaintance, and greater candour and fairness, can alone bridge the abyss between the two divisions of the great army of truth - religion and science - can alone enable them to advance, side by side, for the dispelling of darkness and overthrow of error, instead of engaging in fratricidal conflict with each other - for are they not both

²⁷Smith, In Quest of Light, vii

²⁸Ibid., 45

²⁹The Canadian Methodist Magazine (July-December 1876), 464

sons of the God and Father of truth?³⁰

In 1890, the other Methodist organ, the Christian Guardian, counseled the acceptance of scientific fact but stressed as well the responsibility of the informed layman in science to question scientific theories.

So far. . . as the facts of science are concerned, we must depend for our knowledge almost wholly on those who dig in these mines of research. Supposing the observation in every case to be carefully made and accurately reported we are bound to accept the result as true. . . . But when we pass to the theories and opinions which may be based on alleged facts, the intelligent non-scientific reader should have something to say. . . . It may be inadmissible for ordinary mortals to question the facts; but certainly all thinking and educated people have a right to judge of the soundness of the reasoning and arguments by which a theory or conclusion is supported.³¹

A decade later, the Christian Guardian viewed evolution from a perspective which indicated that belief in it could exist within a theological context without conflict.

It is of lesser importance that a man holds to what Genesis seems to teach, or that he seeks to explain the origin of sin from the standpoint of an evolutionist; his beliefs as to the origin of sin assume importance only, or at least chiefly as they enable him to deal adequately or inadequately with the fact as we have it to-day.³²

An Anglican clergyman, Canon George Jacobs Low of Ottawa, asserted in 1898 that "Evolution is now too much thoroughly established to be resisted or ignored by Theology."³³ Canon Low's advice was to have faith in Christ, the second Adam who imparted eternal life as man's potential.

³⁰ Ibid., 465

³¹ Christian Guardian (10 December 1890), 792

³² Christian Guardian (5 February 1908), 5-6

³³ G. J. Low, "Evolution in Relation to Christian Thought", Queen's Quarterly (October 1898), 93.

By the end of the nineteenth century, it was evident that many clergy and laymen, while still profoundly concerned about the implications of evolution for their faith, accepted that the theory would not disappear and perhaps accepted as well the applicability of the theory to man's physical origins and development.

In the opinion of the essayist W. D. LeSueur, an understanding of such scientific concepts as evolution required the general public to learn the precise meaning of the words used by modern science:

Many of the phrases which the science of today has made the common property of the reading world are wholly void of meaning unless understood in the precise sense in which they may happen to be employed, though the words of which they are composed are as common as words can be.³⁴

LeSueur cited the example of Darwinism:

What words. . . are better understood than "protective" and "resemblance"? But ask some one who is wholly unacquainted with the literature of Darwinism what a "protective resemblance" is, and he will be utterly at a loss for an answer. . . . The same remark applies to the much more familiar term "natural selection"; you must either know the special sense in which the words are used or else find them a meaningless formula. Many phrases of a scientific or semi-scientific character have been caught up by the multitude and are used with very slight reference to their true significance.³⁵

F. W. Watt has called LeSueur "that almost unique phenomenon of nineteenth-century Canada, a disciple of Auguste Comte."³⁶ As might be expected of one associated with positivism, LeSueur defended the accomplishments of

³⁴W. D. LeSueur, "A Few Words on Criticism", Canadian Monthly and National Review, XI (September 1879), 325

³⁵Ibid., 325

³⁶F. W. Watt, "Literature of Protest" in Literary History of Canada, 160

modern science. In his 1879 article "The Scientific Spirit", he noted that

The modern world is, in altogether peculiar degree, under the dominion of physical science, and more and more of the best thought of our time is being drafted into scientific regions.³⁷

LeSueur believed that this emphasis upon science improved the conditions of life and that "human thought. . . is in a healthier state than in the days when science was feeble and theology strong."³⁸ He argued, however, against dogmatism in science, rigid acceptance of the orthodox science of the time.

The true scientific attitude of mind is one opposed to all dogmatism, one which regards the work of science as in its nature exhaustless, and which sees that progress consists in ever grasping more and more of the unity of laws and phenomena, and not in pursuing separate lines of enquiry into infinitely minute detail.³⁹

In LeSueur's opinion, there was a need to stress the fact that all scientific theories were really working hypotheses: "How unwise therefore to allow a working hypothesis actually to stand in the way of works - to nail ourselves down to it, as if it were really part of the durable framework of the universe!"⁴⁰ Although he did not share Goldwin Smith's fears concerning the effect of scientific discoveries upon religious faith, LeSueur would clearly agree with Smith's assertion that "Physical science itself is still advancing, and there may be Darwins after Darwin."⁴¹

³⁷W. D. LeSueur, "The Scientific Spirit", Rose-Belford's Canadian Monthly, III (1879), 437-441

³⁸Ibid., 437

³⁹Ibid., 439

⁴⁰Ibid., 439

⁴¹Smith, In Quest of Light, 7

LeSueur held that, rather than becoming bogged down in the defence of provisional theories or in the classification of specimens, science must be "the instructor of humanity to all noble ends. . . the great liberaliser of thought, the enemy of superstition and confusion, the beautifier of life. . . ."42

The advances in nineteenth-century science left their mark upon Canadian philosophy. Canada's most influential philosophers in the nineteenth century were John Watson of Queen's and John Clark Murray of McGill. Murray taught Mental and Moral Philosophy at Queen's University from 1862 to 1872 when he accepted an appointment to McGill. Greatly influenced by Sir William Hamilton and the Scottish Common Sense school while a student at the universities of Glasgow and Edinburgh, Murray was also influenced strongly by modern French and German philosophy and by biblical criticism during studies at Göttingen and Heidelberg.⁴³ Noting that it is difficult to classify Murray's philosophical position, J. A. Irving suggested that it might be best described as "eclectic idealism."⁴⁴ Murray's major work was An Introduction to Ethics, published in 1891. In it, he made considerable use of the evolutionary concept of development.

In its matter the physical nature of man is connected with the existing matter of the organic and inorganic worlds, governed by the same mechanical, chemical, and physiological movements which are traceable in these. In its form, man's

⁴²LeSueur, "Scientific Spirit", 441

⁴³J. A. Irving, adapted by A. H. Johnson, "Philosophical Literature to 1910" in Literary History of Canada, 442-443

⁴⁴Ibid., 443

physical nature is connected historically with the past evolutions of the organic world.⁴⁵

Murray emphasized the influence of heredity:

Every department of science which treats of human life is being profoundly modified by the conviction that human nature, as we find it now in all its manifestations, is in some sense an evolution of human nature as it existed in the past. Accordingly the mental life of every man is, in a large measure, hereditarily determined by the narrower influences of his immediate ancestry, by the wider influences of the particular race to which he belongs.⁴⁶

In J. A. Irving's opinion, "it is remarkable that he [Murray] should have been so receptive to the scientific material that had become available as an aftermath of the Darwinian biology."⁴⁷

As the above survey suggests, responses to Darwin's theory of evolution were widespread and took many forms in Canada. In the 1867 Inaugural Address to University College's new Natural Science Association, W. H. Ellis declared, "We are slowly advancing towards truth on the ruin of old theories."⁴⁸ There were those in Canada who feared that the Darwinian revolution would ruin more than old theories. The purpose of this study is to analyze the responses of John William Dawson, Daniel Wilson, John Watson, and Nathanael Burwash to the Darwinian hypothesis. Each man responded in a distinctive manner, and both the immediate and the long range influence of their ideas was not equal. Their collective

13 ⁴⁵ John Clark Murray, An Introduction to Ethics (Montreal, 1891),

⁴⁶ Ibid., 20

⁴⁷ Irving, "Philosophical Literature to 1919", 444

⁴⁸ Public Archives of Canada, Biggar Papers, C. R. W. Biggar, notes on the Inaugural Address to the Natural Science Association, University College, made by W. H. Ellis, 14 November 1867.

response, nevertheless, which was enunciated in the last four decades of the nineteenth century tells much about the nature and quality of post-Confederation intellectual life. All four men were active participants in Canadian university development and all four had definite, and articulated, religious beliefs. Starting with Principal Dawson of McGill and then examining the ideas subsequently held by President Wilson of Toronto, Professor Watson of Queen's, and Chancellor Burwash of Victoria College, it is possible to analyze how their responses to Darwin's theory of evolution strove to defend metaphysics and religion against the threat which they apprehended in the Darwinian hypothesis.

An analysis of these four responses to Darwin's ideas reveals two characteristics which might apply in broader terms to Canada's intellectual development. The first is the hybrid nature of the responses. One constant theme permeating all four responses is the interplay of ideas from the United Kingdom and, to a lesser extent, from the United States. The distinctiveness of the responses came not from the formulation of original ideas but rather from the adaptation of external influences to meet specific Canadian intellectual needs. The responses embodied an intellectual tradition which represents the second major theme. There has never been a strong pragmatic or utilitarian tradition in Canada. Rather, Idealism has formed the metaphysical basis for most of Canada's intellectual development. The responses to Darwin's theory of evolution examined in this study illustrate more than the way four Canadian scholars understood a scientific theory. Their responses helped to define the purpose and nature of the Canadian intellectual tradition in the last half of the nineteenth century and revealed as well that this tradition

was firmly rooted in Idealism.

Darwin's theory of evolution was symptomatic of a revolution which extended beyond the world of science. The Bystander noted:

Darwin's discovery. . . has coincided with an immense development of research and criticism, with a great increase of mental activity, with a political and social revolution which has welcomed religious revolution as its ally.⁴⁹

For many Canadians, moreover, Darwin's theory did more than coincide with the political, social, and religious revolution: it provided these revolutions with a new and dangerous conception of man. It was feared that, if evolution reduced the means of man's mental and moral development to mechanistic natural laws, man would be helpless to control his destiny and the destiny of his country. Moreover, this view of man challenged religion since it apparently isolated humanity from divine influence and guidance. It, furthermore, aroused grave doubts about the future of the Canadian nation. The Bystander understood the import of evolution to be that "the strong shall live and the weak shall die."⁵⁰ If the concept of natural selection was valid, the Canadian nation seemed destined to be vanquished in its struggle for survival by a stronger power such as the United States. Only if some metaphysical certitude existed could Canadians hope to escape the ultimate fate of extinction by breaking the deterministic control of blind physical law. It was necessary to establish that man's own mental, moral, and physical efforts were sufficient to ensure individual and national survival.

Initially there was a scientific response to the Origin of Species

⁴⁹"The Religious Crisis", The Bystander (January 1883), 57

⁵⁰Ibid., 59

in Canada. The leading scientist associated with this response was John William Dawson. It is significant that, although Dawson discussed the scientific merits and implications of Darwin's theory, his reaction was clearly affected by his religious beliefs. By the 1870s the concept of evolution was sufficiently accepted to silence any further development of a Canadian scientific response except from the indefatigable Dawson. The publication of The Descent of Man in 1871, however, enabled the critics of Darwin to transfer their attack to the application of the Darwinian hypothesis in the philosophical realm of human mental and moral development. The Descent of Man provoked a response from Daniel Wilson, who had admitted supporting the argument in the Origin of Species. The extension of the Darwinian hypothesis to the specific question of man attracted John Watson as well, who had previously believed himself unqualified and incapable of discussing the strictly scientific questions raised by Darwin's earlier book.

The philosophical response to Darwinian ideas dominated the Canadian discussion of Darwin's theory of evolution for more than two decades. Its purpose was not to refute these ideas but to rescue and defend metaphysics from the materialistic attack which was associated especially with The Descent of Man. Darwin was opposed not as a scientist but as the potential destroyer of metaphysics. In general, the philosophical response to Darwin's theory of evolution began either with an acceptance of the claims made in the Origin of Species or with an uneasy declaration of neutrality concerning them and attempted to prove that it was possible for a metaphysical conception of man's mental and moral development to co-exist with the Darwinian explanation of the origin and

descent of species. While there was an implicitly religious motive behind such an attempt to reconcile Darwinism and metaphysics, the arguments reveal an awareness that the success or failure of a religious stand on evolution depended upon the work accomplished in the field of philosophy.

Once philosophy had demonstrated the possibility of a reconciliation, a third, theological response, evident in the writings of Nathanael Burwash, extended the philosophical reconciliation one step further to the definite inclusion of God in the scheme. This third stage contributed little that was new to the Canadian discussion of Darwin's hypothesis. Since God had always been an implicit part of the philosophical argument, the theologians merely added a sharpened emphasis to the theistic supposition of the metaphysical defence. The philosophical response provided theologians with a formula to demonstrate in their sermons, lectures and writings that religion and the theory of evolution need not be incompatible. This formula also enabled Canadian theologians to turn their attention to what seemed at the time the more urgent question of higher criticism.

Although this study posits three stages of intellectual controversy, it is not suggested that these were rigid divisions which represented any general dialectical progression. Certainly throughout the entire period under examination, all three types of response - scientific, philosophical, theological - intermingled to some degree. John William Dawson, for example, never appreciably modified his initial reaction to the Darwinian hypothesis. The fact remains, however, that Canada witnessed a change in the way that the theory of evolution was discussed in

the latter part of the nineteenth century and that the responses of Dawson, Wilson, Watson, and Burwash significantly reflected this change. The framework of a three-stage development allows the writer to draw conclusions from the four responses which, despite the limitations inherent in an eclectic approach, are relevant to a general understanding of Canadian intellectual history.

III

JOHN WILLIAM DAWSON: INTRODUCTION

Principal John William Dawson of McGill University was one of Canada's earliest critics of Darwin's theory of evolution. As Darwin noted to J. D. Hooker in 1862:

I have heard he [Dawson] is rabid against me. . . . Lyell had difficulty in preventing Dawson reviewing the Origin on hearsay, without having looked at it. No spirit of fairness can be expected from so biased a judge.¹

Although his major work and formal training was in geology, Dawson considered himself both qualified and duty bound to question the biological implications of the Darwinian hypothesis. Charles F. O'Brien stated in Sir William Dawson: A Life in Science and Religion that, "for sheer volume of words, Dawson may have been the most active opponent of evolution."² Dawson's writings demonstrate an attempt to use the geological record as a means of criticizing Darwin's biological hypothesis and ultimately as a means of presenting an acceptable alternative to the Darwinian explanation of development.

Born in Pictou, Nova Scotia on 13 October 1820, John William Dawson was the son of a merchant who had emigrated from Scotland to Nova Scotia in 1811. Dawson revealed an early interest in geology through the

¹Charles Darwin to J. D. Hooker, 4 November 1862, in Francis Darwin and A. C. Seward, eds., More Letters of Charles Darwin (New York 1903), I, 467-468

²Charles F. O'Brien, Sir William Dawson: A Life in Science and Religion (Philadelphia 1971), 144

collection of fossils in his native province while a student at the Pictou grammar school and later the Pictou Academy. He continued his studies of natural science at the University of Edinburgh during two winter sessions, 1840-1841 and 1846-1847. Between these periods abroad, Dawson published papers on geological subjects in English and Scottish journals. He also became acquainted with the Canadian geologist, Sir William Logan, who twice visited Nova Scotia in the course of his work on the Canadian Geological Survey, and with the Scottish geologist, Sir Charles Lyell, whom Dawson accompanied on two geological investigations of the Maritimes. As he noted in his memoirs, Dawson regarded his experiences with Logan and Lyell as formative influences upon the development of his career:

To other men who have passed away, and whose friendship I have enjoyed, I owe much: Jameson, Murchison, Bigsby, Miller, Sedgwick, Phillips, the Carpenters, Hall, Agassiz, Salter, Dana, and Hunt, have all assisted me by their teaching and friendly co-operation; but to Lyell and Logan I owe most.³

The friendship between Lyell and Dawson continued until Lyell's death and produced a series of letters that provide valuable insights into Dawson's work and ambitions.

Dawson married while at Edinburgh in 1847 and the responsibility of family life undoubtedly affected his career choices. When he returned to Nova Scotia, he engaged in educational work and gave an extra-mural course on natural history at Dalhousie College, Halifax, in 1849. In 1850 Dawson accepted Joseph Howe's offer of an appointment as Nova Scotia's first Superintendent of Education. This position required considerable

³J. W. Dawson, Fifty Years of Work in Canada (London and Edinburgh 1901), 50

travel in the province. Dawson used these journeys for further geological investigations, which resulted in a number of papers, and his first book, Handbook of the Geography and Natural History of Nova Scotia in 1852.

After an unsuccessful attempt to become professor of Natural History at the University of Edinburgh in 1854, Dawson was offered the position of principal of McGill University which he accepted.

Founded in 1821, McGill had produced little more than a Medical School during its first thirty years of existence. An amended charter in 1852 promised future development but the McGill which greeted Dawson was not an inspiring sight:

I first saw it, in October 1855. Materially, it was represented by two blocks of unfinished and partly ruinous buildings, standing amid a wilderness of excavators' and masons' rubbish, overgrown with weeds and bushes. The grounds were unfenced, and pastured at will, by herds of cattle. . . .⁴

Dawson remained principal of McGill for thirty-eight years. In 1868, he wrote to Sir Charles Lyell:

Science in this country is not valued for its own sake, and a thoroughly despicable and I fear priest-ridden economy prevails in all education matters in the government of the country.⁵

He complained to Lyell in 1871 of the frustrating pressures of academic administration at McGill:

The worst point of my present position is the severe labour it exacts, and the want of time to do anything as I would wish. I often long for some haven of rest in your quiet England, where I could exercise in a moderate way my powers as a teacher or organizer, and at the same time work at some of my geological

⁴ J. W. Dawson, "Thirty-Eight Years of McGill" (Montreal 1893).

⁵ University of Edinburgh, Lyell Papers, J. W. Dawson to Charles Lyell, 10 October 1868

specialities; but I fear my strength is to be spent here, in building up stone by stone institutions which in their full benefits will be enjoyed only by those who may come after me.⁶

At a special meeting at the university on the day after Dawson's death in 1899, Dean Craik of the Faculty of Medicine noted:

He did for McGill what perhaps no other man could have done - he saved its very existence. The incubus of inertia had long settled upon it so heavily, that nothing but herculean efforts, such as Sir William put forth, could have lifted it.⁷

Despite administrative demands, the recurring search for funds and heavy academic responsibilities which included teaching chemistry, botany, zoology and geology, Dawson maintained his scientific research and produced several papers a year which earned him an international reputation as a geologist.

For over thirty years, Dawson steadfastly defended the organic nature of Eozoön Canadense:

The Canadian Dawn-animal, the sole fossil of the ancient Laurentian rocks of North America, the earliest known representative on our planet of those wondrous powers of animal life which culminate and unite themselves with the spirit-world in man himself.⁸

The alleged Eozoön fossil was first discovered in 1858 by J. McMullen of the Geological Survey in the limestone of the Ottawa River Valley.⁹ Specimens were sent to Sir William Logan who brought them to the attention of Dawson. Although the specimens suggested that the substance was

⁶Ibid., 27 October 1871

⁷Dawson, Fifty Years of Work, 292

⁸J. W. Dawson, The Dawn of Life (Montreal 1875), 1

⁹Ibid., 36-37

mineral, Dawson's microscopic analysis convinced him that Eozoön was organic. In Dawson's opinion, the fossil was of a giant foraminifer, a sea creature like the fresh water amoeba but capable of enclosing itself in a shell or crust of carbonate of lime.¹⁰ Almost immediately mineralogists challenged Dawson's conclusions and a controversy began which involved Dawson until his death. In 1875 his The Dawn of Life presented a detailed account of Eozoön Canadense and he argued for its organic origin in numerous papers. It is now generally accepted that Eozoön is not a fossil but of inorganic, mineral origin.¹¹ For Dawson, however, his belief in the organic nature of Eozoön was an argument against evolution since this complex form was separated by an immense period of time from any related form.¹² Nevertheless, he noted in The Dawn of Life that the organic existence of Eozoön was not by itself sufficient to refute the hypothesis of evolution which would

explain the derivation of other animals from Eozoön if we adopt its assumptions, just as it will in that case explain anything else, but the assumptions are improbable, and contrary to the facts as we know.¹³

As the following chapters on Dawson will demonstrate, his response to the Darwinian hypothesis concentrated upon Darwin's assumptions.

By the time that Darwin published the Origin of Species in 1859, Dawson had written four books, including Acadian Geology in 1855 and Archaia in 1857 which became standard studies that were reprinted several

¹⁰Ibid., 61-63

¹¹O'Brien, Dawson, 150

¹²Ibid., 37

¹³Dawson, Dawn of Life, 229

times during his life. He was one of the few Canadians of his time who possessed both the position and knowledge to formulate a scientific response to Darwin's theory of evolution that could command the attention of scientists beyond Canada. Dawson reviewed Darwin's book in the April, 1860 number of The Canadian Naturalist and Geologist. The review declared the Origin of Species a failure:

We follow him [Darwin] with pleasure over many agreeable and instructive paths not previously explored, and we shrink back only when he leads us to the brink of a precipice, and we fail to perceive the good land which he says lies beyond, or to place confidence in the bridge, thinner than gossamer, which he has woven to bear our feet over the gulf that separates the proved ground of specific variation from the mystery of specific difference.¹⁴

Dawson acknowledged that the Darwinian hypothesis might attract certain supporters among young naturalists and "those who are willing to adopt any amount of error rather than appear not to be on a level with the latest scientific novelties."¹⁵ He affirmed his belief, however, that "the origin of specific distinctness lies beyond the domain of any natural law known to us."¹⁶

Although Dawson's review presented scientific criticisms of Darwin's argument, there were more than scientific reasons which influenced his response to its explanation of the origin of species. A member of Stanley Street Presbyterian Church in Montreal, he was active in the

¹⁴J. W. Dawson, "Review of 'Darwin on the Origin of Species by means of Natural Selection'", The Canadian Naturalist and Geologist, V, #2 (April 1860), 101

¹⁵Ibid., 120

¹⁶Ibid., 119

religious life of the city and served as president of the Evangelical Alliance and the Montreal Bible Society. He also conducted a Bible class for several years in the Y.M.C.A. Hall.¹⁷ In 1855 Dawson wrote to Lyell:

My own religious belief as a Presbyterian I have no desire to conceal, nor could I as it is well known to many friends that I hold strong opinions as to the beauty and accuracy of the allusions to nature in the Bible and the necessity of a knowledge of nature as a part of the studies of those who have devoted themselves to its interpretation.¹⁸

The relationship between science and religion was a lifelong preoccupation for Dawson who believed that the scientist played a definite and necessary role in man's understanding of religion. Viewing science always within a Christian context, he was convinced that Darwin's theory of evolution promised not only to sever the connection between science and religion but also to undermine belief in the operation of the Divine Will manifest to him in nature. Dawson believed that this would have dire consequences for science and for the future of society as well.

¹⁷Dawson, Fifty Years of Work, 305-306

¹⁸University of Edinburgh, Lyell Papers, J. W. Dawson to Charles Lyell, 5 June 1855

IV

JOHN WILLIAM DAWSON: DARWIN'S THEORY OF EVOLUTION AND INDUCTIVE SCIENCE

John William Dawson regarded his opposition to Darwin's theory of evolution as a defence of the inductive method in science. Throughout his writings on evolution, he emphasized the methodological limitations inherent in an explanation of development which was based upon deductions not supported by scientific evidence. His fear was that speculation would come to be accepted as proof. Dawson recognized, however, that hypotheses were a valid means of extending knowledge of nature. The question was whether the Darwinian hypothesis represented a legitimate and credible object of enquiry. Once the basic validity of purpose was decided, it remained to evaluate the assumptions required for an acceptance of the hypothesis.

In his 1860 review of the Origin of Species, Dawson noted that science was faced with the humbling fact that mysteries existed beyond the grasp of inductive investigation. In their attempts to solve these mysteries, scientists had taken two approaches:

. . .some of them content cautiously to explore the ground and prudently to retreat where to advance is no longer sage; others gathering all their strength for a rush and a leap into an unknown and fathomless abyss.¹

¹J. W. Dawson, "Review of 'Darwin on the Origin of Species by means of Natural Selection'", The Canadian Naturalist and Geologist, V, #2 (April 1860), 100

Dawson placed Darwin's work in the second category of scientific enquiry, and admitted that there were certain benefits to science in such a bold approach:

We follow to the last crumbling margin of sound fact and deduction on which their feet have rested before the final plunge, and thus gain an experience that otherwise we should not have had the courage to seek.²

Dawson held that "the last crumbling margin of sound fact and deduction" had been reached when Darwin progressed from specific variability to specific difference in the Origin of Species. He acknowledged that Darwin had investigated the nature and laws of variation of species in a manner which revealed "his strength as a patient and reliable zoologist."³ Darwin, however, then proceeded to "[t]he wild and fanciful application of the results thus attained to another class of phenomena with which they have no connection except that of mere analogy."⁴

Dawson believed that Darwin's examination of variation was based upon the assumption that varieties could not be distinguished from species. He asserted that this assumption was revealed in Darwin's explanation of variation under domestication which, in his opinion, had neglected the fact that species differ widely in their capacity for variability. Likewise, when Darwin answered the objection that varieties tend to revert to original types by arguing that loss of acquired characteristics represented further change and not reversion to an original type, Dawson noted that "the argument would be good if we could have species destitute of all distinctive characters to begin with. . . ."⁵ Dawson proposed to

²Ibid., 100

⁴Ibid., 101

³Ibid., 101

⁵Ibid., 102

approach the question of variation from the alternative premise that "we have species which have remained distinct in the whole period of human experience, and also as far back in geological time as we can trace any of them."⁶ He agreed that domestication had produced considerable variation in specific forms and praised Darwin's study of variations which had occurred in the domestic pigeon as "the most valuable portion of the book."⁷ Yet Dawson held that the varieties produced did not destroy the specific type.

The pigeon, with all its varieties, is still a pigeon, and, according to our author's own conclusive argumentation, a rock-pigeon. It is not a wood-pigeon, or turtle dove, still less a partridge or a rook."⁸

He concluded that, while variation might produce non-essential changes or abnormalities, there was a basic difference between varieties and true species: "The constitution and instincts of the species being fixed by the laws of its creation, it cannot vary beyond these."⁹

Considering Darwin's description of the causes of variation, Dawson commented that "we find our author leaving the basis of fact and losing himself in the mazes in which he henceforth continues to wander."¹⁰ He denied that man's accumulative selection of successive variations produced by nature was an adequate explanation for the varieties of domestic animals. Instead, he held that such varieties were caused by man placing animals in abnormal conditions. While selection was involved in the

⁶Ibid., 103

⁷Ibid., 103

⁸Ibid., 112

⁹Ibid., 109

¹⁰Ibid., 110

maintaining of varieties which man found useful, Dawson argued that Darwin had given "undue prominence" to selection.¹¹ From the creation of domestic varieties through man's selection, Darwin proceeded to Natural Selection. Dawson wrote:

. . .now we are asked to believe that those same natural courses which break down all the breeder's elaborate distinctions so soon as his breeds are allowed to intermix and live in a natural way, are themselves able to take up the work and do still greater marvels in the way of selection. Such a doctrine is self-contradictory, and, we believe wholly incapable of proof. . . .¹²

Another aspect of this contradiction was that, although breeders improved breeds by devoting special attention to certain animals, nature was considered by Darwin to improve breeds through a struggle for existence. Dawson declared that it was incomprehensible how such a struggle could produce the selection required by Darwin's theory.

Natural Selection was based, in Dawson's opinion, upon a false conception of nature. He held that the Malthusian belief in an inevitable struggle for existence created by the rate of increase was proved false by the harmony of nature.

Vegetable life and the lower forms of animal life support the higher and these supporting forms increase far more rapidly than those that subsist on them. . . . The beautiful harmony of nature provides that the feeders shall multiply more slowly than the food and that the food shall be kept under by the feeders.¹³

If certain species could not find sufficient food, they became extinct rather than transformed. "The struggle for existence is a myth," he

¹¹ Ibid., 110

¹² Ibid., 112

¹³ Ibid., 112-113

wrote, "and its employment as a means of improvement still more mythical."¹⁴ If Darwin wished to use natural selection, Dawson felt that the struggle for existence should be replaced by an alternative which stressed the beneficence of nature:

. . . we should much rather take up our ground on the improvements of the physical conditions of the earth, and maintain that each species finding its means of subsistence and happiness constantly extending, exerted itself for their occupancy, and so developed new powers.¹⁵

Dawson compared nature to a skilled breeder instead of the "luckless experimenter" depicted in The Origin of Species.

Dawson concluded his review with an examination of the geological objection to Darwin's theory. To explain why geology had produced no evidence of transitional beings, Darwin had noted the factors which created a broken and imperfect geological record. Although admitting that this imperfection existed, Dawson denied that it was an adequate answer to the lack of evidence. He stressed that breaks in the geological record were usually local and that no transitional forms were found where the record was unbroken. He cited the Post-Pliocene clays and sands of Canada:

In those deposits we have more than sixty species of invertebrate animals, all except one or two known to be now living in the Gulf of St. Lawrence. Yet in all this lapse of time not one of the species has, by natural selection or any other cause, varied more than its living relatives now do.¹⁶

He also noted that a few species found in the deposits now live in the Arctic without having varied to meet the new conditions. Dawson believed

¹⁴ Ibid., 113

¹⁵ Ibid., 113

¹⁶ Ibid., 117

that the existence of such fossils conclusively supported the objection that Darwin's theory was contradicted by the geological record.

A lengthy extract from the Origin of Species on the effect of such factors as climate and food on variation prompted the following comment:

. . . these are specimens of a style of thought which pervades the whole book, and which leaves the task of a reviewer hopeless, for it would require a book as large as the original to expose the fallacies which appear in every paragraph.¹⁷

Whatever pearls existed in the book were strung by Darwin "upon a thread of loose and faulty argument" and used "to deck the faded form of the transmutation theory of Lamarck."¹⁸ Dawson saw no benefit in a hypothesis of descent which proposed the probability that one primordial form produced all the organic beings which have existed. He believed that such a hypothesis replaced one mystery with another one, the first progenitor. Moreover, the hypothesis created difficulties of reconciliation with the geological record and threatened the existing system of classification by making the distinction between species and varieties meaningless.

Dawson proposed a more fruitful view of species:

. . . if we are content to take species as direct products of a creative power, without troubling ourselves with supposed secondary causes, we may examine, free of any trammelling hypothesis; the law of their succession in time, the guards placed upon their intermixture, the limits set to their variation in each case, the remarkable arrangements for diminishing variations by the natural crossing of varieties, the laws of geological distribution

¹⁷Ibid., 115

¹⁸Ibid., 118

from centres of origin, and the physical causes of variation, of degeneracy, of extinction.¹⁹

By accepting the creation of species as part of a divine plan, it was possible to examine a series of scientific questions relating to specific variation without resorting to hypotheses which attempted to explain the origin of species.

The threat of evolution to inductive science was elaborated by Dawson in an address to the Natural History Society of Montreal which the Canadian Monthly and National Review published in 1872.²⁰ Entitled "The Present Aspect of Inquiries As To The Introduction of Genera and Species in Geological Time", the paper claimed the evolutionary principles were treated as established in popular articles and text-books.

So strong is this tendency, more especially in England, that there is reason to fear that natural history will be prostituted to the service of a shallow philosophy and that our old Baconian mode of viewing nature will be quite reversed. . . . Thus "advanced" views in science lend themselves to the destruction of science and to a return to semi-barbarism.²¹

Dawson held that evolution was being accepted without consideration of observed fact. Associated with this was the adoption of classifications which were based upon evolutionary principles and were "untrue to nature."²² The danger was that the widespread diffusion of these ideas in the manner in which they were expressed was turning people insidiously into

¹⁹ Ibid., 119

²⁰ J. W. Dawson. "The Present Aspect of Inquiries as to the Introduction of Genera and Species in Geological Time", The Canadian Monthly and National Review, II, #2 (August 1872), 154-156

²¹ Ibid., 154

²² Ibid., 154

evolutionists who had no alternative view of nature.²³

Dawson believed that the only answer to this tendency was "an appeal to the careful study of groups of animals and plants in their succession in geological time."²⁴ He cited his own studies of Devonian and Carboniferous plants and Post-pliocene period shells which seemed to contradict the evolutionary hypothesis. "The inference is," he noted, "that these species must have been introduced in some abrupt manner and that their variations have been within narrow limits and not progressive."²⁵ Dawson was not optimistic that efforts to correct scientific abuses by evolutionists would achieve immediate results.

Facts of this kind will attract little attention in comparison with the bold and attractive speculations of men who can launch their opinions from the vantage ground of London journals. . . .²⁶

Eventually, however, he hoped that the accumulation of evidence against evolution would triumph and "restore our English science to the domain of common sense and sound induction."²⁷

Some current studies, indeed, seemed to be restoring the balance. Dawson presented the study of Trilobites by the Bohemian paleontologist, Joachim Barrande, as a major attack upon evolution:

In his recent memoir on those ancient and curious crustaceans, the Trilobites, he [Barrande] deals a most damaging blow at the theory of evolution, showing conclusively that no such progressive development is reconcilable with the facts presented by the primordial fauna. . . .²⁸

²³ Ibid., 154

²⁵ Ibid., 154

²⁷ Ibid., 155

²⁴ Ibid., 154

²⁶ Ibid., 154-155

²⁸ Ibid., 155

Dawson held that Barrande had refuted conclusively theories of progressive development by demonstrating that new forms appeared suddenly and unaccountably without any indication of derivation. As one point, Dawson discussed the retrogression in Trilobites necessary to repair an error in the number of thorax segments. The barrier of style which separated him from the evolutionist, and his religious orientation were revealed in the simile used by Dawson to describe this repair: "But like other cases of late repentance, theirs [Trilobites'] seem not to have quite repaired the evils incurred."²⁹ Barrande was a source whom Dawson frequently used when criticizing the evolutionary method. In a Kansas City Review paper, "The Antiquity of Man and the Origin of Species", Dawson noted that Barrande's conclusions

are not arrived at by that slap-dash method of mere assertion, so often followed on the other side of these questions; but by the most severe and painstaking induction, and with careful elaboration of a few apparent exceptions and doubtful cases.³⁰

In his opinion, the work of Barrande was "a striking contrast to the mixture of fact and fancy. . . which too often passes currently for science in England, America and Germany."³¹

In the winter of 1874 - 1875, Dawson delivered a series of lectures at the New York Union Theological Seminary which were repeated at Princeton University. These lectures were published as Nature and the

²⁹ Ibid., 155

³⁰ J. W. Dawson. "The Antiquity of Man and the Origin of Species", Kansas City Review, IV (1881), 397

³¹ Ibid., 398

Bible in 1875.³² Although Dawson upheld the separation of science and religion, he maintained that the relation between the spiritual and the natural remained a necessary subject of enquiry.

. . . the votary of science cannot as a man dispense with religion, and. . . the Christian may impair his own influence, or injure the cause he desires to promote, by want of acquaintance with the position of scientific inquiry in his day.³³

In Dawson's opinion, understanding this relationship was especially important for Christian teachers. Calling himself a student of nature and a careful and reverent student of Holy Scripture, he proposed to examine the "debatable ground between science and religion."³⁴ The evolutionary hypothesis was one area of controversy which Nature and the Bible considered.

Dawson asserted that a theory of evolution which proposed that lower forms were gradually changed into higher might be reconciled with the Bible. The Bible used the word "create" for only the first animal life and man; other appearances of life forms were described in such phrases as "let the waters bring forth" and "let the land bring forth" without any explanation of specific method. The danger in evolution was that its followers extended their theory to apply to man's mental and moral development. Yet although the theory of evolution when confined to lower forms might not pose a threat to religion, Dawson held that it was still an inadequate explanation for the development of animal life.

³²J. W. Dawson, Nature and the Bible (New York 1875).

³³Ibid., 15

³⁴Ibid., 16

It was inadequate because evolution failed to recognize the distinction between species and varieties.³⁵ Dawson argued that varieties formed through external influences were not true species. He noted that Darwin could not provide direct evidence that existing animals had been derived from different species in the past. Many varieties might occur in a species but there was no proof that such varieties could become new species.

As long as Darwin confined his laws of derivation to variation in species, Dawson accepted that there was merit to this work. These laws, however, conflicted with Biblical truth "when they are applied to the origin of things, or when they are employed to dispense with the action of the divine power by which on the theory of theism, these very arrangements were introduced into nature."³⁶ Conflict with scripture also occurred when the Darwinian hypothesis was used to make man's mental and moral development a result of animal variation. Since Darwin's theory was not supported by fact, Dawson considered it a "harmless toy" except for its applications which threatened religion:

These unfair applications of the laws of variation are. . . constantly made, and are paraded by a host of litterateurs and third-rate scientific men as if they were sufficient to explain all things, and to relieve us at once from the necessity of the Scriptures and of God.³⁷

He asserted again that, applied to the origin of species or the origin of man, Darwin's hypothesis was not an example of inductive science but relied upon analogy:

³⁵ Ibid., 134

³⁶ Ibid., 141

³⁷ Ibid., 142

It rests merely on analogy, and on its power to explain easily a great variety of phenomena, provided its premises are granted. In this it contrasts in a scientific point of view unfavorably with the old idea of creative design, which undoubtedly rests on an inductive basis.³⁸

Dawson concluded that neither the Bible nor science had been able to explain how new species originated but that the origin of life described in the Bible did not contradict the evidence of science.

The question of origins provided the basis for Dawson's book The Origin of the World, According to Revelation and Science published in 1877.³⁹ In his "Preface", Dawson wrote:

It is true that the wide acceptance of hypotheses of "evolution" has led to a more decided antagonism than heretofore between some of the utterances of scientific men and the religious ideas of mankind, and to a contemptuous disregard of revealed religion in the more shallow literature of the time; but, on the other hand, a barrier of scientific fact and induction has been slowly rising to stem this current of crude and rash hypothesis.⁴⁰

Stating that he had discussed evolution fully elsewhere, Dawson briefly repeated in The Origin of the World his objections based upon the lack of empirical evidence which he believed especially argued against Darwin's hypothesis. Until these objections were answered, he held that it would be "mere folly and presumption to affirm that modern science supports the doctrine of evolution."⁴¹ He admitted that, while science could not explain the origin of species, it had provided indications concerning the origin of varieties, races, and sub-species of previously existing types.

³⁸Ibid., 144-145

³⁹J. W. Dawson, The Origin of the World, According to Revelation and Science (Montreal 1877).

⁴⁰Ibid., ii

⁴¹Ibid., 228

Included here was the struggle for existence. Dawson thought, however, that this struggle for existence had been "harped upon too exclusively by the Darwinian school."⁴² In his opinion, the chief result of struggle for existence was "depauperated and degraded forms."⁴³

The Origin of the World contained eleven appendices. Three of the appendices dealt specifically with evolution and three others made references to the subject. The first appendix, "True and False Evolution", began with the statement that there would be no theological objection to evolution considered as "the development of the plans of the Creator in nature."⁴⁴

That kind of evolution to which they [Bible writers] would object, and to which enlightened reason also objects, is the spontaneous evolution of nothing into atoms and force, and of these into all the wonderful and complicated plans of nature, without any guiding mind.⁴⁵

Dawson added that science objected to this latter kind of evolution because there was not sufficient evidence to prove its validity. He expanded upon the scientific objection by quoting from his vice-presidential address to the American Association for the Advancement of Science in 1875 which had used the findings of palaeontology and the geological record to illustrate the defects in evolution. In this address he maintained that the introduction of new species had been a continuous, but not uniform, process governed by the creative power of God. The concept of divine plan was discussed further in the appendix, "Evolution and

⁴²Ibid., 228

⁴⁴Ibid., 363

⁴³Ibid., 228

⁴⁵Ibid., 363

Creation by Law". Dawson repeated his belief that a divine plan did not require miraculous intervention. He noted that evolutionists attempted to replace creative intervention with insensate causes and the absurdity of unmitigated chance producing perfect order.⁴⁶ "Evidence of this," he wrote, "may be found by the score in Darwin's works on the origin of species."⁴⁷

The last and longest appendix in The Origin of the World was "Species and Varietal Forms with Reference to the Unity of Man". The actual title differed from the one indicated in the book's table of contents which was "Species and Varieties in Connection with Evolution and the Unity of Man". Dawson held that members of a species were identical except for "sex, age, and other conditions of the individual. . . ."⁴⁸ Expanding upon the criteria for species and examining the laws for variation within specific forms, he reached the conclusions that man is specifically distinct from other animals and that racial differences in men are varietal rather than specific.⁴⁹ Dawson provided evidence that, within the species, man has demonstrated a high degree of variability.

If man is thus so very variable, and if many of his leading varieties have existed for a very long time, does not the fact that we have but one species afford very strong evidence that species change only within fixed limits, and do not pass over into new specific types.⁵⁰

Dawson concluded that variation within fixed limits was "one of the strongest arguments against the doctrine of descent with modification

⁴⁶Ibid., 373

⁴⁸Ibid., 414

⁵⁰Ibid., 434

⁴⁷Ibid., 373

⁴⁹Ibid., 422

as a mode of origination of new species."⁵¹

Dawson's writings on evolution revealed that the lack of scientific evidence occupied an essential position in his argument against evolutionary hypotheses. Reference to palaeontology and the geological record was an obvious response given the scientific interests of Dawson but he used his knowledge of geology to justify an alternative to evolution based on religious conviction rather than science. By opposing evolution on the grounds that scientific evidence failed to support the concept, Dawson was able to base his attack upon a defence of induction. He characterized the evolutionary position as argumentum ad ignorantiam.⁵² It was clear, however, that the evidential weaknesses of evolution were not Dawson's prime concern. As will be seen in the next chapters, when he proposed an alternative, it was a religious conception of the universe which also could not be proved inductively. For Dawson, induction served a negative function: it provided a scientific rationale for rejection. Dawson's writings on the subject indicated that his response to evolution extended beyond the question of evidence. Darwin had put forward an interpretation of the origin of species that threatened to eliminate the creative design of God in nature. Dawson could not accept any hypothesis which contradicted his belief in the powers of a divine creator.

⁵¹ Ibid., 434

⁵² Dawson, "Present Aspect of Inquiries. . . Genera and Species in Geological Time", 156

JOHN WILLIAM DAWSON: THE STORY OF THE EARTH AND MAN

While in England in 1870, John William Dawson was approached by the Leisure Hour to write a series of articles, in his words, "on the geological history of the earth, free from the taint of agnosticism which has affected so much of the popular writing on this subject."¹ These articles were later collected and published in a revised form by Dawson under the title, The Story of the Earth and Man. First published in 1872, the year after Charles Darwin's The Descent of Man, this work was one of the most popular of Dawson's books, and it was reprinted several times, including pirated American editions.

The Story of the Earth and Man was a defence of the need for the recognition of a creator in the geological history of the earth. It noted, however, that "the geological record. . . introduces us to primitive man, but gives us no distinct information as to his origin."² This lack of information was used by Dawson to justify an examination of the evolutionary explanation of man's origins in which the brunt of his attack was directed against Darwin's recent The Descent of Man. Calling the evolutionary hypothesis "one of the strangest phenomena of humanity", Dawson saw two basic threats in it. He believed that evolution threatened to destroy much of contemporary theology and philosophy. Moreover, he feared that it reflected a tendency to promote a distorted science for the masses

¹ J. W. Dawson, Fifty Years of Work in Canada, Scientific and Educational, ed. Rankine Dawson (London and Edinburgh 1901), 128

² J. W. Dawson, The Story of the Earth and Man (London 1872), 316. Subsequent page references have been incorporated in the text.

which promised "most serious effects on the whole structure of society." (317-318) Both threats, in Dawson's view, led ultimately to a common end: the subversion of metaphysics. To prove his case, he examined first the effects which he believed that the evolutionary hypothesis had produced upon those who supported it, and he then examined the implications and inconsistencies of the theory.

Dawson admitted that, for a certain class of intellect, evolution apparently provided a satisfactory substitute for orthodox religion. For this type of person, evolutionary beliefs

constitute a sort of religion, which so far satisfied the craving for truths higher than those which relate to immediate wants and pleasures. (318)

This form of elevated substitution, however, was not the general, or the most logical, effect of the evolutionary hypothesis. Dawson feared that, for a larger class of its supporters, evolution provided a "welcome deliverance from all scruples of conscience and fears of a hereafter." (318) This was a dangerous ~~negative~~ form of liberation which Dawson saw affecting contemporary science's view of man. By making man "a mere term in a series whose end is unknown", evolution

removes from the study of nature the ideas of final cause and purpose; and the evolutionist, instead of regarding the world as a work of consummate plan, skill, and adjustment, approaches nature as he would a chaos of fallen rocks, which may present forms of castles and grotesque profiles of men and animals, but they are all fortuitous and without significance. (318)

There were both practical and philosophical dangers inherent in this view of man's development which Dawson argued would gravely affect the future of society. Once the idea of descent with modification was accepted, the possibility of a philosophical classification - vital to the survival of

metaphysics - would be destroyed since all things would be reduced to a mere series. The practical result of this in the sciences would be a "rapid decay" in systematic zoology and botany, signs of which he believed were clearly evident among the followers of Darwin and Spencer in England. Evolution threatened to take both zoology and botany and "throw them down at the feet of a system of debased metaphysics." (319)

Nineteenth century man, in Dawson's opinion, was faced with two great alternatives. He could view man as an "independent product of a Higher Intelligence, acting directly or through the laws and materials of his own situation and production," or he could accept the evolutionary position that man "had been produced by an unconscious evolution from lower things." (312) Dawson held that there was no room left for compromise between the two alternatives. Although some evolutionists had tried to hold to the view that the creator was part of the evolutionary process, he declared that Spencer, "the greatest English authority on evolution", had through his logic destroyed all hope of compromise. If evolution as currently understood were accepted, Dawson was convinced that the existence of a creator and the possibility of the creator's work had no relevance to man's mental and moral development or to man's physical origins and development. A clear choice must be made, therefore, between the two existing alternatives. He noted, however, that there might be a place in nature for evolution "properly understood", and made the significant qualification that "the idea of creation by no means excludes law and second causes." (322) It was upon this qualification that Dawson attempted to construct a means of reconciliation between the two alternatives by demonstrating the proper function of the physical and the metaphysical in nature.

Critically examining the evolutionary position, Dawson stated at the outset that the concept of evolution was clearly a hypothesis without empirical support:

. . . no one pretends that they [theories of evolution] rest on facts actually observed, for no one has ever observed the production of even one species. Nor do they even rest, like the deductions of theoretical geology, on the extension into past time of causes of change now seen to be in action. (322)

Rather, such theories depended upon the validity, or credibility, of their explanation of a relationship of living creatures to each other - a relationship which science could not previously explain. Dawson argued, therefore, that whatever merits were claimed for the evolutionary hypothesis did not result from the way in which it presented conclusive supporting evidence based upon observable facts. Evolution drew its strength from its ability to explain convincingly the hitherto unknown antecedents of present relationships: it was a theory which fitted the facts rather than a theory which rested upon an accumulation of facts drawn from past observations of development. This undercutting of the empirical basis for a belief in evolution allowed Dawson to concentrate upon the methodological premises of the evolutionary position. He held that lack of empirical evidence had forced evolutionists to use a deductive method to explain existing phenomena. In order to demonstrate the weaknesses in this method, he proposed to reveal the unsound assumptions upon which the evolutionary deductions were based.

Dawson began his analysis by presenting what he considered to be three primary axioms of the evolutionists. The first assumption was the existence of certain forces or materials at the beginning of the evolutionary process. Dawson believed that evolutionists then required that

the indefinite variability of material things be accepted. The third axiom of the evolutionists was the inevitable evolution of life in one specific direction: beings must necessarily evolve from the more simple to the more complex, from the lower to the higher.

Beginning with the first axiom of prior existence, Dawson noted that Darwin had based his theory in the Origin of Species upon the existence of a small number of simple animals. He held that these primitive animals represented only "a temporary resting-place for his [Darwin's] theory." Even if the process were taken further back to the protoplasm, this organism must also have evolved from something. Tracing the evolutionary theory backwards to its ultimate beginning, Dawson noted:

We are thus brought back to certain molecules of stardust, or certain conflicting forces, which must have had self-existence, and must have potentially included all subsequent creatures. (323)

While this might seem an unnecessarily extreme and absurd extension of the evolutionary logic, Dawson defended it in the light of the alternative:

Otherwise. . . we are left suspended on nothing over a bottomless void, and must adopt as the initial proposition of our philosophy, that all things were made out of nothing, and by nothing; unless we prefer to doubt whether anything exists, and to push the doctrine of relativity to the unscientific extreme of believing that we can study relations of things non-existent or unknown. (323)

Dawson concluded that it was necessary to concede to the evolutionists the existence of some initial matter if their theory were to have any validity. He undoubtedly was aware that such a concession placed the origin of this prior existing matter beyond the operative sphere of evolution.

The second axiom assumed that no basic difference in kind existed between the various substances in the world. All substances must be

"mutually convertible, or at least derivable from some primitive material."
(323-324) Dawson argued, however, that this axiom of mutual convertibility was contrary to experience. When minerals were examined the fact was obvious: chemists knew that regardless of the time period, limestone will not evolve out of silica. The evolutionist might still argue that while convertibility was impossible for minerals, it applied to animal life. He might hold that the evolution of a snail from an oyster or a bird from a reptile was different from the evolution of limestone from silica. In Dawson's opinion, however, modern zoology had demonstrated that distinct animal species were not capable of interbreeding to any great extent:

. . . the zoologist will inform [the evolutionist] that species of animals are only variable within certain limits, and are not transmutable, in so far as experience and experiment are concerned. They have their allotrophic forms, but cannot be changed into one another. (324)

Dawson's use of "experience" and "experiment" was significant: he was using induction to combat the evolutionists' deductive method, and to stress the empirical weaknesses of their position. If evolution depended upon the unlimited variability of animal life, this variability had never been observed during modern scientific research.

Dawson argued that the third axiom of evolution in one specific direction seemed at first to be supported by observation. Living things appeared to develop from a simple to a more complex state, and the history of the world had demonstrated a gradually increasing elevation and complexity. Such observations, however, in Dawson's view, failed to take into account the true cyclical nature of life which revealed decay and retrogression as well as development. He held that decay, not development,

was the real observable fact in nature. When development occurred, it more likely gave the impression of being a sudden change, an aberration or revolution, rather than a predictable and inevitable evolution:

. . . evolution occurs only by the introduction of a new species in a way which is not obvious, and which may rather imply the intervention of a cause from without. (325)

The logical conclusion was that this "cause from without" represented the actions of a Divine Mind, but Dawson did not stress the point at this stage of his argument. Rather, he was content to note that, to accept evolution, the evolutionist must be granted this third axiom of development which, when closely analyzed, was shown to be contrary to experience.

These were the three great assumptions which Dawson believed must be granted as axiomatic to the evolutionist before it was possible to begin a consideration of his hypothesis. The next question was: once these axioms were accepted, what did the evolutionist do with them? In Dawson's opinion, the evolutionist took

the facts of botany and zoology out of their ordinary connection, and thread(ed) them like a string of beads, as Herbert Spencer had done in his "Biology", on the three fold cord thus fashioned. (325)

Dawson held that the evolutionary hypothesis was based upon the use of scientific evidence taken out of context and made to fit assumptions which he had demonstrated to be without empirical support. The result was that the evolutionist was unable to formulate a complete argument, but left "certain gaps or breaks which required to be cunningly filled with artificial material, in order to give an appearance of continuity to the whole." (325)

The first gap was that between dead and living matter. The evolutionist might attempt to bridge this gap through the use of such terms

as protoplasm, which was defined to include both living and dead matter, but Dawson asserted that this was not a satisfactory approach. Science had not yet been able to produce life artificially in its lowest forms. Moreover, if physical forces alone were the agents through which life forms had evolved, evolutionists still were ignorant of the way that these forces produced even the more basic forms of life. Although there had been countless announcements that scientists had created life from either dead organic matter or mineral substances, in every case these hopes proved to be false. Regardless of how far back evolutionists might trace the evolutionary process, they were not able to transcend the barrier of life. This suggested to Dawson that creation remained a valid concept despite the evolutionary hypothesis. If life must exist before development could begin, then until it was demonstrated otherwise, a Divine Mind was as reasonable an explanation of the origin of life as any protoplasmic unknown was. Since neither man nor nature seemed capable of bridging the gap between the living and the dead, the external initiative of a God remained a defensible belief.

The gap which separated animal from vegetable life was another break in the developmental argument which evolutionists must bridge. Although primitive forms of animal and plant life might seem to share characteristics which suggested that the two forms had mingled, scientific investigation of these forms indicated that the distinction between plant and animal remained an absolute one without any observable or known exceptions. The only resort left to the evolutionist, Dawson claimed, was an appeal to ignorance:

There may be, or may have been, some simple creature unknown to us, on the extreme verge of the plant kingdom, that was

capable of passing the limit and becoming an animal. But no proof of this exists. (326)

If the first gap removed the possibility of an evolution from dead to living matter and left the creative will of God as a reasonable alternative, this second gap isolated one form of living matter - animal life - and showed that it must have developed out of its own kind. In effect, while systematically undermining the methodological validity of the evolutionist position, Dawson was building a logical defence for the alternative explanation based upon the existence of a divine creator.

The third gap invited a blow at the heart of the evolutionary hypothesis for it was the gap between specific forms. Darwin had attempted to bridge this gap, but Dawson held that he had failed. There had never been an instance, Dawson noted, of a member of one species successfully breeding with that of another. Moreover, he suggested that evolutionists had given an illusionary solidity to their argument by defining "species" imprecisely. Dawson believed that this lack of precision aided the evolutionist position. There was no general agreement upon what constituted a species, and Dawson was convinced that many species were probably in fact races or varieties.

The loose discrimination of species, and the tendency to multiply names, have done much to promote evolutionist views; but the research of the evolutionists themselves have [sic] shown that we must abandon transmutation of true species as a thing of the present, and if we imagine it to have occurred, must refer it to the past. (328)

There was in fact a fundamental difference between the way in which evolutionists and Dawson defined species. In the Origin of Species, Darwin had rejected the concept of immutable species to argue for that "loose discrimination" which Dawson noted. For evolutionists, this imprecise

definition of species was necessitated by the gradual but constant modification of specific forms which made species mutable and blurred the dividing line between species and varieties.³

The final gap which Dawson examined was that which existed between the nature of the animal and the nature of man. Neither external physical influences nor any internal potential within an animal could produce the required change to bridge this gap between the two natures. Dawson held that the existence of intelligence and morality proved the uniqueness of man's mental and moral development. Although the "grosser materialists" had tried to argue that thought is a secretion of the brain as bile is of the liver, Dawson dismissed this analogy as false. There was no comparable function with which to measure man's reasoning process. If the working of the intelligence could not be explained in materialistic terms, materialism had also failed to explain its development:

We may vaguely suppose with Darwin, that continual exercise of such powers as animals possess, may have developed those of man. But our experience of animals shows that their intelligence differs essentially from that of man, being a closed circle ever returning into itself, while that of man is progressive, inventive, and accumulative and can no more be correlated with that of the animal than the vital phenomena of the animal with those of the plant. (329)

Dawson believed too that the evolutionists were unable to explain man's moral development. He held that morality was dependent upon religion which he believed necessarily remained solely within the domain of man:

nor can the gap between the higher religious and moral sentiments of man, and the instinctive affections of the brutes,

³This point will be discussed further in the next chapter. It should be noted that, in the Origin of Species, Darwin had stated that the term "species" did not differ essentially from the term "variety". Origin of Species (Modern Library Edition, New York n.d.), 46

be filled up with the miserable ape imagined by Lubbock, which crossed in love, or pining with cold and hunger, conceived for the first time in its poor addled pate, "the dread of evil to come," and so became the father of theology. (329)

According to Dawson, this was the conception adopted by Darwin when he attempted to explain man's moral development. He stated that Darwin's position on man's moral evolution would be ludicrous, "but for the frightful picture which it gives of the aspect in which religion appears to the mind of the evolutionist." (329)

Yet another flaw in the evolutionary theory was the failure of its supporters to take into account the delicate balance which must be maintained at every stage of development if an organism were to survive:

An animal or plant advancing from maturity to the adult state is in every stage of its progress a complete and symmetrical organism, correlated in all its parts and adapted to surrounding conditions. (335)

If this organism was modified in any way, "probabilities are incalculably great against the occurrence of many such disturbances without the breaking up altogether of the nice adjustment of parts and conditions." (335) Dawson noted a marked tendency in species to return to their original state after they had been artificially modified and he believed that such instability was a reason why so many species had become extinct in the past. He asserted that, although both Darwin and Spencer were aware of this tendency, they had neglected it in their arguments for evolution. Dawson held that it was "another fatal objection" to the evolutionary hypothesis which had been overlooked by its supporters.

Dawson ended his critique of evolution by analyzing Darwin's explanation of man's development in The Descent of Man. In order to prove the evolutionary case for man's development, Darwin would have had

to assume, in Dawson's opinion, that all the conditions were favourable for the successive stages of modification, and he would have had to fill in all the gaps which Dawson noted as existing in the evolutionary process. Dawson stated that Darwin's account was an inadequate defence of evolution since it concentrated only upon the gap which existed between distinct series, "leaving us to receive all the rest on mere faith." (338-339) Moreover, Dawson argued that even this crucial gap between species remained unexplained by Darwin. By failing to establish the necessary link between man and animal, Darwin had failed to prove the validity of his limited hypothesis:

. . . he has not certainly established one link; and in the very last change, that from the ape-like ancestor, he equally fails to satisfy us as to the matters so trivial as the loss of hair, which on the hypothesis, clothed the pre-human neck, and on matters so weighty as the dawn of human reason and conscience. (339)

This dismissal of Darwin's hypothesis was probably deliberately abrupt. Having demonstrated previously that evolution depended upon a series of "transmutations" which contained breaks or gaps that evolutionists must be able to bridge successfully, Dawson suggested that Darwin's inability to produce links was sufficient to destroy the evolutionary explanation of man, and to discredit evolution as a theory of development. Dawson concluded:

The Reader will now readily perceive that the simplicity and completeness of the evolutionary theory entirely disappear when we consider the unproved assumptions on which it is based, and its failure to connect with each other some of the most important facts in nature; that in short, it is not in any true sense a philosophy, but merely an arbitrary arrangement of facts in accordance with a number of unproved hypotheses. . . . (329)

In effect the evolutionists demanded adherence to a hypothesis taken on faith. Dawson's rapid and sweeping attempt to destroy Darwin's argument without entering into an analysis of his complex supporting evidence helped to emphasize the underlying irony - the role of faith in evolution - which Dawson found in the methodological demands of the evolutionists. It also indicated the sense of desperate urgency which became increasingly evident in his writings on the subject of evolution. Finally, it may be that he hoped a clever and logically irrefutable destruction of Darwin would make readers appreciate his own abilities as a scientist and perhaps would bring him the recognition which would allow him to leave the burdens of McGill.

When Dawson discussed individual evolutionists, he repeatedly referred to both Darwin and Spencer. He obviously believed, however, that Spencer was by far the more dangerous and irresponsible of the two:

Darwin always states facts carefully and accurately, and when he comes to a difficulty tries to meet it fairly. Spencer often exaggerates or extenuates with reference to his facts, and uses the art of the dialecticians where argument fails. (330)

There are at least two factors which might explain this distinction which Dawson made between Darwin and Spencer. Whatever the weaknesses in his argument, Darwin was a scientist, and a kind of professional respect was evident in Dawson's evaluation of him. Spencer, on the other hand, was considered by Dawson to be a philosopher who, without proper or sufficient scientific training, was misusing science to promote dubious and dangerous philosophical views of man. Darwin, moreover, already had powerful supporters or sympathizers among scientists in England and Dawson may have considered it prudent to aim his most extreme criticism at a philosopher. Yet, Dawson did not stint in his criticism of Darwin when religion was in

question. When Darwin, in his opinion, went beyond the proper sphere of science and touched upon metaphysics, Dawson asserted that "Darwin, with all his philosophic fairness, sometimes becomes almost Spencerian in his looseness of expression." (340) Certainly, Dawson believed this to have been the case when Darwin inevitably attacked the doctrine of creation.

Dawson believed that Darwin had revealed his basic misunderstanding of creation in the use of such words as "miraculous", "suddenly", and "flash" to describe it. He stated that evolutionists deliberately attached an unnecessarily extreme meaning to creation in order to promote their own position:

Those who have no faith in evolution as a cause of the production of species, may well ask in return how the evolutionist can prove that creation must have been instantaneous, that it must follow no law, that it must produce an animal fully formed, that it must be miraculous. In short, it is a portion of the policy of evolutionists to tie down their opponents to a purely gratuitous and ignorant view of creation, and then to attack them in that position. (340)

Dawson suggested that there was a simple statement of the theory of creation which eliminated the excesses that the evolutionists tried to associate with it. As held by a modern scientist, the theory of creation posited that "all things have been produced by the Supreme Creative Will, acting directly or through the agency of the forces and materials of His own production." (340) This definition meant that creation might be a product of laws as evolution claimed to be, although as the evolutionary laws, the laws of creation were not yet completely known.

Dawson held that a belief in creation did not require that the creative process be miraculous in the sense of going against, or undermining, natural law. Creation may have occurred, furthermore, in successive stages, producing creatures of various kinds, similar or dissimilar

to each other in different degrees. This approach to creation allowed the possibility of a certain compatibility between creation and evolution:

. . . anything once created may, if sufficiently flexible and elastic, be evolved or involved in various ways. Indeed, creation and derivation may, rightly understood, be complementary to each other. Creative things, unless absolutely unchangeable, must be more or less modified by influences from within and from without, and derivation or evolution may account for certain subordinate changes of things already made. (341)

The key to this compatibility is found in Dawson's phrase "rightly understood". To indicate the proper understanding of evolution, Dawson considered the example of man. Although created by God, man may have originated within the plans or laws established by the creator for the operation of his will in the world. Not only might man's creation not be unique in that the creator might have created other things with life before man, man's body might also have been created in a manner distinct from the creation of his soul. Evolution could provide a possible explanation of man's physical development, once it was recognized that his mental and moral development resulted from a separate creation.

Dawson's argument was designed to demonstrate that the theory of evolution demanded a greater suspension of reason and experience than a belief in creation demanded. Both must be taken on faith, but creation had the advantage of avoiding many of the methodological difficulties which marred the evolutionist explanation. Moreover, unlike the evolutionary hypothesis, creation was based upon a source of power which provided "an intelligible origin of nature." This source was the Will: "the only source of power actually known to us by ordinary experience." (342) It was creation, not evolution, that was more easily reconciled with man's experience. Creation

does not require us to contradict experience by supposing that there are no differences of kind or essence in things. It does not require us to assume, contrary to experience, an invariable tendency to differentiate and improve. (342)

Most importantly, creation did not require its defenders to elaborate theories in order to bridge the gaps between various grades or types of being. Accepted without the prejudicial interpretation given to it by evolutionists, creation became a reasonable explanation for man's origin and development through the operation of a divine mind, which modern scientists could accept without any conflict with their own research and discoveries. Once this creative will was recognized, Dawson implied that it might be possible for scientists to use hypotheses such as evolution as a means of explaining the workings of the creator's plan.

The fact remained, however, that many modern scientists refused to accept the existence of a creative will, and preferred instead to explain development in the mechanistic terms of such processes as natural selection. Dawson held that this refusal was mainly due to the ignorance which modern scientific education had bred. Such scientists ignored the existence of a creation

mainly because, from the training of many of them, they are absolutely ignorant of the subject and from their habits of thought have come to regard physical force and laws regulating it as the one power in nature, and to relegate powers or forces, or as they have been taught to regard them, "supernatural" things, to the domain of the "unknowable". (342-343)

In order to correct this situation, Dawson suggested that it might be necessary to adopt a new definition of nature which would eliminate the concept of the "supernatural". He believed that the idea of nature should encompass the whole cosmos, and include both the spiritual and the physical. If this were done, it would be recognized that both the

spiritual and physical aspects of nature came under the same rule of law, but that each was controlled by law which reflected its special nature. Such a conceptual framework would allow the type of scientific enquiry which produced the Darwinian hypothesis of physical development to exist reconciled with a theory of divine creation that explained the mental and moral development of man. All that was needed was a proper understanding of the true meaning of nature and law, and a willingness by scientists to accept the limitations which such an understanding required.

The Story of the Earth and Man attempted to save nineteenth century science from the "system of debased metaphysics" which Dawson believed evolution fostered. This attempt was motivated both by the effects which the acceptance of evolution had upon the course of contemporary science and by the implications of the theory for the spirituality of man. In order to achieve the salvation of science, Dawson recognized that he must eliminate the apparent polarization between the theory of evolution and a belief in divine creation. As he noted, there was no room in the present situation for any compromise between the two alternatives. Dawson suggested, therefore, in The Story of the Earth and Man a reconciliation that would demonstrate the proper place of evolution within the divinely created universe. This reconciliation depended upon the reinterpretation of both evolution and divine creation.

Without denying the usefulness of evolution as a hypothesis, Dawson identified gaps which could be filled only by arguments that contradicted both common sense and scientific knowledge. His purpose was to demonstrate that, far from being a rational and plausible explanation of development, evolution was in fact dependent upon a faith that required

the suspension of experience and observation. Having thus reduced evolution to the level of a faith, Dawson then attempted to convince his readers that divine creation involved fewer difficulties as a faith and as an explanation of fact than evolution did. Much of Dawson's defence of divine creation was based upon his premise that a belief in divine creation need not require adherence to many of the miraculous non-essentials that evolutionists tried to associate with the idea of a creation. Dawson, moreover, argued that his definition of divine creation was sufficiently encompassing to make a properly understood view of evolution compatible with it. The contemporary interpretation of evolution, on the other hand, could never be compatible with divine creation as long as it rested upon the refutation of that metaphysical reality which Dawson believed was evidenced in nature.

Fundamental to Dawson's reconciliation of evolution and divine creation was his belief that these two faiths must be "properly understood". When evolutionists formulated an unnecessarily extreme definition of divine creation, they revealed their lack of proper understanding of it. Dawson believed that it was this lack of understanding which had contributed to the decline in the acceptance of divine creation by nineteenth century scientists. Likewise, by ignoring the gaps in the evolutionary hypothesis, its supporters had failed to take into account the inherent deficiencies in the hypothesis that made it at best suspect. Perhaps the most basic lack of understanding was the failure to appreciate the true nature of the universe. Dawson held that, rather than assuming a break between the natural and the supernatural, scientists should recognize that nature contains both physical and spiritual in one indefeasible

union. Such a view of nature would remove the threat to metaphysics which Dawson saw in the evolutionary hypothesis by incorporating the physical as a part of a larger whole. Properly understood, therefore, the evolutionary hypothesis need not produce a "debased metaphysics" because the basically spiritual nature of man's mental and moral development was protected.

Dawson's attempt to bring about a reconciliation of evolution and divine creation did not disguise the fact that he remained opposed to the evolutionary hypothesis. Despite his claim that there could be a place for a properly understood application of evolution within his concept of nature, his reconciliation was clearly a pretext for refutation. It was unlikely to convince evolutionists since it demanded a view of nature already considered anachronistic by them. Moreover, the strength of the evolutionary theory meant that its advocates had no need to make the concessions demanded by Dawson to achieve the form of reconciliation which he advocated. The fundamental purpose of The Story of the Earth and Man was necessarily a defensive one. Forced to recognize the continuing existence and importance of evolution, Dawson used reconciliation as a means of presenting his case for the alternative of divine creation. The polarization remained and the subsequent success or failure of Dawson's response to the evolutionary hypothesis would rest on his ability to argue convincingly, not for a reconciliation, but for an alternative.

VI

JOHN WILLIAM DAWSON: MODERN IDEAS OF EVOLUTION

John William Dawson's Modern Ideas of Evolution was published in April, 1890 by The Religious Tract Society of London. Although Dawson had discussed the question of evolution in several of his earlier works, this book represented his only full-length analysis of the subject. Published almost exactly eight years after the death of Charles Darwin, Modern Ideas of Evolution appeared at a crucial time in the history of evolutionary thought. As Dawson noted:

The great fabric of the Darwinian evolution may be said to have attained to its completion. Its chief corner-stone has been laid with shouting by its jubilant adherents, and it is presented to us as a permanent and finished structure, fitted to withstand all the attacks of time and chance. We are even asked to regard its architect as the Newton of Natural Science, and to believe in the finality and completeness of the structure which he has raised.¹

As early as 1872, Dawson had suggested in The Story of the Earth and Man that the concept of evolution was becoming an accepted fact governing the views of many contemporary scientists. In his new book he recognized that it now occupied a position of apparent permanency in modern scientific thought. Therefore, although Darwin's position remained a central pre-occupation of Dawson, much of the discussion in his book was directed towards subsequent exponents of evolution who had modified and challenged specific assumptions made by Darwin, while still accepting the basic notion of evolutionary development.

¹J. W. Dawson, Modern Ideas of Evolution (5th Edition, London n.d.).
1. Subsequent page references have been incorporated in the text.

Dawson distinguished three schools of thought among the various new forms of evolutionary theory. There were those evolutionists whose approach to development was monistic or positivistic, terms which Dawson believed were virtually indistinguishable from "materialistic" or "atheistic". Dawson identified Ernst Haeckel, to whom Darwin had once written "Your boldness sometimes makes me tremble",² as the leading spokesman for this school. Although Haeckel had not reached the zenith of his extremism by 1890, it was obvious that he had replaced Herbert Spencer in Dawson's mind as the most irresponsible and dangerous supporter of evolution. The second school consisted of evolutionists including Spencer who upheld an agnostic interpretation of evolution. Finally there was a school including the American professor Joseph Le Conte, the author of Evolution and its Relation to Religious Thought in 1889, whose members held there could be a theistic interpretation of evolution. Dawson recognized that there were differences of opinion within these three groups, but he thought it was viable, nevertheless, to discuss the future of evolutionary thought in terms of a struggle among these three interpretations.

The three forms of evolutionary thought had to be evaluated on the level of philosophy and its relationship to science. There was, however, another aspect of evolution which Dawson believed had serious practical implications for the future. This was the way in which such

²Charles Darwin to Ernst Haeckel, 19 November 1868, in Francis Darwin, ed., The Life and Letters of Charles Darwin (New York 1896), II, 285

concepts as struggle for existence and survival of the fittest had stimulated "that popular unrest. . . which threatens to overthrow the whole fabric of society as at present constituted." (10-11) Dawson attributed much of this misuse of evolutionary ideas to the lack of agreement among scientists.

In these circumstances, it seems desirable that science, and especially natural and physical science, which may in some degree be held responsible for this movement [of unrest], should define its own position, and do what it can to remove the difficulties and relieve the fears which have been engendered by the use or misuse of its facts and principles. (11)

At the root of the unrest which threatened society was the conflict between science and religion. Dawson held that this conflict was unnecessary and he attributed the prevalent hostility to religion to an "unscientific and unspiritual degeneration" caused by "the excessive pursuit of evolutionary ideas." (12) Not only, therefore, did evolutionary ideas potentially subvert the fabric of society, but they also threatened to subvert the spiritual consciousness of individual scientists, thereby promoting an artificial conflict between science and religion.

The central danger in a conflict between science and religion, in Dawson's opinion, was that it would alienate scientists from belief in God as creator of the Universe. Dawson asserted that this belief was a reasonable and necessary part of scientific enquiry. His basic position was that, despite the efforts of evolutionists, science could not negate the following principle:

No system of the universe can dispense with a First Cause, eternal and self-existent; and the First Cause must necessarily be the living God, whose will is the ultimate force and the origin of natural law. (14)

The theistic interpretation of evolution made room for this principle but Dawson argued that there were too many objections to evolution per se to make even this position satisfactory. Dawson's argument was that all evolutionary hypotheses were unacceptable because they required the acceptance of assumptions which were inconsistent with scientific knowledge. By demonstrating the inadequacies of evolution as a theory of development, Dawson hoped in Modern Ideas of Evolution to convince contemporary science of the need to affirm the existence of the living God in the creation and development of the universe and of the specific forms found in it.

Examining Darwin's Origin of Species, Dawson argued that the weaknesses of the Darwinian hypothesis began with the very title of the book. The title was misleading because, in Dawson's opinion, Darwin had failed to prove what was stated in it. Since Darwin did not explain how the first species originated, Dawson claimed that the book was really concerned with the modification, rather than the origin, of specific forms:

Of the origin of species the book tells us nothing. It merely discusses certain possible modes of "descent with modification" whereby new species may be derived from those previously existing. (58)

Likewise, he argued that Darwin's book revealed virtually nothing about species since it held that

there can be no permanent kinds of animals or plants, or true species, in the old sense of the term, but only an indefinite shading of forms into one another, and a permanent flux, by which what may be called a species at one period will be something different at another. (58)

Natural Selection was another meaningless term which Dawson believed refuted, rather than supported, Darwin's theory. He argued that natural selection could operate only after there were enough species in existence from which a selection could be made. Rather than being a factor in the

proliferation of species, natural selection had meaning only after this proliferation had occurred. Moreover, Dawson believed that, unless natural selection was another term for chance, there must be an intelligent selecting power or agency.

Dawson's objections to Darwin's title reflected a fundamental difference in the way that each scientist defined the word "species". When Dawson wrote of species, "true species in the old sense of the term", he referred to a concept which Darwin had clearly rejected in the Origin of Species. Darwin had declared that

I can entertain no doubt, after the most deliberate study and dispassionate judgment of which I am capable, that the view which most naturalists until recently entertained, and which I formerly entertained - namely, that each species has been independently created - is erroneous. I am fully convinced that species are not immutable. . . .³

Darwin's concept of species answered the objection that his book had not explained the origin of the first species. Darwin made it clear that, since species were not immutable

I look at the term species as one arbitrarily given, for the sake of convenience, to a set of individuals closely resembling each other, and that it does not essentially differ from the term variety, which is given to less distinct and more fluctuating forms.⁴

Taken in this light, Darwin's book might have been titled The Origin of Varieties. . . without destroying the value of its contents. Darwin also foresaw the criticism that natural selection was impossible in the simplest structure at the first dawn of life. Although admitting that no facts

³Charles Darwin, The Origin of Species (Modern Library Edition, New York n.d.), 13-14

⁴Ibid., 46

existed to explain the first steps in the advancement of species, Darwin wrote:

. . . it is. . . an error to suppose that there would be no struggle for existence, and, consequently, no natural selection, until many forms had been produced: variations in a single species inhabiting an isolated station might be beneficial, and thus the whole mass of individuals might be modified or two distinct forms might arise.⁵

In a sense, Dawson was correct when he equated natural selection with chance but again Darwin had an explanation that answered this criticism. It was chance which produced a certain effect, "the preservation of favourable individual differences and variations, and the destruction of those which are injurious."⁶ Should someone wish to posit the existence of an intelligent selection power or agency, natural selection as described by Darwin still remained valid. Indeed, this was the very interpretation which theistic evolutionists brought to the evolutionary theory of development.

The attack on Darwin's title revealed the degree of prejudgment with which Dawson approached the Origin of Species. There is a sense of a struggle to the death in Modern Ideas of Evolution. Moreover, this struggle reflected the desperation of a man who, recognizing that victory was virtually impossible, was willing to risk everything and to try anything to vanquish his opponent. Thus, Dawson attempted to prove that the title of Darwin's book was not supported by his subsequent arguments. Likewise, Dawson focused much of his attention upon Darwin's methodology to demonstrate that Darwin's arguments were based upon false, or at best unconvincing, assumptions. In this way, he undoubtedly hoped to destroy

⁵Ibid., 96

⁶Ibid., 64

Darwin's position without entering into a detailed refutation of his specific arguments. This was a bold and calculated risk and it reflected the depth and urgency of Dawson's opposition to the idea of evolution. Dawson thought that the evidence presented by Darwin could be intelligently accounted for on other grounds. His major concern was not Darwin's evidence but the idea of evolution itself.

Dawson believed that the term evolution included two distinct processes which he defined as modal and causal. Modal evolution explained development in terms of a causation which was independent of the evolutionary process. Causation was external in modal evolution and thus formed the subject of a separate enquiry which need not affect the evolutionary theory. Causal evolution, however, assumed that causation was included within the evolutionary process, as one of the internal factors of evolution. Dawson held that Darwin's hypothesis was modal: Darwin did not seek for ultimate causes but accepted the prior existence of matter, force, and laws in the universe. In Dawson's opinion, such a disregard of ultimate causes was impossible. Although Darwin was prepared to leave first causes as something beyond the range of scientific enquiry, Dawson believed that, unless modal evolution were connected with an explanation of causation, "we are embarked as in a ship without captain, crew, rudder, or compass, and without any guiding chart or star." (27) There was either a recognized Divine Will directing nature or nature was a chaos of forces producing a constant and confused struggle for existence.

Having isolated the modal nature of Darwin's hypothesis, Dawson then outlined the weaknesses in it. He held that, disregarding the question of causation, modal evolution as explained by Darwin was not

supported by an objective study of nature. Dawson noted that naturalists had never observed the development of a new species and that species possessed a stability that made infertility the only result of changes produced through domestication and artificial selection. The geological record also indicated that modal evolution had not likely occurred in the past. When traced back into the past, species appeared to have developed along parallel, rather than diverging, lines without any real indication of branching. This development, moreover, apparently ended with "terminal forms" in the distant past that had lost the capacity for further development. Dawson argued that present species represented defined and fixed forms which are now immutable and which had probably always been immutable. He also pointed to the lack of evidence in the geological record that the "infinite alleged connecting links" necessary for modal development had existed in the past. In his opinion, these objections destroyed the notion of gradual and uniform modification found in the Darwinian hypothesis.

If gradual and uniform modification could not be reconciled with the geological record, there remained an alternative evolutionary explanation which argued for sudden or intermittent evolution. Such an explanation was based upon

a doctrine of sudden appearance of new forms, occurring at certain portions of geological time rather than at others, and in the earlier history of animal and vegetable types than in their later history, and in early geological time, rather than in those more recent. (34)

Dawson believed that this view was supported by palaeontology and he cited several examples of sudden appearance, including such forms as the Cambrian trilobites which he had discovered. From these examples, he

concluded that the appearance of the various forms of life seemed to have occurred "in a manner indicating flows and ebbs of the creative action."

(59) Such a manner of appearance was inconsistent with the Darwinian notion of uniform and gradual modification and, Dawson believed, might be inconsistent with any interpretation of evolution then held. If geological evidence suggested that sudden appearances rather than gradual development were indeed how new forms originated, there might then have been no difference between divine creation and sudden appearances.

This argument from the geological record was crucial in Dawson's undermining of the credibility of the evolutionary position. In considering the origin of species, he contended that neither those who held the theological idea of creation nor those who supported evolution could look to biology and geology for conclusive substantiation of their argument. These two sciences were concerned with the nature and succession of organic forms, not their origin. Nevertheless, both theories of origins could use the findings of these two sciences to provide facts which confirmed the subsequent development of their hypotheses. Although the geological record did not offer proof of actual origins, its indication of sudden appearances of forms supported the idea of creation rather than the evolutionary argument of gradual modification. Whether the atheistic or theistic interpretation of evolution was accepted, Dawson argued that scientific facts did not support gradual modification.

It should be noted that, despite Dawson's criticism of Darwin's failure to deal with the actual origin of species, his argument concentrated not upon the appearance of the first species but upon subsequent modification. By demonstrating that there was no scientific

evidence for gradual and uniform modification of specific forms, Dawson attempted to negate the fundamental evolutionary concept of mutable species. The theistic view of evolution was similarly untenable since, although it held that God created, it still attributed to these created beings the power to evolve into new and higher forms, the power of mutability.

If the findings of science did not support evolution, why did prominent scientists adhere to evolutionary theories? Quoting Dr. Albert Wigard's Darwinismus, Dawson called evolution "a confused movement of the mind of the age." (51) He attributed the popularity of evolutionary thinking to a materialism which intoxicated man and gave him a false impression of the legitimate powers of science.

The mind of our time is unsettled and restless. It has a vague impression that science has given it the power to solve all mysteries. It is intoxicated with its physical successes, and has no proper measure of its own powers. It craves a constant succession of exciting and sensational generalizations. (54)

Dawson did not oppose scientific speculation: he believed that such speculation could lead to new truths. Scientific speculation, moreover, had a certain psychological value since it demonstrated how "some of the strongest and most subtle minds of our time exhaust their energies in the attempt to solve impenetrable mysteries." (54) This comment revealed much about Dawson's attitude towards science and scientific enquiry. He saw a danger in scientists who attributed scientific bases to what were speculations. The findings of science might be used as evidence to support hypotheses, but hypotheses should not be presented as the true findings of science. Dawson maintained his adherence to this principle throughout all his critical examinations of evolution: this

misrepresentation of evolution as fact rather than hypothesis by scientists was repeatedly used in his opposition to an evolutionary theory of development.

The way to overcome such abuses in scientific speculation was, in Dawson's opinion, better scientific education. Not only must speculation be kept distinct from science, but "the known facts and principles of science" must also be widely taught to allow men to evaluate hypotheses.

Speculations as to origins may have some utility if they are held merely as provisional or suggestive hypotheses. They become mischievous when they are introduced into text-books and popular discourses, and are thus palmed off on the ignorant and unsuspecting for what they are not. (55)

To avoid this mischief, Dawson counseled that there must be "a more general and truthful teaching of science." (56) Once people knew about the structures of animals and plants, as well as about their geological history, they would cease to be seduced by attempts to explain origins by "any crude and simple hypothesis." (57) This emphasis upon proper scientific education remained a constant theme in Dawson's writings, and was an indication of his approach to science. It was not enough for the scientist to speculate or to discover. Dawson assumed scientists had a moral responsibility which required them to educate the "ignorant and unsuspecting" and to protect them from groundless and dangerous speculations which could destroy both society's fabric and men's souls.

Dawson believed that the theories of evolutionists contributed nothing to a scientific understanding of the origin of life. This still remained a mystery which could be described only by the statement, "In the beginning God created the heavens and the earth." Science had not

discovered a convincing or satisfactory alternative to the Almighty Intelligent Will who created time and space, as well as the matter, energy, and ether which existed in time and space. These creations whose origins were mysteries beyond the comprehension of science embodied the substance of the physical world. The most that such sciences as chemistry and physics could do was to study these substances and powers in the light of certain discovered laws.

Dawson held that analogous to matter, energy, and ether were the animate factors of protoplasm, organism, and life. In his opinion, these animate factors were also divinely created mysteries. Each element in these two trinities of matter, energy, ether and protoplasm, organism, life must have existed fully perfected before the existence of beings was possible. These factors were the prerequisites for the origin of life and no single factor could be understood isolated from the rest. Whatever merits natural selection had as an explanation of variation, it failed to solve the fundamental problem of the origin of life since it could not penetrate the basic mysteries of the physical world. It failed, moreover, to prove that this problem could be solved "without the power and divinity that lie behind it." (76)

Dawson noted that evolution as explained by both Darwin and Lamarck was essentially a biological theory. The great time periods required for the evolutionary process, however, made the theory relevant to geological consideration. Dawson asserted that the geological record suggested

this grand procession of living beings in geological time is not that of a mere continuous flow, but that of a co-operation of physical agencies toward a particular preparation of our planet, and then the introduction at once and

in great force of suitable inhabitants to the abode prepared for them. (93)

He argued that such evidence indicated a progressive plan rather than "mere spontaneous evolution." The causes of this plan were still hidden from man to a considerable extent and evolution had not yet presented them in any satisfactory manner. One reason why biologists tended to accept spontaneous evolution was that, in Dawson's opinion, they were accustomed to argue from analogy. He asserted that biologists were carried away by the parallelism between the development of the individual animal from a simple to a more complex state and the development of life from the protozoa to man. Although there was a general resemblance between these two developments, Dawson held that they were altogether different in their nature and causes. This basic distinction in developments, moreover, was easily recognized by experienced students of the geological record.

The greater part. . . of the more experienced palaeontologists, or students of fossils, have long ago seen that in the larger field of the earth's history there is very much that cannot be found in the narrower field of the development of the individual animal. . . (102)

Through their studies, such palaeontologists had arrived at general conclusions which demonstrated that the geological record did not support a hypothesis of evolution.

These conclusions were used by Dawson as an indication that the history of life demonstrated a continued plan and order. Evidence in the geological record revealed that general laws of nature have remained uniform, and that throughout time, growth has co-existed with degradation and extinction. This has led to an "orderly continuous progress of the utmost complexity in detail" which could not have been produced by chance.

We may. . . conclude that the settlement in very early times of so many great principles of construction, and the majestic lapse of geological ages, and along with so many great physical changes, cannot be fortuitous, but must represent a great creative plan conceived in the beginning, and carried out with unchanging consistency. (117)

This complexity, combined with the fact that the geological record has produced no direct evidence of a gradual or sudden transformation of one species into another, indicated for Dawson the inadequacy of the evolutionary theory. If the geological record did not allow scientists to identify every kind of fossil as a distinct product of creation, it revealed that the causes of the introduction and extinction of species were too complex to be explained by any contemporary theory of evolution. Such complexity was produced by the uniformity of laws which had governed both progress, and extinction and which made a great creative plan necessary. Here, Dawson again directed his argument not against the specific evidence for evolution but against the general premise behind the concept of evolution. Regardless of specifics, natural selection was impossible because it was based upon chance and Dawson believed that chance was inadequate as an explanation of development in the light of the geological record.

The existence of a great creative plan for the universe necessitated for Dawson the existence of a Creator which he held was explicit in the most mechanistic interpretation of evolution. Haeckel was a monistic evolutionist who denied everything spiritual or immaterial, but Haeckel was forced to view the universe, Dawson noted, as originating from an ultimate unity, self-existing energy which, through its operation, started the developmental process that produced specific forms. Dawson argued that this was "an approximation to the idea of a Creator, but not a

living and willing Creator." (120) Likewise, an agnostic such as Herbert Spencer believed that man must accept the hypothesis of a first cause, although he asserted that this first cause was wholly inscrutable. However, since Dawson held that causes are only known by their effects, he argued that a study of the phenomena in the universe would reveal the nature and operation of their cause or causes. Inherent in the recognition of cause was the knowledge of the cause and this fact, by Dawson's logic, destroyed the agnostic position. "We must be theists," he wrote, "unless we prefer to call ourselves monists or pantheists." (156)

There were evolutionists such as Professor Le Conte of California who considered themselves theists. Dawson called Le Conte "a geologist of some repute and a clear thinker, who aims to combine the various divergent schools of evolution, whether Darwinian or Lamarckian, and to reconcile the whole with theistic beliefs." (162) Dawson, however, could not accept the position of men such as Le Conte. His rejection originated from a belief that there are certain things which science and man are incapable of explaining. This limitation of scientific discovery was based upon a Platonic view of man.

Man himself occupies merely one plane or grade in the great system, and there may be far higher and more intelligent grades above him. He can hope to know something of the planes that are below him, but not except by revelation or mere speculation, of those above; and his comprehension even of those below as compared with that of the Creator must be crude and imperfect. (167)

The potentiality of divine power was too great and varied to be reduced to the simple causal explanation of development put forward by theistic evolutionists.

By his very place in a specific plane of being, man lacked the capacity to understand completely the origin and development of the universe. Science and philosophy might properly investigate these subjects, but Dawson implied that their investigations in these areas could produce only speculation. The only means of transcending the limitations of man's imperfections as man was faith in "the loving and all-wise Father of our spirits." (168) He knew all the secrets of the universe and through revelation would equip man with what he needed to know. The fundamental conceit of the evolutionists was their claim that they had discovered a sufficient explanation for the origin and development of life in the universe.

Despite his limitations, man could gain some knowledge of the Creator by studying nature. Dawson believed that nature was a manifestation of mind, and nature's laws were "the voluntary limitation of the power of the Creator in the interests of His creatures." (172) This combination of mind and laws could be possible, however, only if nature were a perfect machine.

. . . nature, in all its varied manifestations, is one vast machine or congeries of machines, too great and complex for us to comprehend, and implying a primary energy infinitely beyond that of man; and thus the unity of nature points to one Creative Mind. (175)

Dawson presented examples of the complexity and perfection in nature that revealed a precision and intricacy which could only be attributed to a Divine Mind. He used a favourite Platonic example of the leaves on plants which were arranged in a series of spirals rather than at random. He noted the beauty of form, proportion and colouring that suggested the existence of mind in nature. Most important, however, as an example of

mind in nature was man's reasoning power. Dawson held that it was absurd to believe that man's reason could have developed from an irrational state, or through an irrational power. "We cannot imagine," he wrote, "the development of reason from that which has no reason, and must admit that only the 'inspiration of the Almighty' could have given understanding." (201)

It was man's ability to reason which demonstrated that he was both in harmony with nature and a distinctive creation separate from the lower animals. Man's reason must conform to natural laws and be in harmony with them in order for him to comprehend the material universe. Man, therefore, was necessarily a part of the system of nature. Since man was a part of nature, he must also be a part of the unity of the natural system which meant that any conflicts between man and nature were imaginary. Within nature, however, man existed on a particular plane. This plane, Dawson believed, was one of the higher levels of existence and was reserved solely for man.

Dawson argued that, although man was anatomically a mammal, he clearly represented a distinct order within that class.

Anatomically considered, man is an animal of the class Mammalia. In that class, notwithstanding the heroic efforts of some modern detractors from his dignity to place him with the monkeys in the order Primates, he undoubtedly belongs to a distinct order. . . . (If he were an extinct animal, the study of the bones of his hand or of his head would suffice to convince any competent palaeontologist that he represents a distinct order, as far apart from the highest apes as they are from the carnivora. (209)

Moreover, although man shared certain physiological characteristics with other animals, his supreme endowments of consciousness, reason, and moral volition isolated him from these animals, and confirmed his special order

of existence within the universe. Men alone of all the animals were able "to rise into the domain of the rational and ethical." (213) Dawson concluded that this capacity for the rational and ethical represented the spiritual potential of man: it allied man with the Power, God, who made and planned the animals.

The spiritual potential of man also suggested the possibility of "a kind of unity and of evolution for a future age" which would correct the existing anomalies of man's ignorance and cruelty in the world. Dawson posited the existence of "a new and higher plane of existence to be attained to by humanity."

This is what Paul anticipates when he tells us of a 'pneumatical' or spiritual body to succeed to the present natural or 'psychical' one, or what Jesus Himself tells us when He says that in the future state we shall be like to the angels. (223)

Although angels escaped scientific observation, Dawson believed that they represented a conceivable order of created beings, existing within nature and subject to its laws. Angels, however, possessed powers which could restore the harmony of the universe with God which had been disturbed by man's depravity.

This idea of angels bridges over the otherwise impassable gulf between humanity and deity, and illustrates a higher plane than that of man in his present state, but attainable in the future. (224)

For Dawson, Christianity revealed man's spiritual potential through Christ whose mission was to restore the harmony of man with nature and God.

In the "General Conclusions" to Modern Ideas of Evolution, Dawson declared:

It will. . . be the safest as well as the most candid and truthful course, both for the scientific worker and the theologian, to avoid committing himself to any of the

current forms of evolution. The amount of assumption and reasoning in a vicious circle involved in these renders it certain that none of them can long survive. (228)

Dawson's conclusions presented the religious beliefs which had determined his rejection of evolution. He affirmed the necessity of a First Cause, "the living God", in nature "whose will is the ultimate force and the origin of natural law." (228) Evolution existed in that God's plan of creation developed in stages over large periods of time and each stage of this development was based upon the stage that preceded it. Dawson held, however, that it was futile to attempt to explain God's plan by "any one little principle" which could only be limited and partial.

The present condition of the Darwinian doctrine of natural selection clearly proves this, and the various substitutes for it, or additions to it, now proposed are all equally partial. (231)

Man may gain indirect knowledge of God through the study of nature but such study could not lead to a complete revelation. The infinite designs of the Divine mind created inscrutable mysteries in nature. Dawson ended his book with a call for man to turn to Jesus Christ, God's direct revelation of Himself.

Modern Ideas of Evolution emphasized the importance of causation in Dawson's argument against evolution. Early in the study, he had defined Darwin's hypothesis as a modal, rather than a causal concept of evolution. Since, according to this distinction, modal evolution left causation as an independent, external factor, Dawson was able to isolate the question of ultimate cause and introduce the Christian concept of Divine Will. This isolation of ultimate cause was necessary although much of Dawson's subsequent discussion concentrated upon the objections to evolution suggested by scientific evidence. The geological record might

not support evolution but it also did not present direct proof that the development of specific forms was governed by the plan of a Divine Mind. Belief in the operation of a Divine Mind in the universe required the prior existence of the Divine Mind as ultimate cause. By establishing the need for a First Cause, Dawson could extend the influence of the causal force to the developmental process in a Christian alternative to evolution.

Dawson's religious convictions led him to believe that limitations have been imposed upon man's capacity to understand nature. If man understood fully the mysteries of nature, he would know the infinite mind of God. Dawson held, however, that such knowledge was beyond the comprehension of man. God revealed Himself directly through the prophets and Christ to compensate for the barriers in nature. In 1872, Dawson had suggested in The Story of the Earth and Man that a reconciliation of evolution and divine creation might be possible if it were recognized that nature was a union of the physical and spiritual. His rejection of the theistic interpretation of evolution in Modern Ideas of Evolution indicated that his opposition to any form of evolution precluded such a reconciliation. Although Dawson counseled against a theistic concept of evolution on the grounds that the evolutionary theory was not supported by scientific evidence, it is clear that his response was motivated more by religion than science. Dawson's position sat within a certain tradition concerning the relation of religion and science. Implicit in his reaction to evolution was the belief that it is presumptuous to claim that a scientific theory can explain adequately a process governed by the plan of God.

VII

DANIEL WILSON: INTRODUCTION

As were many of his contemporaries, Professor Daniel Wilson of University College, Toronto, was concerned with the effect of scientific enquiry upon religious belief in his age. His poem "Doubt" expressed the view that such enquiry need not threaten faith:

Faith, science, doubt profound,
Searching for ampler knowledge from afar,
By turns have soared to question every star,
Have probed the earth, to tell us whence we are,
And whither bound.

* * * * *

And is belief no more?
A thing as facile as a courtier's suit;
To be put on, like bloom of summer fruit,
By the mere sunshine; fashioned by the moot
Of faction's roar?

Nay! give the soul free scope.
To doubt is to inquire, to search, to scan!
To seek to comprehend the wondrous plan;
To know, believe, and worship as a man,
With God-like hope.¹

A similar sentiment was expressed in prose in a letter sent by Wilson to Bishop Isaac Hellmuth of Huron:

Truth has nothing to fear in the long run from the researches of such men as Darwin and Huxley. I think it suffers far more from the shackles with which orthodox zeal would hamper inquiry with the most honest intentions.²

¹Daniel Wilson, "Doubt", The Canadian Monthly and National Review, VIII (October 1875), 315-316

²University of Toronto Library, Daniel Wilson, Diary, 4 May 1877

Yet Daniel Wilson attacked the Darwinian hypothesis of evolution in print and in the classroom. His response is significant for its delineation of the boundary beyond which the apparently liberal attitude of Wilson could not extend and for the uniquely non-scientific method which he employed to demonstrate the inadequacies of the Darwinian position.

The son of a wine-merchant, Daniel Wilson was born in Edinburgh on 5 January 1816. Educated at the University of Edinburgh, Wilson went to London in 1837 and spent five years writing articles for popular magazines. In 1842, he returned to Edinburgh and continued his literary career. Reflecting upon this period, Wilson called himself a "professional literary hack" and his published writings "pot-boilers."³ He produced articles and several books, often on historical themes such as History of Oliver Cromwell and History of the Puritans, for Thomas Nelson and Sons. He established himself in Edinburgh as a print-maker and artists' colour-man as well, which enabled him to maintain an interest in art that had been stimulated by the engraver William Miller. This background in art combined with his antiquarian knowledge to produce in 1848 the two volume Memorials of Edinburgh in the Olden Time, illustrated from his sketches which recorded many buildings later demolished. In 1851, he published The Archaeology and Prehistorical Annals of Scotland. As he later noted:

I coined the word prehistoric for my own use; and it made its appearance for the first time, unless I deceive myself, in my Prehistoric Annals of Scotland in 1851.⁴

³H. H. Langton, Sir Daniel Wilson (Toronto 1929), 30

⁴University of Edinburgh, Lyell Papers, Daniel Wilson to Charles Lyell, 13 December 1865. The Oxford English Dictionary also attributed the word "prehistoric" to Daniel Wilson.

As well as giving the world a new word, this work established Wilson's reputation as an archaeologist sufficiently to secure him a teaching position at the University of Toronto.

In 1853 Wilson accepted an appointment as Professor of History and English Literature at University College, the newly created secular college of the University of Toronto. Undoubtedly, his decision to emigrate was influenced by both ambition and a desire for security. Thirty-seven years old, he was married and had two young daughters. His attempt, moreover, at obtaining such positions as Keeper of the Library of the Faculty of Advocates at Edinburgh in 1848 had been unsuccessful,⁵ and prospects must have seemed brighter to him in the new world. Wilson remained at Toronto until his death in 1892, teaching history exclusively after 1888 when the English and history chair was divided. He became better known as an administrator. Upon the retirement of John McCaul in 1880, Wilson succeeded him as President of University College. Then, after university federation in 1887, he became President of the University of Toronto. Beginning with the designing of the gargoyles for University College, through negotiations on co-education and federation to the great fire which destroyed much of the original building in 1890, Wilson helped to guide his College and University through nearly forty years of change and development.

Letters sent to friends in Scotland reveal that Wilson viewed his Canadian career with mixed feelings. Writing to the Scottish historian John Hill Burton in 1877, Wilson commented:

⁵G. M. Wrong, H. H. Langton, eds., Review of Historical Publications Relating to Canada (Toronto 1901), v, 202

I but drag a lengthened chain; and the longer it grows it is the more irksome. I left old Edinburgh after all my friendships and my tastes were formed; and so too late to transplant kindly to so strange a soil. But our Colonial University is a thriving institution; the freshness and hopefulness of a young country have their charms. One feels, moreover, that he is actually accomplishing something in the training of the rising generation of a young country with all its future before it.⁶

A similarly ambivalent attitude towards Canada and his position at University College was expressed in letters to Professor John Stuart Blackie of Edinburgh University. In 1860, Wilson wrote Blackie:

. . . I have not abandoned the hope of some day finding myself back in my own favourite haunts, and among old friendly faces; but meanwhile there is abundance of work to be done here of a very pleasant kind.⁷

This correspondence with Blackie reveals that the intellectual and political climate in Canada contributed to Wilson's dissatisfaction. The same 1860 letter which expressed the hope of returning to Edinburgh contained the following comment:

You must come to a new colony indeed, to see how little wisdom suffices for the government of mankind. It would make you hold your own fools in better esteem. There are degrees even in stupidity!⁸

A decade later, Wilson wrote Blackie:

If you could see the imbeciles that an absolute popular suffrage thrusts into power here, you would better appreciate the legitimate delight arising from the fruits of such Scholarship as Derby, Gladstone, and other English statesmen have produced amid the cares of political strife. Here I had the luxury of being summoned before a Parliamentary Committee bent on University reform, the chairman of which could not spell his mother tongue!⁹

⁶National Library of Scotland, Hill Burton Papers, Daniel Wilson to John Hill Burton, 13 July 1877

⁷National Library of Scotland, Blackie Papers, Daniel Wilson to John Stuart Blackie, 19 March 1860

⁸Ibid.

⁹Ibid., 29 January 1870

Wilson's attempts to leave Canada met with failure. In 1861 he had tried to secure a Chair at St. Andrews University without success. When the Chair of English Literature of Edinburgh University became vacant in 1863, he applied for the position. Although he received supporting testimonials from Mr. Justice Morrison, William Henry Draper, Oliver Mowat and Sir William Logan, Wilson did not obtain the appointment.¹⁰ Notwithstanding this demonstrated desire to leave Canada, Wilson was apparently dedicated to the University of Toronto in Canada. When offered the position of Principal of McGill University shortly after arriving in Canada, he refused and the appointment went to John William Dawson. In 1877 he also declined to become head of a new university in London, Ontario. Moreover, he steadfastly rejected all political overtures: in 1875 he would not accept the position of Minister of Public Instruction offered by Oliver Mowat.

In Canada Wilson's archaeological studies understandably turned to the New World and its first inhabitants. In 1861 he published Prehistoric Man, a two volume examination of early Indian life which drew upon field trips Wilson had made north of Lake Superior.¹¹ In this work, he rejected the chronology of creation derived by Bishop Ussher from Genesis in favour of the general view of man's longer existence on earth held by Lyell and others.¹² Prehistoric Man, however, did not attempt to develop from the early evidences of man's existence any explanation of human

¹⁰Langton, Wilson, 51

¹¹Wrong, Langton, eds., Historical Publications, 202

¹²Public Archives of Ontario, Daniel Wilson Papers, Andrew Hunter, "Sir Daniel Wilson's Archaeological Work, Mainly 'Prehistoric Man'".

development or change. This cautious attitude towards the implications of his research was characteristic of Wilson's scientific work. Witnessing perhaps where, in his opinion, excessive theorizing had led Darwin, he refused to allow himself to make the same error. His scientific works did not present any novel interpretations or new theories and none of his writings on prehistory conflicted with the scriptural account of creation as it was then interpreted. Through silence, Wilson was able to avoid the possibility of controversy by presenting an account of man's early development which lengthened the necessary time of creation but remained well within the orthodoxy of his day. Except for further revisions of Prehistoric Man, Wilson's subsequent writings tended to neglect archaeology. As H. H. Langton noted, "While he never lost his interest in the science, it became more and more a pastime for him, a relaxation from practical affairs."¹³ Scientific papers by Wilson appeared in various journals. However, except for Prehistoric Man and The Lost Atlantis, a collection of scientific essays published shortly after his death, his Canadian books were primarily literary.¹⁴ His major examination of evolution, Caliban: The Missing Link, significantly approached the question from a literary rather than a scientific point of view.

In 1887 Darwin's theory of evolution became a subject of special discussion at the University of Toronto when Alfred Russel Wallace

¹³Wrong, Langton, eds., Historical Publications, 203.

¹⁴Wilson also wrote biographical studies of Chatterton and William Nelson and produced a two volume Reminiscences of Old Edinburgh which was a revised edition of his earlier work on the city. He reissued a volume of poetry, Spring Wild Flowers which had first been published before he emigrated from Scotland and published an examination of left-handedness, The Right Hand: Left-handedness.

delivered two lectures in Convocation Hall. Bracing himself for the controversy which he thought was sure to follow these lectures, Wilson wrote in his diary:

Arrangements completed for Dr. A. Russel Wallace, the alter ego of Darwin, to lecture in the College this week. . . . The very title of his first lecture: Darwinism is enough to bring the clergy down on us in full force, for the very name of Darwin is to most of them like a red flag to a bull; and the greater their ignorance the more pronounced their dogmatism.¹⁵

If President Wilson had any doubts about the wisdom of Wallace's lectures, however, The Varsity had none. It published several articles on Wallace and the Darwinian hypothesis, including "Wallace and Darwinism" which treated Darwinian evolution as a sound and established position.¹⁶ The article displayed a certain degree of sophistication in recognizing that the hypothesis had limitations and could not be used to give a simplistic explanation of change:

. . .the theory takes such variations of species simply as a matter of observation, and does not necessarily involve a discussion of the causes thereof. Darwin, himself, in the later editions of his book, gives due consideration to other processes, such as sexual selection and geographical isolation, which, besides natural selection, have had their part in giving origin to new species. . . .¹⁷

Wilson must have been relieved after the lectures by Wallace which presented the standard orthodoxy of Darwinism in an uncontroversial, conservative manner. Toronto press reaction was perhaps surprisingly mild with only The Evening Telegram making an editorial comment and this was the humorous suggestion that, if man and the apes resembled each other

¹⁵Wilson, Diary, 3 March 1887.

¹⁶R.R.W., "Wallace and Darwinism", The Varsity, 5 March 1887

¹⁷Ibid.

so greatly, man could use ear wagging as an additional means of expression.¹⁸

The Globe and The Mail were satisfied to print factual reports of the two lectures.¹⁹ Nevertheless, Wilson received his share of letters commenting upon Wallace. One University College graduate, Edward Ponton, wrote to protest the use of Convocation Hall for sustaining "a theory having for its aim the overthrow of the doctrine of Creation and the establishment of atheism."²⁰ This type of complaint did not disturb Wilson for he had little patience with irrational extremists. His response was, "I have written the good man a soothing little note, and I shall be well pleased if I hear no more about it."²¹

A low church Anglican, Wilson believed in the ability of faith to withstand the challenges of his age. Writing to Principal Dawson in 1876, he declared:

. . . I am more and more convinced that science makes no sceptics; though sceptical men of Science will naturally turn materialistic weapons to account in their own defence; and shallow smartness try to persuade themselves and others that their doubts spring out of the profound depths of their amazing comprehensions of Science!²²

He had confidence that man need not be corrupted by false theories. Reflecting upon agnostic pamphlets sent to his college, he decided that such literature would not prove harmful:

¹⁸ The Evening Telegram, 14 March 1887

¹⁹ The Globe, 12 March 1887; The Mail, 11 March 1887

²⁰ Wilson, Diary, 28 March 1887

²¹ Ibid.

²² McGill University Library, Dawson Papers, Daniel Wilson to J. W. Dawson, 2 March 1876

On reading the pamphlet[s] I had the further satisfaction of hoping somewhat confidently that such poor shallow negations are not likely to exercise much influence on any thoughtful young man.²³

Wilson, however, considered the theory of evolution posed an exceptional danger. He was haunted by the example of Darwin who, he noted, had "lost faith, not only in a personal God, a beneficial Father, but in any hold on a hereafter."²⁴ If evolution were accepted, what happened to Darwin might happen to society in general. Wilson mused: "It is no longer 'I do not believe,' it is now 'Nobody knows or can know'."²⁵

²³Wilson, Diary, 21 April 1881

²⁴Ibid., 13 January 1888

²⁵Ibid., 21 April 1881

VIII

DANIEL WILSON: CALIBAN: THE MISSING LINK

Two years after Charles Darwin published The Descent of Man in 1871, Daniel Wilson replied with his most detailed and direct attack upon the Darwinian hypothesis, Caliban: The Missing Link.¹ This attack was not based primarily upon his scientific knowledge but rather combined this with his study of Shakespeare. As was Browning before him, Wilson was fascinated by the creature, "being but half a fish and half a monster",² who was born of a witch and served as Prospero's slave on the mythical island of The Tempest. In his opinion, Shakespeare's Caliban pointed clearly to the scientific theories of the nineteenth century:

We have in "The Tempest" a being which is "a beast, no more", and yet is endowed with speech and reason up to the highest ideal of the capacity of its own nature. A comparison between this Caliban of Shakespeare's creation and the so-called "brute progenitor of man" of our latest school of science, has proved replete with interest and instruction to the writer's own mind. . . .³

Wilson declared that his purpose was to show that Shakespeare had already created the ideal of the creature which existed between animal and man, the missing link, "which, if the new theory of descent from crudest animal organisms be true, was our predecessor and precursor in the inheritance of this world of humanity." (xi-xii)

¹Daniel Wilson, Caliban: The Missing Link (London 1873).

²William Shakespeare, The Tempest, III, ii, 9

³Wilson, Caliban, xij. Subsequent page references have been incorporated in the text.

Despite its clear statement of purpose, Caliban: The Missing Link has puzzled literary critics who have examined it. Much of this subsequent confusion may be attributed to a lack of appreciation of Wilson's position. A. D. Nuttall in Two Concepts of Allegory called Wilson's book a "prize specimen" of an evolutionary Tempest.⁴ Nuttall held that by 1873 romantic allegorist-critics had already produced a historical Tempest, a political Tempest, and a sociological Tempest. Caliban: The Missing Link combined all these earlier interpretations into an evolutionary Tempest. It was Nuttall's belief, however, that "Wilson's precise intention in this book is extraordinarily elusive, even for his century."⁵ Assuming Wilson to be a Darwinian, Nuttall argued that he was not sufficiently clear whether Caliban was an anticipation in allegorical form of Darwin's hypothesis or whether Caliban merely illustrated what the missing link must have been like. Nuttall failed to realize that the book was fundamentally a comment on Darwin, not on Shakespeare. It was, therefore, polemical rather than critical. Many of the points made by Wilson were intended to be whimsical and cannot be taken as serious Shakespearian criticism: critical and textual consistency were often sacrificed to score a point against Darwin. If Caliban is read as a humorous use of Shakespeare to demonstrate the ludicrousness of Darwin's position, Wilson's precise intention, far from being elusive, becomes demonstrably clear.

⁴A. D. Nuttall, Two Concepts of Allegory: A Study of Shakespeare's 'The Tempest' and the Logic of Allegorical Expression (London 1967), 8

⁵Ibid., 8

Wilson began his study by describing the fundamental dilemma created by modern science. He believed that it was impossible to ignore in science the element of man's reason, and that it was this element which created the eternal conflict between mind and matter. This, moreover, could not be avoided by modern science since, in his opinion, it was impossible for science to limit itself to materialism when it dealt with man:

As soon as we take up the question of the origin and descent of man we are compelled to deal with the spiritual no less than the material element of his being, whatever theories we may be tempted to form in accounting for the origin of either. (3)

To illustrate this last point, Wilson considered the alternative theories used to explain the origin of the universe. Either the eternity of matter must be assumed or the eternity of God. If the notion that nothing could come out of nothing still held, Wilson argued that it was not less but more scientific to start with "the preoccupation of the mighty void with the Eternal Mind." He concluded, "It is easier to conceive of the eternity of God than of His coming into being." (4)

Wilson's basic assumption was that God exists. He rejected the notion that science could have any legitimate foundation in atheism and argued his position firmly within the bounds of this theistic assumption. Once the hypothesis of creation based upon the eternity of God was accepted, he thought that the issue created by science became obvious:

. . . if "first mind, then matter," be thus the order of the universe, how are we to reconcile with it the inductions of modern science, in such a total reversal of this order in the process of creation of mind as is implied in the development of the intellectual, moral, and spiritual element of man, through the same natural selection by which his physical evolution is traced, step by step, from the very lowest organic forms. (4)

This statement suggested that Wilson was more concerned with a scientific method than with any scientific discovery. It was the methodology of modern science by which the notion of natural selection was applied to the development of man which disturbed him. It was also the explicit threat to man's spirituality rather than any general theory of biological origin which he opposed. He was obviously more concerned with the implications of Darwin's recent The Descent of Man than with the earlier Origin of Species.

As had so many opponents of Darwin's theory, Wilson found the extreme zeal with which some evolutionists defended their doctrine distasteful:

The nonconformity which receives least toleration in our own day lies under the ban of science far more than of theology. . . . Its new hypotheses are pronounced by most of its exponents to be infinitely probable, and by many of them to be absolutely demonstrated. With a generous denouncement of all intolerance, the modern evolutionist presents his axioms to the questioner and passes on. (6)

It is significant Wilson considered evolution to be the new orthodoxy and those who opposed it, the "nonconformists". The opponents seemed to sense that they were on the defensive in a struggle which in the minds of many scientists had already been decided in favour of the evolutionists. There was a generation gap in style, moreover, as well as in ideas and values. This was reflected in the religious imagery which characterized the style of much of Wilson's attack. For example, he wrote that "Infallibility has deserted the chair of St. Peter, and finds itself at home on a new throne." (6-7) Evolutionists had banished the type and style of scientific discussion to which many scientists of Wilson's generation were accustomed. Wilson noted that, although some "men of calm judicial sobriety" existed among the evolutionists, "the crowd of followers, who

have been dazzled by the novelty of the new theory of evolution. . . are animated with all the zeal of young converts". (7) He admitted that some aspects of the evolutionary theory appealed to him:

We owe to being charmed with the theory of the origin of species, to have recognized in it the key to a thousand difficulties in natural history. . . . (7)

He feared, however, that extreme evolutionists had made acceptance of their notion of man's descent a necessary condition for belief in this theory of origins. In his opinion, these evolutionists had declared:

. . . all is in vain, unless the whole hypothesis of the descent of man, the evolution of mind, and every step in the pedigree by which he is traced back to the remotest of his new-found ancestry, be accepted as indisputable fact. (7)

Wilson believed that they demanded blanket acceptance of all, including the most dubious and controversial, facets of their theory. Unable to give such total acceptance, he saw total rejection of the evolutionary hypothesis as the only alternative left by its extreme supporters.

Wilson praised the "cautious reticence" with which Darwin himself approached the question of man's origins or descent:

He [Darwin] not only hesitated to startle and prejudice his readers against the novel system as a whole, by publishing what nevertheless seemed to him the inevitable deduction from his general views, but he had determined to withhold that crowning result of his research. . . . (17-18)

The Origin of Species, however, clearly indicated to Wilson that man must be included with all other beings in the Darwinian hypothesis. It was only a matter of time before the followers of Darwin would begin specific discussion of man, even if Darwin did not do so himself. Darwin's line of thought in his earlier book so obviously pointed to man that, in Wilson's opinion, it was

. . . no wonder that his disciples hastened to break through prudential restraints, and proclaim in undistinguished simplicity the doctrine of affinities and genealogy, by which we are taught to conceive of a remote marine group of hermaphrodites diverging into two great branches, the one in retrograde descent producing the present class of Ascidians, hardly recognisable as animals; the other giving birth to the vertebrate, and so to man himself. (18)

Wilson suggested that Darwin was not immune to the pressures of the extreme evolutionists. Despite his own feelings, Darwin was forced by his less prudent followers to publish The Descent of Man, which explicitly considered the progenitor of the human race.

The certainty with which Darwin applied his hypothesis to man amazed Wilson. He noted that, "while wanderings of the world's gray fathers in such inconceivably remote and dark ages are hard to trace, their forms reveal themselves with no vague uncertainty to the scientific seer." (19) It is difficult not to believe that Wilson was offended almost as much by Darwin's style as by his ideas. Such self-confidence implied an arrogance which was foreign to the studied rhetoric that marked Wilson's writings. Wilson, moreover, believed that this self-confidence was unjustified. He noted that, although Darwin wrote as if his facts were beyond doubt, what was being described was not man, but man's progenitor, "still irrational and dumb, or at best only entering on the threshold of that transitional stage of anthropomorphism which is to transform him into the rational being endowed with speech." (19) Wilson argued that the confidence reflected in Darwin's style must not confuse the reader into assuming more than was actually proved. There remained a break in the lineage of man, a missing link, separating the purely animal from the rational and intellectual man.

In order to chart the development of man, scientists had to devise some standard means of measuring the evolutionary process which changed brute into rational being. Wilson questioned the effectiveness of one common standard, namely, using brain development. He noted that size appeared to be the criterion: "the more carefully the human brain has been compared with those of the anthropomorpha, the tendency has been to diminish the distinctive features, apart from absolute size." (21) Quoting the "trustworthy authority" of Huxley, he stated that the highest cerebral development of the gorilla was 35 cubic inches. Since the human brain at its lowest was 55 cubic inches, somewhere in the middle of this 20 cubic inch gap should lie, according to this reasoning, the "intermediate, hypothetical 'man's progenitor', the Caliban of Science." (21) There were, however, difficulties with this theory of brain development:

. . . most ancient human crania hitherto recovered, for example, that from Engis Cave near Liege, and most degraded types, approximating in any considerable degree to an ape-like form, as the Neanderthal skull, betray no corresponding diminution of cerebral mass. (22)

Anthropological research could not support the theory of evolution by demonstrating the actual existence of transitional forms with intermediate size brains. Wilson believed that a still greater difficulty remained. This difficulty was:

by any legitimate process of induction to realize the evolution which consistently links by natural gradation the brute in absolute subjection to the laws of matter, and the rational being ruling over animate and inanimate nature by force of intellect. (16)

A totally successful hypothesis must explain how and when man required his most distinctive quality: his ability to reason.

Wilson argued that man has always had an intuitive knowledge of "an element peculiar to himself, distinguishing him, not in degree, but radically from the very wisest of apes." (27) This element could not be classified by anthropologists in the same way that the purely physical parts of man could be:

The Reasoning faculty - whether it be the mere large brain-power, or something as essentially distinct as that which "smiles at the drawn dagger and defies its point", - lies beyond the ken of any such anthropoid classifier. Yet reason may, on that very account, be a more distinctive element than hand, foot, pelvis, vertebrae, brain, or any other structural characteristic. (28)

Wilson believed that an overly exclusive devotion to physical science induced the scientist not to recognize the metaphysical and psychical. This was the type of deadening which he saw in Darwin's confession that he had lost his taste for poetry. In the argument of the evolutionists, he believed that "the spiritual element in man seems to dwindle into insignificance." (27) Evolutionists seemed to evade unconsciously the real difficulty in their conception of the transitional being. In Wilson's opinion, "the difficulty is not to conceive of the transitional form, but of the transitional mind." (27)

Wilson described the immense gulf which man's mind had created between him and the brute:

. . . the infant, even of the savage, ere it has completed its third year, does daily and hourly without attracting notice, what surpasses every marvel of the "half-reasoning" elephant or dog. . . . (27-28)

The savage was "still not less man than ourselves." (27)

In truth, the difference between the Australian savage and a Shakespeare or a Newton is trifling, compared with the unbridged gulf which separates him from the very wisest of dogs or apes. (28)

He concluded that "not one but many links are missing between man and his nearest anthropoid fellow-creatures." (28) There were, moreover, serious considerations which made the bridging of this gulf improbable. For example, Wilson did not understand how the acquisition of reason by a brute could be adequately explained by natural selection. He argued that the gorilla was in his native habitat thoroughly natural and at home: he was in that state the perfect gorilla. For such an animal, "the first manifestations of reason, while they blunt the pure instincts, would seem to result in a perverted moral sense, antagonistic to all the healthful instincts of its nature." (31) Assuming that such a moral development could be justified, he believed that there were other reasons why the gap between man and brute must be very great. Why, on any theory of survival of the fittest, or natural or sexual selection, should Eskimos be the naked descendants of progenitors naturally clothed with fur? Wilson argued that we should expect to find arctic man provided no less than the polar bear with a natural covering so needed in his natural habitat. (31-32)

Early in his discussion of the missing link, Wilson had emphasized two important considerations: not only was there a great gap to be bridged by such a link, but it was also very unlikely that the premises of evolution which required the link were valid. Caliban: The Missing Link, therefore, proposed to examine a creature whom the author believed never existed. This indicated the basically whimsical quality of the whole book. It was undoubtedly Wilson's way of drawing attention to the fact that an imaginary creature, necessitated by an unreasonable theory, could be the subject of a scholarly investigation. By basing his book on an untenable foundation, he suggested that he was doing no more than had

been done by Darwin and his followers who had also, in his opinion, published supposedly scholarly works which were, in fact, based upon unproved and unprovable hypotheses. Caliban was neither literary nor scientific criticism, but a satirical attempt by Wilson to ridicule the "scientific" presumptions and statements of the evolutionists.

Since the discoveries of science had failed to produce evidence of a missing link, Wilson asserted that imagination must be used. He admitted that his own prejudices made this a difficult task:

To the inquirer who still acknowledges a natural repugnance to the acceptance of a law of progress which makes man no more than a highly developed ape, it is difficult to give imagination fair play in whatever share it should take in the solution of the problem. (36)

Fortunately this great imaginative feat had already been performed by the "most original and creative fancy" of William Shakespeare who

before the close of his too brief career, dealt with the very conception which now seems so difficult to realize, and untrammelled alike by Darwinian theories or anti-Darwinian prejudices, gave the "airy nothing a local habitation and a name." (39)

In The Tempest Shakespeare imagined a mythical island on which lived a creature

so distinct from anything hitherto seen or known on earth, that only now two centuries and a half after its production on the English stage, has it entered into the mind of the scientific naturalist to conceive of such a being as possible. (66)

By his creation of Caliban, Wilson suggested, Shakespeare anticipated perfectly the supposedly original theories of the nineteenth century evolutionists and proved that poetic insight was superior to modern, pseudo-scientific theory.

It is obvious that in The Tempest Caliban was meant to be something less than human. He is called "man-monster", "monster", and "fish".

When the jester Trinculo discovered the sleeping Caliban, he asked:

What have we here? a man or a fish? dead or alive? A fish: he smells like a fish; a very ancient and fishlike smell. . . . Legged like a man! I do now let loose my opinion, hold it no longer: this is no fish, but an islander. . . .⁶

The notion that there was something fish-like about Caliban is important.

Wilson noted how clearly this creature fitted Darwin's description of man's early ancestor:

"In the dim obscurity of the past," says Darwin, "we can see that the early progenitor of all the vertebrae [sic] must have been an aquatic animal;" in its earliest stages "more like the larvae of our existing marine Ascidians than any other known form," but destined in process of time, through lancelet, genoid, and other kindred transitions, to:--

"Suffer a sea change
Into something rich and strange."
(73-74)

Although Caliban had evidently evolved beyond the purely aquatic stage, his evolution into man was far from complete. Wilson saw that "in Caliban, there was undesignedly embodied, seemingly, an ideal of the latest stages of such an evolution." (74) Caliban was "perfect as the study of a living creature distinct from, yet next in order below the level of humanity." (78)

As many fictional monsters, Caliban was a pathetic figure. He had evolved sufficiently to aspire to a humanity from which his intermediate state of existence still barred him. Trapped by his brute nature, he suffered the cruelties of humans who could only see in him a subject of ridicule. Wilson believed that Caliban merited the thoughtful study of the modern philosopher:

⁶Shakespeare, The Tempest, II, ii, 25-28, 34-37

Caliban's is not a brutalized, but a natural brute mind. He is a being in whom the moral instincts of man have no part; but also in whom the degradation of savage humanity is equally wanting. (79)

In The Tempest it was the shipwrecked human crew who used coarse and brutal language: they were incapable of poetic thought or rhythmical structure and spoke only in prose. Wilson noted, however, that Caliban

is in perfect harmony with the rhythm of the breezes and the tides. His thoughts are essentially poetical, within the range of his lowest nature; and so his speech is, for the most part, in verse. (90)

Caliban possessed the natural poetry of the senses which was associated with animals. Wilson implied that this animal simplicity represented a positive type of spirituality which brutalized man had come to be incapable of recognizing in nature.

Wilson placed Caliban on the verge of rationality:

He is a novel anthropoid of a high type - such as on the hypothesis of evolution must have existed intermediately between the ape and man - in whom some spark of rational intelligence has been enkindled, under the tutorship of one who has already mastered the secrets of nature. (79)

Caliban had, however, "a nature of his own essentially distinct from the human beings with whom he is brought in contact." (90) He was not a savage in the way that members of a primitive race were. Wilson associated with savages qualities of brutality and degradation which he did not find in Caliban. It was, indeed, their very savage qualities which indicated to Wilson that the primitive races could not have been directly evolved from animals. Through his distinctive nature, Caliban

realises, as no degraded Bushman or Australian savage can do, a conceivable intermediate stage of the anthropomorphous existence, as far above the most highly organized ape as it falls short of rational humanity. (90-91)

Wilson found the half-human brute-man in some ways more attractive than the savage. In his opinion, Caliban "excites a sympathy such as no degraded savage could." (92)

Implicit in this sympathetic treatment of Caliban was a criticism of evolution. It would be difficult to maintain from his argument that the descent of man from ape through brute-man, Caliban, to degraded savage was a totally logical explanation of the origin of man's rationality. Except that he lacked reason, Caliban, according to Wilson's description, possessed many favourable qualities which savages lacked. Surely if natural selection were correct, Caliban's sensitivities would have been preserved in savage man. Wilson had constructed a Caliban who, if he were the missing link, would invert the evolutionary concept of development and make nonsense out of the evolutionists' position as it applied to man's mental and moral development. To achieve this, however, Wilson had to present a distorted picture of Caliban. He neglected, for example, the fact that the man-monster once attempted to rape Prospero's daughter. Likewise, when Caliban urged Stephano to murder Prospero, he was drunk from the wine which the shipwrecked crew had given him. He was then as degraded as any human savage for, after contact with the crew, Caliban became, in a sense, brutalized. A change occurred in him which Wilson chose to ignore when he described Caliban as "not a brutalized, but a natural brute mind." (79)

Throughout his book, Wilson remained preoccupied with the mind-matter question which seemed to represent for him the major difficulty in accepting Darwin's hypothesis in The Descent of Man. In his opinion, the evolutionist saw no evidence that man had been "aboriginally endowed with

the ennobling belief in the existence of an omnipotent God." (92)

Furthermore, it seemed quite doubtful whether, in the scheme of evolutionary development, man could have received this belief as either an endowment or a revelation. For the evolutionist, man's "intellect, conscience, and religious beliefs are but the latest ramifications of that primitive Ascidian germ which clung to the rocks on the shores of inconceivably ancient seas." (92-93) If this were accepted, Wilson held that there would be virtually no limit to how far back man's pedigree might be traced:

. . . if conscience, religion, apprehension of truth, belief in God and immortality, are all no more than developed or transformed animal sensations; and intellect is only the latest elaboration of the perceptions of the senses, it need not surprise us that inquiry has already been extended in search of relations between the inorganic and organic. (93)

Provided that the evolutionists allowed the divine origin of the soul, Wilson was prepared to accept the widest possible definition of physical evolution:

. . . when it becomes a psychical question, it is not as a mere matter of sentiment that the mind revolts at a theory of evolution which professes to recognize its own emanation as no more than the accumulation of impressions and sensations of the nervous organization, gathered in the slow lapse of ages, until at last it had culminated in a moral sense. . . . (93-94)

Such a conception threatened man's belief in a First Cause which Wilson held was inextricably tied to belief in the human soul. Directly contradicting what he considered was the evolutionist position, he attributed a rudimentary spiritual or religious awareness to the missing link: "This is no partially developed irrational anthropoid, but man as he is to be with in many a stage of mental progression far above the rude savage." (113)

To illustrate this point, he turned again to a romanticized Caliban. He

argued that, like Adam and Eve, who heard the voice of God among the trees of Eden, Caliban heard God in the violence and terrors of nature and was afraid. Even granting both physical evolution and the existence of a missing link, Wilson implied that the ideal example of such an intermediate being, Caliban, possessed a spiritual awareness which refuted the evolutionary concept of moral development.


In Caliban: The Missing Link, Daniel Wilson left no doubt that Shakespeare had been more successful than Darwin in discovering and portraying the "missing link". The sixteenth century playwright in The Tempest created a Caliban of fancy, but the nineteenth century evolutionist, in Wilson's opinion, had created an equally fanciful missing link. Darwin's conception was "a mere Frankenstein, still inanimate, the counterfeit presentment of undeveloped man, with its intellectual and moral possibilities an unsolved problem." (193) Shakespeare's Caliban was not a man or, of course, really the progenitor of man. He belonged rather to the fanciful order of Shakespearean fairies and spirits. Nevertheless, Wilson held that the difference between the poetic and the evolutionary missing links was only one of style:

. . . whether, I say, we study the one Caliban or the other, is it less a creature of the imagination; is it more a possibility of this world of our common humanity, than the Ariel of the poet's animated and embodied zephyr? (193)

Wilson admired the poetic charm of Shakespeare and disliked the dogmatic confidence of Darwin and the evolutionists. He believed, however, that neither was dealing with reality. For both poet and scientists, the missing link remained a creature of the imagination.

Caliban: The Missing Link proved nothing. The point of the book was not to show that the missing link of evolution was an imaginary

concept: Wilson had established this in the first forty pages of his study. The book did not provide any constructive alternatives to evolution, except for general statements concerning the Divine Mind. It was moreover, not an attack upon evolution proper since Wilson admitted freely his admiration for much of Darwin's hypothesis. The book was based upon an entirely negative premise: the immediate need to attack Darwin's recently published application of his evolutionary hypothesis to man's descent. The purpose of Caliban was to ridicule, not convert. Using a satirical method which was at times whimsical, and at other times bitter, Wilson pointed out the folly of the evolutionary position which, in its explanation of man's descent must resort to an imaginary device, the missing link, that had already been more successfully described by Shakespeare three centuries earlier. If Darwin's hypothesis in The Descent of Man were correct, the book would threaten the most basic assumptions concerning man's spiritual nature and potential held by men like Daniel Wilson. Since Wilson believed that the missing link was the weakest link in The Descent of Man, his Caliban: The Missing Link concentrated upon its destruction.



IX

DANIEL WILSON: THE NEW HERALDS' COLLEGE OF SCIENCE

Students of Daniel Wilson at University College inevitably learned their professor's opinion of Darwin's theory of evolution. As A. F. Hunter noted, Wilson

steadfastly held out against the modern trend of scientific thought in the direction of simian theories of human descent. His lectures, too, till his latest years, always had a burlesque or lampoon of the monkey-man theory. He would place the skull of a gorilla in the class-room beside that of a man, with its arched forehead, and compare them sportingly to the detriment of the gorilla. . . .¹

In Caliban: The Missing Link, Wilson had argued against the concept of a missing link progenitor of man as the vehicle through which human mental and moral development may be traced from its animal, non-human, origins by the Darwinian hypothesis of natural selection. Although he drew upon examples of savage or aboriginal behavior to illustrate the unbridgeable gulf between man and beast, it is clear that when Wilson contrasted man with the gorilla for the benefit of his students he had an Anglo-Saxon man in mind. Inherent in his opposition to Darwin's theory was the belief that, if accepted, the Darwinian explanation of man's development would have a disturbing effect upon the racial distinctions which Wilson firmly upheld as well as upon man's self-consciousness and spiritual awareness.

Wilson held that acceptance of the Darwinian explanation of man's descent produced a common genealogy for all mankind. He noted Darwin's

¹Public Archives of Ontario, Daniel Wilson Papers, A. F. Hunter, "Daniel Wilson's 'Caliban'."

belief that, if the races of man came from two or more distinct species, marked differences in the structure of certain bones would be found in present day man.² Since no such differences had been discerned, Darwin concluded that man must have evolved from the same progenitor. To Wilson this meant that the evolutionary Caliban "must needs find admission into our pedigree as the undoubted progenitor and sole Adam of the whole human race."³ The Court of Heraldry represented the accepted and final authority for settling disputes of pedigree. According to Wilson, Darwin was "our Garter King in the new Herald's [sic] College of science." Wilson asserted that Darwin was more dogmatic than all the old judges combined.⁴ Once the descent of man was accepted, no man would be joined in a brotherhood since all would have a common brute ancestor. Presumably, too, all men would have to accept the evolutionary explanation of their moral development and thus deny the Christian conception of the origin of man's moral and intellectual capacity. There could be no middle ground.

In his Prehistoric Man, Wilson had asserted the superiority of Britain in almost evolutionary terms.

The very elements for Britain's greatness seem to lie in her slow maturity; in her collision with successive races only a little in advance of herself; in her transition through all the stages from infancy to vigorous manhood.⁵

Here, in a sense, is the survival of the fittest. Britain was able to

²Daniel Wilson, Caliban: The Missing Link (London 1873), 189

³Ibid., 189

⁴Ibid., 190

⁵Daniel Wilson, Prehistoric Man (London 1865), 6

triumph over and conquer savage races because she had been "isolated during centuries of preparatory training."⁶ This isolation allowed Britain to develop to the stage of impregnable superiority which resulted in the British race's mastery of the new world:

. . . the Old Englander becomes the New Englander; starts from his matured vantage-ground on a fresh career, and displaces the American Red-man by the American White-man, the free product of the great past and the great present.⁷

The American Indian was doomed to defeat because he had been forced to compete with a race at a much higher stage of development. Chance played a major part in Wilson's argument. Britain possessed the good fortune to have been relatively isolated during her growth to maturity. Had the American Indian escaped premature contact with the superior British race, his race might have attained the mature superiority that, in Wilson's opinion, characterized the British.

Wilson denied that "the element which so markedly distinguished the White- from the Red-man of the New World is an attribute peculiar to the former, rather than the development of innate powers common to both."⁸ It was these innate powers which, he believed, separated man from the lower animals. Animals can be domesticated; however, this requires subjecting them to artificial conditions foreign to their natures. Wilson noted that animals will quickly remove themselves from this foreign state as soon as they have regained their uncontrolled action. In this way, he held, domestication of animals was greatly different from civilization of men:

⁶Ibid., 6

⁷Ibid., 6

⁸Ibid., 5-6

Civilisation is for man development. It is self-originated [rather than imposed like domestication upon animals]; it matures all the faculties natural to him, and is progressive and seemingly ineradicable.⁹

Wilson feared, however, that this view of civilization was being affected critically by the new scientific ideas of his age.

Is, then, civilisation natural to man; or is it only a habit or condition artificially superinduced, and as foreign to his nature as the bit and bridle to the horse, or the truck-cart to the wild ass of the desert? Such questions involve the whole ethnological problem reopened by Lamarck, Agassiz, Darwin, Huxley and others. . . .¹⁰

The process of civilization, moreover, was not the only problem for it was inseparable from the fundamental question of man's origins:

Whence is man? What are his antecedents? What - within the compass with which alone science deals, - are his future destinies? Does civilisation move only through limited cycles, repeating in new centuries the work of the old; attaining under some varying phase, to the same maximum of our imperfecting humanity, and then, like the wandering comet, returning from the splendor of its perihelion back to the night?¹¹

If civilization were "like the wandering comet", materialism might very well seem a reasonable creed. Once both hope in progress and faith in divine guidance had been removed, there was little left for the spiritual and imaginative man.

In Prehistoric Man, Wilson had seen no qualitative difference between those whom he called the civilized Euro-american and the uncivilized

⁹Ibid., 6

¹⁰Ibid., 4

¹¹Ibid., 4

Indian other than a difference in their relative stages of development. This embodied the thought of Wilson the anthropologist and archaeologist. Likewise, in Caliban, Wilson stressed "the unity of mind, linking the rude savage and the Christian philosopher in a faith in the supernatural and the conviction of a life beyond the grave."¹² He declared that the rudest savage mind had undefined conceptions of a spiritual life, yearnings after immortality.¹³ In the privacy of his diary, however, Wilson concluded that the lower races were "seemingly soulless."¹⁴

Although Wilson held that man's mind distinguished him from the lower animals, he believed that civilized man was fundamentally different from the existing "lower races" of man. Commenting upon two lectures delivered by Alfred Russel Wallace at the University of Toronto in March 1887, Wilson declared:

Above all, I was greatly disappointed with the definition of his [Wallace's] ideas as to the inspiration of man in his latest evolutionary stage with the higher moral and intellectual elements of the rational and responsible being. His ideas places [sic] this acquisition far within the lower races of the present day. They are seemingly soulless. His theory is utterly untenable.¹⁵

This judgment is especially important when it is remembered that Wallace, in fact, shared Wilson's opposition to an evolutionary explanation of man's mental and moral development through natural selection. Despite the fact that Wallace had formulated independently of Darwin a

¹²Wilson, Caliban, 125

¹³Ibid., 125

¹⁴University of Toronto Library, Daniel Wilson, Diary, 10 March 1887, typescript.

¹⁵Ibid.

developmental hypothesis based upon natural selection, he could not accept the application of this hypothesis to man's descent and argued that only the direct intervention of Cosmic Intelligence could explain the emergence of man as an intellectual and spiritual creation.¹⁶ For the same reasons, therefore, that caused Wilson to write Caliban: The Missing Link, Wallace had rejected the argument which formed the basis of The Descent of Man.

Wilson's attitude towards uncivilized man was implicit in an 1865 letter which he sent to Charles Lyell. Describing a visit with Louis Agassiz in Boston, Wilson wrote that Agassiz had showed him a series of jars containing in alcohol

the heads of Chinese, Indians, etc. thus preserved with the flesh, hair, etc. perfect as in life. He contemplates being able ultimately to secure a series of illustrations of leading types of man, preserving not merely the head, but the whole body. But he complained that even the New England mind was not yet sufficiently advanced to admit of his giving publicity to his scheme.

It is easy to commission a traveller to bring home a Gorilla or other anthropoid; but a Commission to bag a few natives and send them home in spirits would rather startle our Aborigines protection Societies!¹⁷

In effect, the evolutionary explanation of man's descent created a dilemma for Daniel Wilson. To emphasize the fundamental difference between man and the other animals, he argued that primitive men possess the mental and moral qualities, which civilized man possessed. On the other hand, it is evident that he found it difficult to accept the brotherhood of all

¹⁶See page 28 of the dissertation.

¹⁷University of Edinburgh, Lyell Papers, Daniel Wilson to Charles Lyell, 13 December 1865

men which the evolutionary concept of a common progenitor suggested.

In his studies of primitive North American man published mainly in The Canadian Journal and later in the Transactions of the Royal Society of Canada, Wilson made repeated use of craniology and linguistics. The evidence presented by Wilson in these studies suggests that the first inhabitants of North America displayed fundamental differences which made it difficult to affiliate them directly with Asiatics or the prehistorical races of South America. He argued that essential differences existed among the various races of man:

The essential differences which separate the Aryan from the Semitic Races are not more marked than the intellectual and moral divergencies among barbarous tribes.¹⁸

Such a view of race might indicate that Wilson supported polygenism, the belief associated with the American anthropologist, Samuel G. Morton, in the 1850s and later with Louis Agassiz that the races of man belonged to separate species. Polygenism originated in the United States where it was used to demonstrate the inferiority of the Negro and the uniqueness of the American Indian race, and it relied heavily upon the study of crania. While Wilson's writings point in the direction of polygenism, he always exercised a caution in reaching conclusions that makes it impossible to identify him conclusively with this interpretation. It may be that his religious convictions prevented him from explicit support of polygenism since it raised questions concerning the Genesis account of man's creation.

¹⁸Daniel Wilson, "Artistic Faculty in Aboriginal Races", Transactions of the Royal Society of Canada, III, 2 (1885), 70

If the races of man were separate species, they did not demonstrate that inability to produce offspring which characterized the inter-mating of other species. In his paper "Pre-Aryan American Man", Wilson considered the Métis living in the Hudson's Bay Company territory. He believed that the Métis were "a fact of singular interest to the ethnologist."¹⁹ In his opinion, the union of Cree women and Scottish or French Canadian trappers was beneficial:

The contrasting Scottish and French paternity reveals itself in the hybrid offspring; but in both cases the half-breeds are a large and robust race, with greater powers of endurance than the pure-blood Indian. They have been described to me by more than one trustworthy observer as "superior in every respect, both mentally and physically", and this is confirmed by my own experience.²⁰

Wilson's attitude towards racial differences did not include opposition to miscegenation. His writings suggest instead that humanity is improved and strengthened by the spread of Western European characteristics through mating with other races. The Aryan race, however, remained for Wilson the standard of measurement of other races.

Wilson stressed that he did not object to many of the points made by Darwin in the Origin of Species. He asserted in Caliban that

We are ready with the admission that all life starts from a cell; that the primary rule of embryonic development is to all appearance common to animal life; that the human embryo in early stages is not readily discernible from that of inferior animals very remote from man. . . .²¹

¹⁹Daniel Wilson, "Pre-Aryan American Man", Transactions of the Royal Society of Canada, I, 2 (1882-1883), 43

²⁰Ibid., 43

²¹Wilson, Caliban, 190

He agreed that there were many similarities in structure between man and the lower animals. He also admitted that, "up to a certain stage, development proceeds with many striking analogies and some striking homologies."²²

The "certain stage" was that point when the evolutionist went beyond the development of physical structure:

. . . the modern evolutionist, leading us on clearly and on the whole convincingly, through many remarkable evidences of development, and seeming evolution of species; and recognizing in so far the essential element of humanity as to push research beyond mere physical structure in search of intellect, the social virtues, and a moral sense: just at the final stage where the wondrous transformation is to be looked for on which the verdict depends, we are directed solely to physical evidence, as though brain, reason, mind, and soul were convertible terms.²³

Wilson's basic complaint was that the evolutionist used matter to explain mind. Physical evidence could be employed to explain physical change, but mental and moral development did not depend upon material or physical development:

Perfection of form is insignificant in comparison with the living soul. We are not prepared to admit that the development of the brain of an orang or a gorilla to a perfect structural equality with that of man must necessarily be followed by a corresponding manifestation of intelligence, reason, and mental sense.²⁴

The true standard of man was not his brain, but his mind. The true development of man, therefore, could not be measured in purely physical terms.

Wilson recognized that there were implications in the evolutionary approach which affected all men. Noting that immense periods of time were

²²Ibid., 190

²³Ibid., 190

²⁴Ibid., 190

required for evolution to work, he asserted in Caliban that death is a necessary agent of the evolutionary process since the survival of the fittest could only occur through the elimination of the inferior. In his opinion, evolution would affect man's self-consciousness as well: the higher in the scale of development that man wished to place himself, the lower he must descend to find his original ancestor. Man, moreover, could conceive of himself as a Caliban, or a link to a still higher development of life. Wilson held that all these concepts required man to adopt an outlook which was difficult to reconcile with a sense of self and individual entity. Wilson believed that, if God were left within the system, it would still be difficult for man to accept the long range benefits which his death might bring:

Death may play its useful part, no less than life, in working out the grandest idea of an unending chain of being over which the Divine Mind is recognized brooding in calm supremacy and watching the evolution of the creative plan. But the little link which constitutes our own life is worth to us all the rest; and philosophy cannot rob death of its terrors, whatever religion may do.²⁵

No matter what accommodations the materialist evolutionists made with the spiritual development of man, man's natural fear of death remained, and the notion of natural selection which subordinated present existence to future benefits would not relieve this anxiety. Wilson believed that evolution removed the supernatural comfort of personal immortality which even savages had to lessen their fear of mortality.

The question whether men could take any comfort from a future governed by evolutionary precepts was examined further by Wilson in a

²⁵Ibid., 120

paper, "Three Generations", published by The Canadian Monthly and National Review in 1876. In this he considered the possible transfer of mental and moral qualities from generation to generation. Wilson cited the example of the Darwin family:

Dr. Erasmus Darwin, author of "The Botanic Garden", of "Zoonomia, or the laws of Organic Life", &c., had a son, Robert, a physician of note, and in due course, a grandson, Charles, known to all men as the author of "The Origin of Species", "The Descent of Man", and in short of Darwinism. Evolutionists, therefore, claim some show of reason in looking to the third generation for the harvesting of whatever seedtimes of promise the men of mark of an elder time may supply.²⁶

In a telling gibe at evolution, Wilson declared that he would not examine such notables as Smollett, Wilkes, Churchill, or "Junius" to their third generation since "they never got so far."²⁷ Instead, as in Caliban, he chose a literary subject. He considered the two successive generations which descended from the Reverend John Russell, the strict Calvinist preacher whom Robert Burns had satirized in his poetry. Wilson noted that John Russell had a son who became a preacher and shared his father's oratorical power. John Russell's youngest grandson also became a clergyman but not a Calvinist. The Very Reverend Alexander Russell was the current Dean of Adelaide, South Australia. Wilson concluded that, if John Russell could

have looked down the vista of the future, and realized the evolutionary process which, after the lapse of only one generation, were to bring forth from the loins of the stern old Calvinistic preacher, to whom Prelacy and Popery were

²⁶ Daniel Wilson, "Three Generations", The Canadian Monthly and National Review, IX, 5 (1876), 397-398

²⁷ Ibid., 398

alike ahhorent [sic] a full-blown Dean of the Anglican Church, it would scarcely have diminished his wrath to know that his descendant was to reproduce, at the antipodes, not a little of the hereditary powers of an eloquent and popular preacher.²⁹

Through a satirical approach in the same vein as Caliban, Wilson's "Three Generations" demonstrated that hopes based on the idea of evolution held out limited solace for the consolation of mortal man.

Wilson believed that the theory of evolution not only affected man's understanding of himself and his future. He feared, too, that evolution and the other preoccupations of modern science had an enervating effect upon man's sensibilities. As noted earlier, Wilson saw this effect in Darwin's confession that he had lost his taste for poetry.²⁹ In his diary he reflected upon the life of Darwin, first commenting upon the strength and comfort in Darwin's relationship with family and friends:

. . . a life-long invalid, yet gentle, kindly, considerate, and lovingly self-sacrificing in all his relations with his wife, children, servants and friends. But then certain elements, besides a most generous, kindly natural disposition, have to be kept in view. Darwin had children - sons and daughters - who grew up to cheer his hearth, sympathize in his work, and engaged the true womanly sympathies of their mother in healthful home life. . . .³⁰

Nevertheless, Wilson concluded that Darwin had basically a barren, unhappy life:

As for Darwin he ended as "one who would peep and botanize" and believing in nothing but what his scalpel and his microscope could demonstrate; lost faith, not only in a personal God, a beneficent God, a divine Father, but in any certitude of a spiritual world at all, or any hold on a hereafter. Man was the latest phase of an evolution as

²⁹See page 128 of the dissertation.

³⁰Wilson, Diary, 13 January 1888

lowest animal existence, an evolution as little complete as ever. . . . He developed the inductive observations of the man of science, to the neglect of all else, till he speaks of the dying out of all appreciation of the imaginative element as a literal atrophy.³¹

In 1870, Wilson wrote to John Stuart Blackie about his fears concerning the present age:

I watch with interest from this distant point of view the new generation around you breaking from their old moorings amid a new troubling of the waters. . . . In the midst of curious speculations on the unity of the human race, the Antiquity of Man, etc. I felt for a time as though my old moorings were failing me. But that divine example and teaching of Jesus Christ was never invented in any of the centuries to which carping critics would relegate their emasculated New Testament.³²

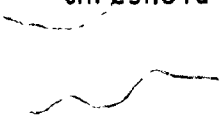
If man lost his spiritual awareness, all members of the evolutionary brotherhood of man would become soulless.

Had Wilson been born a generation later, he might have turned to Social Darwinism. In the 1870s and 1880s, however, the scientific theory of evolution seemed more a threat than a hope to a man with his ideas. If The Descent of Man were correct, it would be a powerful argument for a brotherhood of man which contradicted the notion of any God favoured race. All men would be the products of chance and even the most primitive man would have the potential for greatness within the confines of his materialistic bounds. It was an unfortunate coincidence that The Descent of Man was published in the year of the Paris Commune. Although the Darwinian hypothesis might be later enlisted to justify the chauvinistic militarism of the new imperialism, in 1871 the communistic anarchy

³¹ Ibid.

³² National Library of Scotland, Blackie Papers, Daniel Wilson to John Stuart Blackie, 27 January 1870

of Paris seemed to many the direction towards which evolution was pointing mankind. There was a double threat from evolution. It affected man's self-consciousness and spiritual awareness, and it promised to undermine social distinction and remove the restraints of religious belief upon society. Wilson was too deeply concerned about both to let the sometime glimmerings of acceptance of Darwin carry him over the threshold of his fears.



JOHN WATSON: INTRODUCTION

In 1892, the Scottish philosopher Edward Caird evaluated John Watson of Queen's University in a letter sent to Miss Mary Sarah Talbot:

We had a visit from Professor Watson (of Kingston, Canada) - one of my earliest pupils in Glasgow. And perhaps the man of "driest light" that I know. I do not know anyone who sees his way more clearly through any philosophical entanglement. I always feel braced by his conversation. It is a pity his health enables him to do little more than get through his teaching work. He is now, however, engaged in a work on the idea of Evolution in its modern application [Comte, Mill¹, and Spencer] - which I think will be a great contribution to philosophy.¹

Canada's foremost philosopher of his period, John Watson achieved international recognition as an authority on Kant and as the author of books which presented Idealistic answers to contemporary philosophical questions. His response to the effect of Darwin's theory of evolution upon modern philosophy was to establish a means of reconciliation of the evolutionary hypothesis and metaphysics.

A generation younger than John William Dawson and Daniel Wilson, John Watson was born on 25 February 1847 in Glasgow, Scotland. His father was employed in a print works and Watson spent his early years in relative poverty. After he attended the Free Church School of Kilmarnock, Ayrshire, he could not afford to continue his education and worked as a clerk in Dumbartonshire and Glasgow. Aided, however, by his sister and a small bursary, he was able to enter the University of Glasgow in 1866

¹ Edward Caird to Mary Sarah Talbot, 22 August 1892, in H. Jones and J. H. Muirhead, The Life and Philosophy of Edward Caird (Glasgow 1921), 183

as a prospective student of theology. In 1872, he earned his Master of Arts degree with first class honours in Mental and Moral Philosophy and English Literature. By the time of his graduation, Watson's intention of entering the Presbyterian ministry had been replaced by a desire to make philosophy his career. This change was largely due to the influence of Edward Caird, who had been appointed Professor of Moral Philosophy the same year that Watson began his studies at the University of Glasgow. Caird's teaching provided Watson with a new insight into the relationship between Greek philosophy and the Christian religion, which led Watson to abandon the strict Calvinism of his youth.² More important still, he learned from Caird about the British Idealism which had been developed at Oxford in the early 1860s by Caird, Benjamin Jowett, and T. H. Green. This form of Idealism would remain the life-long basis of Watson's own philosophy.

In 1872, Watson applied for a teaching position at McGill University. When John Clark Murray of Queen's University received the McGill appointment, Watson replaced Murray as Professor of Logic, Metaphysics and Ethics at Queen's. Both Edward Caird and his brother, John Caird, Professor of Theology and future Principal of the University of Glasgow, wrote letters of recommendation for Watson to McGill which were also used by Watson when he applied to Queen's. In his recommendation, Edward Caird wrote:

He has shown not merely an external knowledge of philosophical doctrines but also a clear insight into their inner

²John A. Irving, "Philosophical Literature to 1910" in Carl F. Klinck, ed., Literary History of Canada (Toronto 1965), 438

spirit and meaning. He is no mere disciple of a school, but has real speculative power and originality. In ten years of teaching Philosophy, I have had no pupil equal to him either in extent and accuracy of knowledge or in clearness and depth of thought.³

Watson remained at Queen's University for fifty-two years. For the last twenty-five years of his career, he served as both Professor of Moral Philosophy and Vice-Principal of the University. Retiring in 1924, he died on 26 January 1939 in Kingston.

Watson assumed his position at Queen's the year after the publication of The Descent of Man. The intellectual climate at the university supported a frank examination of the implications of Darwin's theory of evolution. Presbyterian Queen's had a reputation for liberalism in its theological teaching, which was reflected in the ideas of its principal from 1877 to 1902, George Monro Grant. In his inaugural address, Grant stated:

Suppose, for example, that the Darwinian theory is not established - that it is only a puerile hypothesis. . . . It was at any rate useful to Darwin, and it will soon be forgotten. Suppose it is established. What possible harm can result to theology. As Professor Asa Gray points out in his pleasant Darwiniana, it only means "that what you may have thought was done directly and at once, was done indirectly and successfully."⁴

Science at Queen's in this period was taught by Nathan F. Dupuis, who had been appointed Professor of Chemistry and the Natural Sciences in 1867. Dupuis' attitude towards science and religion was similar to Grant's.

³ Edward Caird to the Electors of McGill University, 14 March 1872, Queen's University Archives. Reprinted in Douglas Library Notes, XVI, 1 (Summer 1968), 2-3

⁴ W. L. Grant, F. Hamilton, Principal Grant (Toronto 1904), 213

He said, for example:

Surely Christianity contains enough, in itself, that is noble, and reasonable, and good without subjecting its adherents to the necessity of believing in legends and stories concerning operations like creation, about the nature of which the ancients knew absolutely nothing.⁵

This liberal strain was further strengthened when William George Jordan joined the faculty of Theology as a professor of Hebrew and Old Testament exegesis in 1899. During his thirty years at Queen's Jordan published several books, including Prophetic Ideas and Ideals (1902) and History and Revelation (1926), which examined the Old Testament in the light of modern Biblical criticism.

Watson, for his part, was the author of several works which established his reputation as a philosopher and scholar. His first books concerned German philosophy, notably the writings of Kant. Kant and his English Critics: A Comparison of Critical and Empirical Philosophy was published in 1881. This was followed by Schelling's Transcendental Idealism: A Critical Exposition in 1882, and The Philosophy of Kant as Contained in Extracts from his own Writings in 1888. By the time that these works appeared, papers by Watson had been published in various journals. These papers presented ideas which were later developed into a series of books that expressed Watson's own philosophical Idealism. Comte, Mill and Spencer: An Outline of Philosophy and Hedonistic Theories from Aristippus to Spencer were published in 1895. Both books demonstrated Watson's belief that philosophy must be understood within a historical context and both were widely used in universities.

⁵ John Matheson, "Nathan Fellowes Dupuis", in R. C. Wallace, ed., Some Great Men of Queen's (Toronto 1942), 62

Throughout his writings, Watson revealed an interest in the relationship of religion to philosophy. This matter was examined specifically in Christianity and Idealism: The Christian Ideal of Life in its Relation to the Greek and Jewish Ideals and to Modern Philosophy in 1896 and The Philosophical Basic of Religion in 1907. In the years 1910 - 1912, Watson became the only Canadian to deliver the Gifford Lectures in Natural Philosophy at the University of Glasgow. These lectures, embodying a summation of Watson's philosophy of religion, were published in 1912 in two volumes entitled The Interpretation of Religious Experience. Although he continued to teach for twelve more years, his only book in this period, The State in Peace and War in 1919 did not modify his previously established ideas.

It is possible to identify three stages in John Watson's response to Darwin's theory of evolution. He analyzed the extension of Darwin's theory to man's mental and moral development in the Canadian Monthly and National Review in the 1870s. The philosophical implications of the theory of evolution were considered further in the exposition of Watson's Speculative Idealism. However, it was in his writings on the philosophy of religion that Watson's response to Darwin's theory of evolution reached its fullest expression. Beginning with the paper "Darwinism and Morality" in 1876, this study will analyze the nature and development of Watson's response to its culmination in the Gifford Lectures.

XI

JOHN WATSON: DARWINISM AND MORALITY

INSTINCT VERSUS REASON

In October, 1876, the Canadian Monthly and National Review published "Darwinism and Morality" by John Watson.¹ Noting that there was a temptation by some to distort facts in order to extend a new theory beyond its proper limits, Watson held that

The attempt now being made to explain moral and social phenomena by the doctrine of Evolution, is an instance of the effort to apply a hypothesis to a totally new class of facts.²

To illustrate this attempt, he quoted Goldwin Smith's statement that the acceptance of evolution would "render it necessary to rewrite our manuals of Moral Philosophy."³ It should be noted that Smith might well have claimed that Watson was using his words out of context since his original statement had been:

The writer is fully prepared to accept Evolution, nor does he shrink from the new view of Moral Philosophy which it seems likely to bring with it. . . . This would no doubt render it necessary to rewrite our manuals of Moral Philosophy; but it would not alter our notions of what is higher and lower in Morality, or confuse our perceptions of right and wrong, while it would render Ethics more practical and relieve us of much superstition.⁴

¹John Watson, "Darwinism and Morality", Canadian Monthly and National Review, X, 4 (October 1876), 319-326

²Ibid., 319

³Ibid., 319

⁴Goldwin Smith, "The Immortality of the Soul", Canadian Monthly and National Review, IX, 5 (May 1876), 415

Watson was careful, however, to define the exact purpose of his enquiry. Not being a scientist, he felt that he could not competently express an opinion upon the actual hypothesis of evolution. He wrote, "The question is not. . . whether the theory of Evolution is true or false; but whether assuming its truth, it has any bearing upon Morality."⁵ It was the extension of the hypothesis to the field of philosophy, not the theory itself, which was the concern of his paper.

"Darwinism and Morality" is divided into three sections. In the first section Watson considered whether evolution could be shown in any way to affect the validity of man's moral conceptions. This consideration was based upon two inferences which Watson drew from the scientific theory. The first was that the theory explained only in general terms how the various species of organic beings have arisen. The evolutionary "laws" of Inheritance and Variability were empirical generalizations which could not be compared with absolute physical laws. The hypothesis, moreover, accounted only for phenomenal manifestations and changes: it rested upon physical and external development. Since it did not aid an understanding of the nature of life, the evolutionary hypothesis could not help either to explain basic questions such as the relation of life and matter or to solve problems centred upon the nature of consciousness and reason.

. . . the doctrine of Evolution is a purely physical theory and even as such only an empirical law destitute of the accuracy and stability of the highest kind of natural law.⁶

Watson was willing to begin with the assumption that Natural Selection explained how moral laws had evolved. He argued, however, that the

⁵Watson, "Darwinism and Morality", 319

⁶Ibid., 320

empirical, limited nature of the hypothesis still made it impossible to determine the relative or absolute value of competing moral conceptions through the use of evolution:

To state the special ways in which a class of ideas has come into existence is one thing: to appraise these ideas according to their moral value is another and a very different thing; and the doctrine of Evolution being necessarily limited by its very nature to the former task, is impotent to undertake the latter task.⁷

Watson believed that the only plausible argument to show that evolution could have an evaluative role in questions of morality must be based upon the notion of progress. It might be maintained that, if certain moral ideas were held by communities that had gone through the whole process of development, it was probable that these moral ideas were true. This argument depended upon the assumption that the Darwinian hypothesis necessarily implied the notion of progress. Watson's second inference, however, was that "the conception of a development from lower to higher types of organic beings is not an integral part of the doctrine of Evolution."⁸ He quoted Herbert Spencer's opinion that Natural Selection did not favour the survival of the "better" or the "stronger" but of those most constitutionally fit to withstand the conditions in which they are placed.⁹ In many cases, inferiority on some other scale of values would cause survival. Watson concluded that, "to determine whether there has been any advance in morality, recourse must be had to considerations other than those furnished by a theory which is as consistent with retrogression as

⁷Ibid., 320

⁸Ibid., 321

⁹H. Spencer, Recent Discussions in Science, quoted in Watson, "Darwinism and Morality", 321

with advancement."¹⁰

The evolutionary hypothesis held equally well for a decline of morality from a past golden age. In order, therefore, to evaluate whether a series of movements were progressive or retrogressive, a pre-determined goal was required. A standard of morality had to exist in the mind of the evolutionist before he could begin to prove moral progress by evolutionary means. Watson had argued, however, that the only way to prove by evolution that existing standards of morality were valid was through reasoning based upon the concept of progress. In his opinion, this meant that evolutionists must assume that moral progress had occurred before they could prove that morality was in fact progressive. He commented that, "it is a manifest see-saw to argue that 'existing morality' is presumably true because it has been developed, when the only proof of its development is that it is presumably true."¹¹ The "natural history" of morals, he concluded at the end of his first section, could not establish that morality is progressive.

The next question which Watson considered was whether evolution helped solve ethical problems by supplying a wider range of facts upon which to base a system of values. He approached this somewhat ambiguous question by examining once again the concept of moral progress. In his opinion, the theory of evolution had "done good service in binding together all living things by the bond of a common descent."¹² Despite many contrary instances, it had suggested the possibility of a continuous,

¹⁰Watson, "Darwinism and Morality", 321

¹¹Ibid., 322

¹²Ibid., 323

progressive development. This notion of progressive development, however, was only a biological innovation. Long before Darwin had presented his biological hypothesis, men had conceived the idea of moral progress. The question was not, therefore, whether the process of moral progress might be explained, but whether the evolutionists had explained it adequately:

The only question. . . which remains to be decided is, whether the results arrived at in the sphere of biology, allowing them to be correct, are applicable to moral problems, and are of such a nature as to supersede the notion of moral progress as it has been hitherto conceived.¹³

Watson noted the belief of Darwin and his followers that morality derived from man's relation to society. The evolutionists held that the true scientific explanation of morality was found in the transmission to early man of the social instincts, including family ties, found in the lower animals. Moral progress, according to this view, consisted in the strengthening and widening of such inherited instincts. Watson found this explanation unsatisfactory: "This theory attempts to account for moral progress by the convenient method of leaving out all that makes it moral."¹⁴ If the instincts remained basically unchanged, how could these instincts, however strengthened and enlarged, be considered moral in the case of man but not in the case of animals? The answer must be that the instincts were changed in man and a new element had been added which separated him from the animals and made him moral. Watson believed that this new element had been recognized by Darwin, himself. He noted that Darwin had written, "A moral being is one who is capable of comparing his past and future actions or motives, and of approving or disapproving of

¹³ Ibid., 323

¹⁴ Ibid., 323

them."¹⁵ Watson held that Darwin's definition of a moral being implied the necessary addition of the new, non-physical element of reason or self-consciousness.

The difficulty was that, while the evolutionists were aware of the need for reason, they were blind to the effect which the addition of this new element had upon their explanation of morality:

The charge from which Mr. Darwin and his followers cannot free themselves is, that while they admit the presence of reason to be necessary to morality, they still go on to speak of social "instincts" as if no radical change were involved in the presence to instinct of a totally new factor.¹⁶

Watson had proved already that evolution could not determine the value of moral ideas or account for moral progress. Having now demonstrated the necessity of reason for morality, he concluded that "the truth is that Natural Selection, understood in the sense in which it is employed to account for biological phenomena, has no application whatever to moral phenomena."¹⁷ Moral progress must be considered in terms of the development of practical reason and not as an extension of natural characteristics. Darwin and his followers concentrated exclusively upon the external conditions which accompanied the advance of morality and overlooked the fundamental element, the development of reason, which made the advance moral. Watson conceded that there was some validity in the evolutionist position: "The Darwinians rightly place morality in the relation of the individual to society."¹⁸ Despite this, however, he believed that the

¹⁵Ibid., 323

¹⁶Watson, "Darwinism and Morality", 324

¹⁷Ibid., 324

¹⁸Ibid., 325

evolutionist argument suffered from a serious weakness which made it an imperfect and unsatisfactory explanation of moral development:

The imperfect conception of moral progress which the advocates of Evolution have adopted must be merged in the larger and truer conception of a progress that is conscious and rational, and therefore moral.¹⁹

Ending his article with an examination of the evolutionist conception of the ultimate end and standard of morality, Watson cited the following statement in Darwin's The Descent of Man:

The moral sense is fundamentally identical with the social instincts; and in the case of the lower animals these instincts have been developed for the general good of the community. . . . As the social instincts both of man and the lower animals have no doubt been developed by the same steps, it would be advisable, if found practical, to use the same definition in both cases, and to take as the test of morality, the general good or welfare of the community.²⁰

He objected once more to the lack of distinction between man and animal. If the general good of the community were the sole measure of conduct, a cat who caught a mouse performed as much of a moral act as a patriot who sacrificed himself for his fellow-men. Darwin apparently saw "no essential difference between the actions of animals, which are admittedly dependent upon instinct alone, and the actions of man, in which reason plays a prominent part."²¹ The flaw in Darwin's conception of the moral sense was that it neglected the change which the presence of reason effected in the essential character of an act.

The beginning of all morality, whether in an individual or the race, lies in the condemnation of mere impulse or passion - in looking down upon it as beneath the dignity

¹⁹ Ibid., 325

²⁰ Watson's reference: Descent of Man, vol. 1. p. 94."

²¹ Watson, "Darwinism and Morality", 325

of a rational being.²²

Man's ability to rise above impulse and passion represented the foundation of all subsequent moral advancement. From this ability originated the sense of responsibility in man's relation to society. Once this distinction between man and animal was made, the notion of the "welfare of the community" could be accepted as the ultimate end of right conduct since this end must necessarily include everything that aided the development of the higher nature. But Watson insisted:

. . . if a conscious conformity to the "general good" as the supreme standard of right conduct is an act the same in kind with that performed by a pointer dog when it points at a hare; [a direct reference to The Descent of Man, 375] the notion of Duty is thoroughly depleted of all that makes it moral.²³

Once again, the evolutionists were partially correct while remaining fundamentally wrong: their inability to appreciate the role of reason in morality prevented them from grasping the full import of their argument.

Watson believed that his examination of evolution could be summed up in three statements:

1. The doctrine of evolution, being concerned with the explanation of material changes, throws no light whatever upon the nature or history of morality.
2. While serving as at least a provisional conception to bind together biological phenomena, the doctrine of evolution supplies no data for the settlement of ethical problems, nor can a proper conception of moral progress be extracted from it.
3. The standard of morality set up by Mr. Darwin and his followers is not a standard of morality at all, since it omits the very element that distinguished moral from natural causes.²⁴


²²Ibid., 325

²³Ibid., 326

²⁴Ibid., 326

These findings suggested to Watson that:

The attempt of Evolutionists to solve ethical questions by a method fundamentally unsound can only be regarded as one more example of the futile effort which some physicists are at present making to transcend the proper sphere of scientific investigations.²⁵

If this e so, Darwinian arguments could not be used to improve the present text-books on ethics and no system of morality could be developed from them. Whatever scientific validity there was in the biological application of evolution, it had no possible relevance to the philosophical problem of morality.

Despite the fact that Watson's first summary of the evolutionary hypothesis made specific reference to the Origin of Species, all subsequent references to Darwin's ideas in "Darwinism and Morality" were from The Descent of Man. The subject matter of the paper, of course, required this concentration upon man. It should be noted, however, that Watson based much of his argument upon inferences made from the scientific reasoning of the Origin of Species. Although he declared that he was not qualified to express any authoritative opinion upon the scientific validity of the hypothesis, the paper left little doubt that the author had an unfavourable opinion of the biological, as well as the ethical, application of evolution. For example, comparing the "so-called laws of Inheritance and Variability" to the law of gravitation, he stated that the evolutionary laws were "simply empirical generalizations, not comparable in any strict sense with an absolute physical law."²⁶ The use of

²⁵ Ibid., 326

²⁶ Ibid., 320

the phrase "so-called" typified the way in which Watson stressed the limited, hypothetical nature of the evolutionary concept.

Perhaps the most important point which "Darwinism and Morality" demonstrated was Watson's faith in reason. This faith, as will later be seen, was a basic characteristic of his philosophical position. For him the primary reason why Darwin and his followers were wrong was that they neglected the role of reason in man's development. Watson believed that moral progress required the development of practical reason. Reason separated man from the animal by transforming instincts into rational motives. It was only when man could rise above impulse and passion that morality could begin. However correct the evolutionists were in describing physical development, they could not explain moral development, in Watson's opinion, because they did not accept the fact that the advent of reason made a radical change in the development of man.

Watson's paper provoked a critical reply, "The Evolution of Morality", by Joseph Antisell Allen, an Anglican clergyman and author, who defended Darwin:

So many start aghast from the very name of Evolution, as if they believed that they had been dropped suddenly from the heavens with full-grown minds and bodies, and had not been evolved out of a protoplasmic germ, and, by gradual increment and modification, became slowly unfolded into rational and moral men. . . . For what is the difference, in the question of dignity, whether the development took for its completion a few years or as many aeons. Is not the end achieved everything?²⁷

To answer Allen, Watson wrote "The Ethical Aspect of Darwinism: A Rejoinder"

²⁷ Joseph Antisell Allen, "The Evolution of Morality. A Reply", Canadian Monthly and National Review, XI, 5 (May 1877), 501

which The Canadian Monthly published in June, 1877.²⁸ The importance of the paper, however, lay not in Watson's answers to Allen's criticisms but in his use of the opportunity to define further his views on reason and morality. He dealt with the criticisms quickly and easily. In reply to Allen's description of how ethical concepts had been evolved, he repeated his belief that, since the doctrine of evolution accounted only for change, it could not explain progress, either physical or moral. He also pointed out Allen's inconsistency in holding that there was no line of demarcation between instinct and reason while quoting Darwin's view that man was "governed by something more than Instinct." In Watson's opinion, "something more than Instinct" represented a line of demarcation. Allen had also defined the Darwinian position on the end of morality as not merely the preservation of the species but "their advancement in all that is intellectually and morally higher and noble."²⁹ Watson argued that this definition was near to tautology since it suggested that the end of morality was the advancement of morality. These were the major points made by Allan which Watson believed needed to be answered. Having spent half of his paper refuting Allen, he devoted the rest of his space to a discussion of reason, instinct and morality, making only token references to his opponent.

Watson began by distinguishing between reason and instinct. He defined reason as synonymous with self-consciousness: the ability to identify with, yet distinguish, oneself from other self-conscious beings. He believed that morality was only possible in a being who was self-

²⁸John Watson, "The Ethical Aspect of Darwinism: A Rejoinder", Canadian Monthly and National Review, XI, 6 (June 1877), 638-644

²⁹Ibid., 639

conscious, or rational. To prove this statement, he examined the moral judgment that stealing is wrong.³⁰ He asserted that right and wrong, virtue and vice, were correlatives that could not be thought of apart. The statement that stealing is wrong, therefore, required a correlative statement of the opposite right. Since he believed that the only conceivable limit to the acquisition of a natural right was the right of another to it, the opposite right to stealing, in his opinion, was respect for property. Respect for property, in turn, required a distinction between what is "mine" and what is "his". Watson held that this distinction between "mine" and "his" applied not only to property but formed the basis of all moral judgments. To make this distinction, a being had to be self-conscious. Watson believed that, when used in this way, "self-conscious" meant the same as "rational".

Turning to instinct, he noted that the term could be used in two different ways. It meant either the feeling or emotion of a conscious being that was not obtained by direct reflection, or it implied a feeling or impulse, but never an emotion, that was experienced by a being that was not self-conscious and, therefore, not rational. The second meaning alone was in absolute opposition to reason. The first use of instinct, indeed, was not true instinct at all since Watson held that every feeling experienced by a self-conscious being implied distinction or mediation and never was really immediate or spontaneous.

Darwin and his followers held that morality resulted from the extension and strengthening of certain instincts which man inherited from

³⁰Ibid., 641

some lower form of being. In Watson's opinion, the question was whether Darwin meant instinct to represent a feeling distinct from self-consciousness or a feeling that existed only in a self-conscious being. If he meant the first, then morality could not be explained because it could not exist apart from self-consciousness. The alternative, however, was instinct in the first sense of Watson's original distinction which was not instinct at all since it concerned the "realm of self-conscious intelligence, where no blind feeling can exist."³¹ Watson believed that Darwin, unable to resolve this problem, had tried to compromise by merging both meanings of instinct through the use of "popular and ambiguous language."³² The result was complete failure:

. . . his physical theory seems closely to enfold morality, while, in reality, it is a phantom that lies within its embrace; and thus, too, a man like Mr. Darwin, of high endeavour and achievement, set in motion by moral force of no common intensity, unwittingly removes the only support that keeps the edifice of morality from sinking into ruins.³³

Watson argued that the acceptance of the Darwinian conception of instinct as the basis for morality would destroy the ability of man to exercise rational control over his actions.

Reason may reveal the objects toward which the instinct goes out, but it no more originates the end of action than light creates the object on which it falls. The formal intellect may contemplate the sufferings of millions of human beings, but, according to Darwinian ethics, it must be the instincts of sympathy that impels the philanthropist to go to their rescue.³⁴

Reason would become a helpless "slave of the passions", completely subordinate to the power of the instincts. Watson believed that this

³¹ Ibid., 642

³² Ibid., 642

³³ Ibid., 642

³⁴ Ibid., 643

conception of instinct represented the popular view on ethical questions which divided man's self-consciousness into compartments labelled "instinct", "reason", "will", "conscience", etc. He believed that this was a false and, logically disastrous position. If actions were governed by instinct rather than by the conscious direction of reason, man must not only act exactly as his instincts demanded, but he could not conceive of any alternative way to act. In contrast to this, Watson suggested that in fact the "so-called Instinct" was "simply Self-Consciousness in action - not something given to man but something he gives himself."³⁵ This meant that man could have control over his impulses. He could "move with freedom in one direction or another according as he obeys or disobeys his Reason, the 'immortal part' which is himself."³⁶

Watson then briefly considered whether his conception of morality could apply to the "barbarous Fuegian" or to the "impulsive Jamaica negro".³⁷ In his opinion, if the savage races were self-conscious, they possessed morality. Since the savage attempted to care for those dependent upon him and would sacrifice himself for his tribe, Watson concluded:

The savage is self-conscious, and in virtue of that divine prerogative, he differs toto coelo. . . from those creatures that are not self-conscious.³⁸

He held that:

in characterizing morality it is natural to look towards its ideal goal rather than at its still ill-defined starting point; but I do not think I have said anything

³⁵ Ibid., 643

³⁷ Ibid., 643

³⁶ Ibid., 643

³⁸ Ibid., 643

that is not true of even the lowest type of man.³⁹

Although the distance between the savage and the "civilized Indo-European" was immense, it was not infinite as the distance between self-conscious and instinctive action.

The paper ended with a strong assertion of Watson's belief in the primacy of reason:

Reason is not, as Mr. Darwin and his followers are bound to say, an unconcerned spectator that stands aloof and calmly awaits the issue of conflicting impulses, but an eager participant in the hard struggle towards a higher life.⁴⁰

Instead of being with instinct, conscience and will simply an element of self-consciousness, reason was self-consciousness. Conscience was merely an embodiment of reason for it was the product of reason's past efforts. What the evolutionists called instinct was an example of reason's swiftness and suddenness "which counterfeits, but is not instinct".⁴² Watson did not specifically state the relationship of will to reason but the paper suggested that will represented for him the freedom of man to go against his reason if he wished. Watson's final statement stressed that it was the defence of reason which had prompted him to write:

. . . I would fain hope that the reader, if not before, then now, will endorse the conclusion I have reached by no over-hasty leap, that no theory, Darwinian or other, which seeks to strip Reason of all that makes it rational, with a naive unconsciousness of what it is really attempting, is worthy to go behind the veil which secludes the holy place of Morality from the outer court of Nature.⁴²

³⁹ Ibid., 643

⁴¹ Ibid., 644

⁴⁰ Ibid., 644

⁴² Ibid., 644

Certain questions arise from Watson's defence of reason. Since the barrier between reason and instinct is absolute according to his argument, how did the entirely new element of reason come to exist within man? Reason was the foundation of morality but what was the foundation of reason? Watson did not, moreover, present a completely satisfactory explanation of will. When a man chose to act against reason, what was he then governed by? Were moral acts determined by reason? There are psychological and religious implications involved in these questions which are directly related to the premises of Watson's philosophy. Watson's two articles dealing directly with evolution and morality presented the basis of his response to Darwinian evolution but, for a more complete and mature statement of this response, his later philosophical and religious writings must be examined.

XII

JOHN WATSON: SPECULATIVE IDEALISM AND DARWIN'S THEORY OF MENTAL AND MORAL DEVELOPMENT

When discussing John Watson's philosophy, it is useful to maintain the distinction made by J. A. Irving between Watson's writings on hedonism, positivism, and empiricism and his writings on the philosophy of religion.¹ This chapter will concentrate upon what is perhaps Watson's best known work, Comte, Mill and Spencer: An Outline of Philosophy. Published in 1895, the book ran through several editions and many Canadian and American universities adopted it as an introductory philosophy textbook.² The preface to the first edition contained a statement of Watson's philosophical position:

The philosophical creed which commends itself to my mind is what in the text I have called Intellectual Idealism, by which I mean the doctrine that we are capable of knowing Reality as it actually is, and that Reality when so known is absolutely rational.³

Throughout his philosophical career, this commitment to Reason remained the basic element in Watson's inquiry into the nature and meaning of Reality.

¹J. A. Irving, "Philosophical Literature to 1910", in C. F. Klinck, ed., Literary History of Canada (Toronto 1965), 440

²Although the book dealt specifically with the three themes of positivism, empiricism, and evolutionism, it provided a general introduction into philosophy as well. After the first edition, the book was re-titled An Outline of Philosophy, with Notes Historical and Critical, and included additional material which amplified the more general aspects of the topic. Since the relevant parts of the first edition to this present study remained unchanged, except when noted, the first edition Comte, Mill and Spencer is used for page references in the notes.

³J. Watson, Comte, Mill and Spencer; an Outline of Philosophy (Glasgow 1895), v

Watson called his creed Intellectual Idealism in the first edition of Comte, Mill and Spencer. In all subsequent editions, however, he used "Speculative Idealism" where he had originally used "Intellectual Idealism" or, at times, "Philosophical Idealism."⁴ Since it was soon obvious that Comte, Mill and Spencer was a success, it was natural for Watson to give a distinctive name to the form of Idealism which he advocated. That later editions carried the more general title of An Outline of Philosophy suggests that the author expected it to be widely used. As a text-book, it would be an excellent means of making his own ideas known. Despite the fact that Watson always acknowledged himself to be a follower of the British Idealists T. H. Green and Edward Caird, his philosophy was never a mere duplication of their ideas. As Watson's most brilliant pupil, J. M. McEachran, has noted:

While. . . Watson always remained faithful to the general principles which they [Green and Caird] expounded, he developed his own original methods of exposition and made significant contributions of his own, particularly in the field of the Philosophy of Religion.⁵

In the next chapter, an examination of Watson's Gifford Lectures at the University of Glasgow will reveal the most mature expression of his philosophy of religion. Even in his primarily non-religious writings, however, Watson saw himself not only as an interpreter of Green and Caird, but also as a philosopher who used British Idealism as a basis for his own distinctive philosophical system.

Watson's reason for writing his book was partially defensive.

⁴J. Watson, An Outline of Philosophy, 3rd. ed. (Glasgow 1901)

⁵J. M. McEachran, "John Watson", in R. C. Wallace, ed. Some Great Men of Queen's (Toronto 1941), 25-26

To prove that existence was purposive and rational, he proposed to demonstrate that

the ideas which lie at the basis of Mathematics, Physics, Biology, Psychology and Ethics, Religion and Art, are related to each other as developing forms of one idea - the idea of self-conscious Reason.⁶

He believed that there was a need for a book of reasonable size which treated the subject of philosophy as a whole. While admitting that there was a danger involved in using generalities, he feared even more that, because of modern tendencies, "Philosophy, in the large sense in which it was understood by Plato and Aristotle, should be lost in artificial divisions and in a mass of empirical detail."⁷ To counteract this threat of excessive specialization, Watson hoped that his book would outline "a complete system of philosophy."⁸ The basis for this outline was an examination of certain ideas of Comte, Mill and Spencer which he considered inadequate. In conjunction with this principal theme, Watson also discussed the philosophical implications of Darwin's theory of evolution.

Philosophy in the Aristotelian and Platonic sense, Watson believed, concerned the search for first principles. Philosophy attempted to discover what was as distinct from what seemed to be. This provided the clue to the distinction between philosophy and science. Watson wrote that "science treats of modes of existence, philosophy of existence in its completeness."⁹ Both physics and chemistry, for example, took for

⁶Watson, Comte, Mill and Spencer, v-vi

⁷Ibid., vi

⁸Ibid., vi

⁹Ibid., 19-20

granted the principle that every change must have a cause and both searched out the specific causes which explained and produced change in nature. Philosophy, however, considered in what sense man could speak of causal connection at all. Watson suggested three ways in which philosophy differed from science. Science dealt with objects; philosophy with the knowledge of objects. Science accepted that real knowledge was possible; philosophy inquired into the truth of that position. Science examined the relationship of objects to one another; philosophy considered the relationship of objects to existence as a whole.¹⁰ In Watson's opinion, these three ways indicated that philosophy was on a higher level than science: without the justification provided by philosophy, science could not operate or even exist.

Watson examined Darwin's views in two chapters, "Philosophy of Nature - Biological Science", and "Relations of Biology and Philosophy". The first chapter began with a consideration of the difference between organic and inorganic matter. Life was defined as "the principle by which a being maintains its individuality by a continuous adaptation to external conditions."¹¹ This individuality depended upon the organization of an individual's parts: a stone might be fragmented into smaller stones, but a living being could not be broken into parts without losing its character as a living being. A second characteristic of living beings was that they produced other individuals of the same general type as themselves. According to Watson, this suggested that some conception of final cause was required:

¹⁰ Ibid., 19

¹¹ Ibid., 104

For, if the living being has the power of perpetuating itself by a continual adaptation to external conditions, these conditions must be of such a nature as to admit of such self-adaptation. The world must therefore be conceived as an organic whole, in which each part is related to all the other parts, i.e. the world must be conceived from a teleological, and not from a mechanical point of view.¹²

Watson believed that a being which was continuously adapting itself to external change and throughout all its adaptations was realizing the goal of self preservation could be understood only in terms of a final cause, or fixed conditions of nature, that fostered such adaptation. The question was whether Darwin's theory of evolution was incompatible with such a teleological explanation of the world.

Watson held that Darwin's theory of the mutability of species and natural selection must be applied to man. If it were concluded that all mammalia originally descended from one primitive type, man must trace his origins back to that type since, in all essential features, man's body resembled the bodies of other mammalia. The crucial question was whether man's mental and moral faculties have also been derived by gradual modification and development from the lower animals. As in his article nineteen years earlier, Watson quickly turned his attention from the Origin of Species to The Descent of Man. He stated that he would assume, "with the majority of scientific men," that species are mutable and natural selection represented "the true phenomena of organized existence."¹³ He wished his reader to consider, however, whether, the theory of evolution was an ultimate explanation or only the solution to a subordinate problem:

Let us ask. . . What is the precise nature and value of the proof that man has descended from the lower animals,

¹²Ibid., 107

¹³Ibid., 112

granting that proof to be as irresistible as scientific men usually suppose it to be?¹⁴

The biological concept of natural selection, Watson noted, was inconsistent with the belief in special creation such as Paley had held. He wrote that Darwin

refuses. . . to say how the primitive forms from which living beings have descended came to be in existence - whether by "special creation" or by evolution from non-living things - but, in regard to the adaptation of all subsequent beings to external conditions, he maintains that the operation of the law of natural selection explains the fact quite irrespective of any hypothesis of special design.¹⁵

The result of this was that the supporters of the Darwinian hypothesis refused to accept a teleological explanation. While the teleologist would say that cats existed in order to catch mice, the Darwinist view was that cats existed because they caught mice well.¹⁶ Watson was willing to agree that the conception of external design no longer served a fruitful purpose in philosophy. The problem was not external design but

granting that the Darwinian theory has made it impossible for us any longer to hold to the idea of the external and artificial adaptation of an organized being to a particular end, must we not seek for a new and higher conception of the relation of the various parts of the universe to one another, and more particularly of the various organized beings to their environment?¹⁷

This search for a new and higher conception reflected the special nature of philosophy as distinct from science which Watson had defined earlier in his book. Science began by assuming the independent existence of individual objects and considered these objects as if they were only externally related. Philosophy, Watson believed, must go on to enquire whether

¹⁴Ibid., 111

¹⁶Ibid., 114

¹⁵Ibid., 113

¹⁷Ibid., 114-115.

there is a principle of unity which demonstrated that individual differences belong to one intelligible system.

Belief in the principle of unity was fundamental to Watson's Idealism. In an earlier chapter, he had denied the view held by Comte that knowledge was limited to particulars.¹⁸ He had argued that all sensible objects were related by the fact that they existed within the one world of space. The question was whether this existence then required the view that all living beings also belonged to a single system. If this were so, it must be decided whether a teleological conception of the world was necessary in order to bring the theory of development into harmony with the rest of human knowledge. In an attempt to reconcile some of these difficulties, Watson proposed to examine the presuppositions of the Darwinian hypothesis to determine if they led beyond the hypothesis to support belief in teleology.

Watson noted three presuppositions found in the Darwinian hypothesis.¹⁹ The first was that the laws of inorganic nature were inviolable. These were the ordinary laws of dynamics, physics and chemistry, such as the indestructibility of matter, action and re-action, and affinity of elements. The second presupposition was that every living being possessed a purposive tendency or impulse to maintain himself and to continue his species. This was implied in the struggle for existence. Finally, Darwin assumed that the variations in the several parts of the living being were consistent with the impulse to self- and race-

¹⁸Chapter II. Philosophy of Auguste Comte.

¹⁹Ibid., 116-117

maintenance. This last impulse was implied in the concept of inheritance which ensured that a being would possess the organs required to maintain itself under the external conditions in which it was placed. Watson believed that, when the implications of these three presuppositions were considered, it became apparent that the world was a system and that existence could not be explained apart from some form of teleology.

In Watson's opinion, Darwin incorrectly suggested that a denial of teleology in Paley's sense was identical to a denial of teleology in any sense. Watson based his defence of teleology upon the connection between the organism and the environment.²⁰ Once special creation was rejected, it became obvious that the connection between the organic and inorganic world was so close that one could not exist without the other. This connection, moreover, was not accidental. To prove this, Watson returned to the three presuppositions which he had noted in the Darwinian hypothesis.

If the laws of nature were inviolable, living beings must conform to them or die. The fact that living beings existed proved that an essential harmony must exist between them and their environment. The relation between inorganic and organic, Watson therefore argued, was not accidental: it was a relationship that was implied by the very existence of the organic world. Second, since the hypothesis assumed that each living being possessed an impulse to maintain itself, the tendency to self-maintenance and race-maintenance was an essential factor in the relation of organic beings to the environment. The world was fitted for the existence and

²⁰Ibid., 117-121

perpetuation of life on the whole and, therefore, a harmony must exist between organic beings and their environment. Living beings also have a tendency to organization or self-adjustment to their environment through the hereditary tendency to variation. Since adaptation has produced higher forms of existence, it was the incompatibility of the lower forms with their environment which explained the development of the higher forms. The environment was opposed to the continued existence of lower forms and promoted the development of higher forms of being.

Watson's conclusion was that, far from being banished by Darwin, the idea of purpose might be found in another and higher form in evolution. Teleology was implied in the very nature of existence which demonstrated that "the organic forms with the inorganic world a systematic unity in which every part is related to every other."²¹ The evolution of human beings revealed the same unifying principle that was at work in the inorganic world:

Apart from the tendency to organization and unity, there is not life; and this tendency, in its widest sweep, is exhibited in the gradual descent of life from its simplest to its most complex forms. The higher a being is, the greater is its power of adaptation, and the more perfect its unity.²²

From a philosophical point of view, evolution suggested the conclusion that "organized existence exhibits the continual evolution of living beings towards a more and more perfect form of unity."²³ The world was not a product of chance, but displayed "an immanent teleology."²⁴ The

²¹Ibid., 121

²³Ibid., 123

²²Ibid., 122

²⁴Ibid., 123

world constituted, Watson believed, a systematic unity in which every element strove towards a definite end.

The next question was whether the unity of the world implied intelligence. In Watson's opinion, Darwin's The Descent of Man posited that man's mental qualities differed from the animal's only in degree, not in kind; and that the mental qualities of both man and animal might be accounted for by the law of natural selection.²⁵ Watson held that, by implying or asserting that the mental qualities of man were generically identical with those of the animal, evolutionists brought man and the animal closer together in two ways: they both uplifted the animal and lowered man.²⁶ Darwin contended that the higher animals displayed the same kind of intelligence as man. They were, for example, capable of curiosity, wonder, memory, imagination, and some possessed rudimentary mathematics, language, aesthetics, morality and religion. The evolutionists considered man, in his lower stage of development, to be little superior in mental qualities to the most developed animal. The difference between the highest animal and the savage was no greater than that between the savage and civilized man. Since the difference between civilized man and the savage was only one of degree, it followed that the difference between the higher animals and the savage must also be one of degree. Watson stressed that this argument led to the conclusion that there was no break in the continuity of development.²⁷ Just as an animal differed physically from man only in degree of development, so

²⁵Ibid., 124

²⁶Ibid., 124-125

²⁷Ibid., 125

animals possessed the same kind of intelligence as man.

Watson expressed willingness to accept Darwin's facts. "There can be no doubt," he wrote, "that the higher animals exhibit qualities that must be regarded as implying an elementary intelligence."²⁸ He declared, however, that Darwin had not sufficiently recognized the implications of his position:

If, in the animals nearest to man, we find traces of a rudimentary intelligence, must we not expect to find in less developed animals traces of an intelligence still more rudimentary; nay, must we not hold that even plants exhibit intelligence in a still more rudimentary form?²⁹

It was, moreover, impossible to stop at plants. The evolutionary position suggested that "inchoate intelligence even in inorganic things" must be examined.³⁰ The fact that some evolutionists were examining inorganic objects suggested to Watson a revival of the Leibnitzian doctrine that the distinction between forms of existence was only one of degree.³¹ In effect the evolutionary position that the animal differed from man only in the degree of mental qualities must be extended to include a belief that the plant and the mineral differed in the same way. Watson held that this Leibnitzian doctrine could be seen in Tyndall's statement that, in the tendency to crystallization in the mineral world, there was an anticipation of the organized form of living beings.³² Watson concluded that

²⁸Ibid., 126

²⁹Ibid., 126

³⁰Ibid., 126

³¹Watson described Leibnitz' views: ". . . the distinction between man and the animal, between the animal and the plant, and between the plant and the mineral, is one of degree not of kind. Wherever there is existence, there is perception. Every monad is an individual, and there is no individual that has not an ideal centre of perception, in which it represents all other existence." Comte, Mill and Spencer, 129

³²Ibid., 130

The whole tendency therefore of the Darwinian conception is to deny that there is any fundamental distinction between different orders of existence. The mineral exhibits in an implicit form the same characteristics as are presented in man in the explicit form.³³

It could be said that there was an element of satire in Watson's attempt to prove his point by a reductio ad absurdum presentation. There was, however, a basically serious purpose in his argument. In his opinion, the Darwinian hypothesis, and extreme applications of it such as Tyndall's indicated that evolutionists possessed two radically different world views which they had not clearly distinguished from each other.³⁴ The first view was that there was nothing in the nature of intelligence as found in man that was not contained in lower forms of existence. This implied, Watson believed, that intelligence must be reduced to the same level as other modes of existence. The second view was that all forms of existence from mineral to human implied intelligence. Watson held that these two views were radically different in that the first levelled down and the second raised up.³⁵

Watson stated that "there can be no doubt that the tendency of Darwin's theory of the nature of man is to abolish the distinction between intelligence and non intelligence."³⁶ This was the first proposition which he identified as being implicit in the view of man presented in The Descent of Man. He now turned to the second proposition that natural selection explained man's mental and moral qualities and especially to an examination of the explanation of man's nature which must be given when the theory of natural selection is rigidly applied. Through

³³ Ibid., 130

³⁵ Ibid., 131

³⁴ Ibid., 131

³⁶ Ibid., 131

this examination, he seemed to suggest, the correct world view might be discovered.

In Watson's opinion, Darwin's hypothesis left no room for spontaneous activity on the part of the individual since survival depended solely upon the natural adaptation of inherited peculiarities to the circumstances in which the individual was placed. No individual could change his inherited qualities or control his environment. Watson wrote:

If, therefore, we apply the doctrine of natural selection to man, it seems to make any claim for his freedom, either of intelligence or of action, quite unintelligible. . . . If. . . we follow the evolution of man from his primitive to his civilized condition, we shall still find nothing but the reaction of the individual on his environment, - a reaction determined simply by the peculiarities of his inherited disposition.³⁷

According to Watson's interpretation of natural selection as applied to man, it was man's inherited disposition which determined what he could know. Likewise, man's actions were determined by his inherited love of approbation and fear of punishment. Right and wrong were merely names for these opposite social and selfish tendencies. Once the full implications of a rigid adherence to the use of natural selection as an explanation of man's mental and moral qualities were examined, Watson was certain that its limitations would become obvious:

. . . we cannot help asking whether Darwin has not made a grave mistake by attempting to explain intelligence and morality by a principle which necessarily excludes all freedom either in knowing or in willing.³⁸

Although natural selection might be valid within its own sphere, Watson asked whether it was only a "limited or partial explanation. . .

³⁷Ibid., 132

³⁸Ibid., 134

inadequate and untrue when extended to the explanation of conscious beings?"³⁹

Watson had so far only shown that natural selection denied mental and moral freedom to man. He attempted next to demonstrate that natural selection was generally inadequate and untrue when applied to man. Beginning with what he believed was the slight difference in degree between the characteristics of higher animals and savages, Darwin had assumed, according to Watson, that natural selection explained the animal qualities and had inferred from this assumption that the mental and moral characteristics of man could be explained in the same way. Watson proposed to begin, not with animals, but with man and examine whether natural selection was an adequate explanation of man's intelligence and morality. He declared that, "If we see reason to deny its adequacy as regards man, we shall have reason to doubt whether it is adequate even when applied to the animals."⁴⁰ Previously Watson had been willing to concede that natural selection might be true within its own sphere. He now suggested that his attack would be not only upon the application of natural selection to man's mental and moral development but upon the basic validity of natural selection itself, a corner-stone of Darwin's hypothesis.

He began by considering what knowledge, as it existed for primitive man, implied. Since Darwin had written that man had inherited from his animal ancestors mental characteristics such as curiosity, wonder, and memory, Watson examined what curiosity is. He suggested that it involved interest in an object, concentration of attention upon it for the purpose

³⁹Ibid., 134

⁴⁰Ibid., 135

of discovering its properties, and a belief in the intelligibility of the object.⁴¹ All these aspects of curiosity required the ability to distinguish one object from another through an apprehension of each object's properties. Watson traced the origin of this faculty to primitive men's struggle for survival which required him to learn about the habits of animals and the properties of the natural elements. In order to grasp the different properties of things, primitive man had to free himself from his first impressions and separate his impressions of things from their actual nature. This faculty of distinguishing the real from the apparent was, in Watson's opinion, the pre-requisite of all knowledge for it indicated that man has mastered "the fleeting impression of the moment."⁴² Man's curiosity demonstrated an interest in all the properties of things, an interest that is both basic to his knowledge and essential to his existence. Watson argued that knowledge, therefore, even for primitive man implied two things:

(1) the consciousness of a distinction between the apparent and the real, and (2) the capacity of apprehending the real in virtue of intelligence.⁴³

Not only did knowledge assume the ability to recognize that a difference existed between the apparent and the real, but it also suggested that, through the use of intelligence, it was possible to determine the real.

This conception of knowledge reflected Watson's Idealist position:

Consciousness always involves the opposition of what seems and what is; or, what is the same thing, it implies that impressions as they occur are only the sign or index of what does not occur.⁴⁴

⁴¹Ibid., 135

⁴²Ibid., 136

⁴³Ibid., 137

⁴⁴Ibid., 138

He suggested that there must be something beyond impressions. If knowledge were reduced to the flow of impressions in a passively receptive subject, even the simplest knowledge would become unintelligible. For knowledge to exist, man must be aware that he has impressions and then he must possess the capacity of evaluating these impressions by comparing them to the permanent nature of the object. If, however, an object possessed a permanent nature, it must be presupposed that the objective world is more than a series of impressions or occurrences. This world must be a "fixed system of things", and man, the subject, must be capable of discovering what this system, the object, is. "Knowledge," Watson stated

always consisted in grasping things from a universal point of view, i.e. in liberation from accidental impressions and associations. . . . [O]nly in freeing oneself from the accidental impressions of the moment, and putting oneself at the point of view of existence as it actually is, can knowledge be obtained.⁴⁵

From this interpretation of knowledge, it necessarily followed that existence could not be divided into two antithetical halves. The Cartesian theory of knowledge, for example, which was based upon the separation of mind and matter, implied the impossibility of any knowledge in Watson's opinion:

If the objective world is in its nature entirely foreign to the knowing subject, knowledge is impossible. If man can know only his own subjective states, he is necessarily shut out from all apprehension of objective existence.⁴⁶

Instead, Watson insisted that the objective world is not essentially foreign to man, but is something that man can know and understand. This

⁴⁵ Ibid., 137-138

⁴⁶ Ibid., 142

principle required belief in the rationality of the world. Because it was rational and formed a connected system of objects, the world might be comprehended by man's reason. In discovering that the world was rational, man, therefore, discovered that he was rational as well. This fact demonstrated for Watson the real connection between subject and object, mind and matter.

It is in virtue of his own intelligence that he is capable of finding the world intelligible. And he cannot learn his own rationality apart from the process by which he gains a knowledge of the objective world. . . . In man there is a principle, the principle of rationality, which gives him a mastery over the world just because in the world that rationality is already implied.⁴⁷

There were two equally valid ways of viewing the process of knowing: it could be regarded as the development of man's consciousness of the world, or of man's consciousness of himself. The development of man's consciousness of his own essential nature necessarily implied a development of man's knowledge of objective reality.

This Idealistic conception of knowledge suggested to Watson that it was knowledge which freed man from unintelligible forces acting externally upon him. As soon as man learned the properties of the objective world, his environment became something that he could comprehend and master.

The only external force that acted upon him was the force that he had not yet learned to master. And the development of man has been a continuous process of mastering the world more and more perfectly.⁴⁸

Watson believed that the effect of his argument was to destroy the notion that natural selection explained the knowledge which man possessed.

⁴⁷ Ibid., 143

⁴⁸ Ibid., 144

Evolutionists had argued that knowledge was produced in man by the action of the environment upon certain inherited tendencies. These inherited tendencies, however, were held by Watson to be man's capacity of grasping the nature of the environment. Such a capacity could not be explained as the mere effect of the environment but implied a comprehension of the environment's nature, and the power to adapt it to man's own use. Man's knowledge, therefore, consisted "in an ever more complete realization of himself by means of an ever greater mastery of the law of the world."⁴⁹ Far from being the slave to inherited dispositions, knowledge was a gauge of man's freedom.

In so far as he knows man is free. We might say, in fact, that the history of man's knowledge is just the history of his substitution of the higher law of reason for the lower law of natural selection.⁵⁰

Having thus dealt with the inadequacy of natural selection as an explanation of man's mental qualities, Watson considered whether natural selection could explain man's morality. Darwin's view of man's morality suggested that there was no possible freedom of action and that no distinction between morality and nature existed:

(1) There is no freedom, because the actions of man are determined by the natural impulse to pleasure, and that impulse again is due to the action of the environment upon the individual's inherited disposition. (2) Nor is there any moral as distinguished from natural activity; for morality is simply a name for the actions that give more pleasure than pain.⁵¹

Watson proposed to show that, as man's knowledge implied freedom, so his actions demonstrated that he was free because he was not controlled by

⁴⁹ Ibid., 144

⁵⁰ Ibid., 145

⁵¹ Ibid., 145

immediate impulses. To prove this proposition, Darwin's conception of primitive man was once again examined.

Primitive man, according to Darwin, inherited from his animal progenitors a selfish and a social tendency. In primitive man, the selfish tendency motivated his struggle for self survival and for the gratification of natural wants such as food and shelter. His success depended upon his ability to use his knowledge of the environment to turn it to his own benefit. This ability, however, presupposed that primitive man had an idea of the end, or benefit, which he desired to obtain. Watson wrote that primitive man "not only possessed the impulse to maintain his life, but he grasped so far the meaning of the impulse."⁵² At the basis of primitive man's selfish struggle for survival at the expense of others was a consciousness of self, a conception of himself as capable of being satisfied. What Darwin described as a primitive selfish impulse, therefore, could not be a mere impulse. Rather it was "the consciousness of self as capable of being satisfied and the effort to obtain that satisfaction at whatever cost to others in the way of dissatisfaction."⁵³ Only through learning the meaning of his immediate wants could man learn to satisfy them. In order to satisfy his wants and consequently himself, primitive man had first to understand the objects of his appetites and learn the means by which they could be satisfied.

To speak of such purposive activity as the action of external circumstances upon an inherited disposition is meaningless: the fact is that man, grasping the law of his environment, and grasping the law of his own nature, turns the environment into the means of realizing his ideal self.⁵⁴

⁵²Ibid., 146

⁵³Ibid., 147

⁵⁴Ibid., 147

Watson held that man was not, as the evolutionists believed, subject to his impulses but that he subjected his impulses to himself.⁵⁵

This same fact could be observed in what Darwin had called the social impulses. If man possessed a tendency to be concerned about the good of others, he must be capable of both abstracting from his own immediate impulses and putting himself at the point of view of others. The fact that a savage might risk his life for the good of the tribe demonstrated that he was capable of giving up self-satisfaction. This suggested to Watson that man had risen above the idea of his own self to grasp the idea of a common good.⁵⁶ Although Darwin could explain this subordination of self by stating that the individual felt pain when he acted against the common opinion of the tribe, Watson considered that this explanation was deficient. First, it neglected the existence of a common opinion, which indicated that the consciousness of the tribe possessed the ideal of a self that could only be genuinely satisfied by seeking the good of all:

It is therefore implied that selfishness is not the way to obtain the satisfaction of the individual. . . but that man is by his very nature social and forms part of an organism in which the good of each is bound up with the good of all.⁵⁷

Watson held also that the dissatisfaction experienced by an individual when he acted contrary to the common opinion rested upon this consciousness of a social self higher than the individual self. He believed that, when Darwin wrote of the environment acting upon the individual, he omitted all that made man's social context intelligible:

⁵⁵Ibid., 148

⁵⁶Ibid., 148

⁵⁷Ibid., 148-149

For the environment here can only mean the constraining power of the higher consciousness of his true self which is revealed to man in virtue of his reason. Learning that his true nature can be realized only by self-identification with the common weal, the individual is not externally acted upon by a foreign influence.⁵⁸

Watson concluded by affirming once more his belief that true freedom came from the law of reason: "In submitting himself to the law of reason, he is submitting himself to his true self, and such submission is true freedom."⁵⁹

Speculative Idealism argued that a Reality existed which transcended mere matter and which could be properly understood by philosophy, not science. The fundamental reason for Watson's opposition to Darwin was his belief that Darwin's hypothesis encroached upon the domain of philosophy and threatened to undermine the true understanding of God's essential union with the world. In 1879, Watson had written:

The doctrine of evolution is a scientific theory, so long as it only proposed to explain the gradual way in which all living beings have been formed by the slow accumulation of slight increments of difference; but it ceases to be scientific, and becomes philosophical, when it supposed to render superfluous the existence and operation of the living God.⁶⁰

If evolution correctly explained man's mental and moral development, a world view would be created which was incompatible with reason and individual freedom. More important still, by isolating the individual completely from God and by destroying the rational basis for the spiritual unity of the universe, this world view left room only for agnosticism and materialism.

⁵⁸ Ibid., 149

⁵⁹ Ibid., 149

⁶⁰ J. Watson, "A Phase of Modern Thought", Rose-Belford's Canadian Monthly, III (November 1879), 462

XIII

JOHN WATSON: PHILOSOPHY OF RELIGION

John Watson presented his philosophy of religion in several articles and three major works, Christianity and Idealism (1896), The Philosophical Basis of Religion (1907), and The Interpretation of Religious Experience (1912). The last was a two-volume edition of the Gifford Lectures which he delivered at the University of Glasgow, 1910 - 1912. It is significant that the first volume was entitled "Historical" and the second, "Constructive". Watson believed that a sense of history was a prerequisite of philosophy: "To ignore the process by which ideas have come to be what they are, must result in an abstract and one-sided theory."¹ To understand Watson's philosophy of religion, it is necessary, therefore, to understand first his conception of the historical development of theology and of the religious experience.

Watson held that the history of theology demonstrated that there had long existed

a continual oscillation between the idea of a transcendent God, too august to be revealed or comprehended by man, and the contrary idea of a God who is here and now, comprehensible by our intellect, giving perfect peace to our heart, and directing the mainspring of our will to the highest ends.²

He believed that this oscillation began with the Greeks and the Hebrews. Although both groups had reached independently the same conclusion that

¹J. Watson, The Interpretation of Religious Experience (Glasgow 1912), I, v

²Watson, Interpretation of Religious Experience, II, 319

one God existed, they tended to view this God as absolutely perfect and entirely apart from the universe. This concept of God led ultimately to a dualistic view of the universe which separated matter from spirit, the world from God, and produced a pluralism of unrelated individuals, isolated from any idea of unity. At the same time, the alternative of an immanent God led to a monistic concept of the universe which upheld the presence of God in the world and in the human soul. These two conflicting views were embodied, Watson argued, in the attempts made by early Christian theology to reconcile the seemingly mutually exclusive ideas of a transcendent and yet immanent God. The theology of the Fathers and the Scholastic theologians represented, in Watson's opinion, unsuccessful attempts to find a formula which could express within the dualistic categories which these theologians had inherited the idea that God is the principle of all things and is present in all things.³

The tension between dualism and monism was reflected in Watson's concern with the problem of the relationship between subject and object, mind and matter. Watson believed that it was Kant who had initiated the method of reconciling the one and the many. Kant defined the world of experience as a system in which every object was connected with, and dependent for its character upon, other objects. Since, however, this system did not form a complete whole, Kant argued that there must be beyond man's limited range of knowledge real beings which, unlike the objects experienced, were self-complete and individual wholes. Kant held that his position allowed both for the existence of God, and for the

³Ibid., 319-320

proof that man is a free moral and immortal being.⁴ Watson noted that this view was subsequently modified by Hegel who changed the Kantian distinction between appearance and reality which limited experience to the relative. According to Hegel there were a number of equally real phases within the sphere of experience, though none was a complete and adequate manifestation of the Absolute.⁵ It was the concrete and absolute reality of God which united all phases of experience into a single spiritual unity. Watson believed that Hegel's fundamental idea was "that only by self-conscious identification with God can man truly realize himself."⁶

Hegel's philosophical position was established before the great scientific discoveries of the nineteenth century. In response partially to these discoveries, a school of English Idealism developed which attempted to re-evaluate Hegel in such works as Hutchison Stirling's Secret of Hegel (1865). Watson wrote that it was

impossible that Englishmen, living at the end of the nineteenth century after the great scientific advance in the special sciences, and especially in biology under the influence of Darwin and his followers; living moreover at a time when the conception of development has been applied to all branches of history and especially to the history of religion. . . could accept the Hegelian philosophy in the form in which it was stated by the author.

Writing from within this modified Hegelian tradition, Watson argued for the spiritual unity of the universe in the omnipresent "Divine Reason". This conception of "Divine Reason" represented a direct extension of the

⁴Ibid., 322

⁵Ibid., 323

⁶Ibid., 323

⁷J. Watson, "The Outlook in Philosophy", Queen's Quarterly, VIII, (April 1901), 250

Idealistic world view present in An Outline of Philosophy, which described the necessary union of subject and object. In his philosophy of religion, Watson used his Idealism to correct what he considered were dangerous attitudes towards the relationship of God to man fostered by the contemporary mechanistic view of the world. This view which Watson labelled "Naturalism" was defined by him as "the theory which finds in nature itself a sufficient explanation of all the facts that fall within our experience. . . ." ⁸

Watson argued that Naturalism should not be considered a legitimate reflection of scientific theory:

The peculiarity of Naturalism is that it converts the attitude of the scientific man, adopted as a convenient and practical method of solving his special problem, into the positive or dogmatic assertion that this attitude is ultimate. . . naturalism maintains that the doctrine of the conservation of energy is the fundamental law of all existence. . . . ⁹

In his opinion, the conservation of energy could not by itself justify a mechanistic world view. Not only was there no reason why quantitative consistency should exclude qualitative differences but the conservation of energy also revealed nothing about the specific development of the world. Naturalism's assumption that the whole process of evolution could be explained solely in mechanistic terms was, therefore, "an illegitimate extension of a principle - conservation of energy - which is undoubtedly valid within its own sphere." ¹⁰ It represented an identification of one aspect of the complete process of life with the whole. Naturalism confused the proposition that there were no living processes without

⁸ Watson, Interpretation of Religious Experience, II, 144

⁹ Ibid., 145, 150

¹⁰ Ibid., 151-152

mechanism with the very different one, that the living processes were nothing but mechanism. Watson held that purely mechanistic principles could not explain life. A reliance upon mechanistic principles was evident in hypotheses of biological evolution which were "apparently inconsistent with any generic distinction between the living and non-living."¹¹ Watson, therefore, proposed to examine the two dominant developmental theories: the Darwinian which, in his opinion, favoured a purely mechanistic explanation, and the Lamarckian which upheld a certain purposive tendency.¹² Naturalism, he noted, inevitably gravitated towards the Darwinian hypothesis.

Darwin had argued that an accumulation of "insensible variables" determined the genesis of species. In Watson's opinion, the very simplicity and clearness of this proposition suggested that it was "open to insuperable difficulties" which, he believed, had been most convincingly described by Henri Bergson in Creative Evolution.¹³ In support of this opinion, Watson chose a favourite example of the anti-Darwinists: the development of the eye. Although the evolutionary explanation held that vertebrates and molluscs may be traced back to a common ancestor, they must have separated and developed along distinctive lines long before the eye appeared. Yet, there is a close similarity between the eye of the vertebrate and that of the mollusc. While Darwin's principle of correlation, that many structures are so intimately related that when one part varies so does another, might explain the similarity in the structures of the eye, Watson believed that this principle virtually ruled out the

¹¹ Ibid., 162

¹² Ibid., 162

¹³ Ibid., 163

purely accidental appearance of variations. He concluded that the Darwinian mechanistic hypothesis of development failed to explain the method of evolution satisfactorily and merely described the phenomenon of change.

All that the [Darwinian] theory really shows is the evolution of organized beings take[s] place, as a rule, by the gradual accumulation of slight differences, much less the appearance of correlated differences; and therefore, to obtain such an explanation [of change], we must have recourse to an entirely different method. For the mechanical form of the doctrine, in other words, must be substituted the organic.¹⁴

Watson considered next whether the Lamarckian theory gave a truer account of the evolution of living things than the Darwinian hypothesis. He wrote that, according to Lamarck:

. . . living beings are regarded as displaying a certain selective activity, so that the variation which results in the formation of a new species is not due merely to accident, but results from the effort of the being to adapt to the environment; while the modified structure acquired by the use or disuse of its organ is transmitted to descendants.¹⁵

In effect the Lamarckian theory was based upon effort and inheritance rather than the mechanical accumulation of insensible variations.

Watson was quick to indicate the special difficulties involved in the Lamarckian explanation of evolution. He thought that there was a certain ambiguity in the meaning attached by this theory to the term "effort". Although an organ might be enlarged and strengthened through use, he argued that something more than use was required to explain the evolution of a complicated structure like the eye.¹⁶ The Lamarckian

¹⁴ Ibid., 164-165

¹⁶ Ibid., 166-167

¹⁵ Ibid., 166

theory depended also upon acceptance of the belief that acquired characteristics could be transmitted. The possibility of transmission, however, had been denied by many biologists. Weismann, for example, had held that an acquired character resulted from the repeated exercise of a natural aptitude and that only this aptitude could be transmitted.¹⁷

This suggested to Watson that it was "at least doubtful whether the Lamarckian theory of the transmission of acquired characters can be accepted."¹⁸ Since, moreover, this type of transmission would be exceptional rather than the norm, it was improbable that it could account for the enormous numbers of variations all in the same direction, required by the Lamarckian argument. Watson concluded that, for these reasons, the followers of the Lamarckian theory were, like the Darwinians, able at best to provide an incomplete and inadequate explanation of the evolutionary process.

Although they both contained elements of truth, the two contemporary neo-Darwinian and neo-Lamarckian explanations of biological evolution failed, in Watson's opinion, because they neglected the basic teleological reality which united and gave purpose to development. The fundamental defect of the Darwinians was that they assumed that the

¹⁷"Weismann maintains that development is entirely determined by the constitution of the germinal cells, which he regards as practically independent of the somatic cells, so that the only characters transmitted are those which are already found in the germinal cells. Acquired characters are generally habits or the effects of habits, and it is argued that, as all habits rest upon a natural aptitude, it is this natural aptitude which is transmitted, not the acquired character resulting from its repeated exercise." Interpretation of Religious Experience, II, 167

¹⁸Ibid., 167

differences which produced variations were entirely fortuitous. On the other hand, the Lamarckians mistakenly attributed evolution to the more or less conscious effort of the individual. Watson held that the effort required to produce such a development as the eye could only be attributed to "something in the fundamental nature of the universe."¹⁹ This, he declared, was the organizing principle which constituted the essential nature of all living things.

The process of evolution we must therefore conceive as the realization in millions of individuals of the same identical and self-differentiating principle of life, a principle which realizes itself by subduing the physical and chemical forces of the universe to itself and using them as its instruments. The development of organic structures cannot be the result of an infinite number of accidental variations accidentally working in a certain direction, and accidentally resulting in the formation of an infinite variety of species; it must be the self-differentiation of a single eternal and inexhaustible principle.²⁰

This principle possessed a reality which made it much more than a simple generalization concerning the existence of common characteristics. For Watson, it pointed to the existence of the Divine Reason: the fundamental, universal rationality which marked the spiritual union of all things with the one God.

For Watson, Speculative Idealism demonstrated that there must be a necessary rational unity binding all things together in the universe, and making all things comprehensible through reason. Man's knowledge of himself depended upon his understanding of this essential connection between his rationality and the rationality of the universe. This rational unity, moreover, provided the basic premise for Watson's

¹⁹ Ibid., 168

²⁰ Ibid., 168

philosophy of religion. In The Philosophical Basis of Religion, he wrote:

Man is capable of overcoming the world, because in it he discerns the operation of the principle of reason which constitutes his own true self, and because in realizing that self he is in harmony with the universal reason; he is capable of union with God because there is no aspect of the universe which is not the more or less explicit expression of the Divine Reason.²¹

He believed that the principle of reason was the only basis for systematic thought in religion. In the past, the principle of external authority had aided the development of religious consciousness. Watson held that the Reformation and the Renaissance had overthrown this principle. Despite attempts to revive the notion of authority by men such as Cardinal Newman and A. J. Balfour, Watson believed that, in the modern world, religion could find no real support in external authority:

The appeal to external authority in any form does not in our own day carry conviction even to those who make it. Nothing short of a complete revision of current theological ideas, as I am convinced, can bring permanent satisfaction to our highly reflective age.²²

In his opinion, the only alternative to a total abandonment of systematic thought in religion was the rebuilding of theological beliefs upon the basis of reason.²³

Watson's repeated references to the modern age in his writings are significant. He believed that, before Kant, there had been no answer to the conflict between dualism and monism which produced "the separatist spirit of the Medieval world."²⁴ In Christianity and Idealism, he described

²¹J. Watson, The Philosophical Basis of Religion (Glasgow 1907), 137

²²Ibid., v

²³Ibid., vii

²⁴J. Watson, "Thomas Aquinas", Queen's Quarterly, X, (July 1902), 71

the three main characteristics of medieval Christianity: a universal belief that the kingdom of heaven could not be realized in this life, a belief in the absolute authority of the church, and the opposition of faith and reason.²⁵ In his opinion, this last factor led directly to the downfall of medieval theology. When the fourteenth century English philosopher Occam argued that there were doctrines which were not merely super rational but irrational, contrary to reason as well as beyond reason, the result was that

reason, frustrated in its attempt to find unity with itself in an authoritative creed, could only fall back in despair upon a universal scepticism or set about a reconstruction of the creed itself.²⁶

The Renaissance and Reformation liberated the human spirit. In his article "Thomas Aquinas", Watson described the effect of this liberation:

. . . the spirit of the modern world demands the complete union of freedom and reason, whether it deals with the construction of society, the search for truth, or the practical problems of everyday life.²⁷

The "spirit of the modern world", in other words, demanded the kind of philosophy of religion that was proposed in Watson's Speculative Idealism.

In "A Phase of Modern Thought" published by The Canadian Monthly in 1879, Watson argued that his age was one of search, not scepticism. He asserted that there was no cause for antagonism between science and religion:

Science and religion are inseparable strands of thought that have been intertwined from the dawn of intellectual activity. Their analytical separation should not make us forget the

²⁵ J. Watson, Christianity and Idealism (Glasgow 1897), 111-118

²⁶ Ibid., 118

²⁷ Watson, "Thomas Aquinas", 70-71

necessity of their real union to the highest comprehension of the universe. . . . The advance of religion and the advance of science are really phases of one great movement of thought. The one has gained nothing that has not been equally a gain of the other.²⁸

In a later article, "Some Remarks on Biblical Criticism", Watson declared that religion was not threatened by modern Biblical scholarship:

. . . we must not despise even minute and apparently trivial enquiries into dates and authorship, so long as these are guided by an earnest desire to realize with vividness and clearness from what manner of man and what manner of age a given literary product proceeded. . . . The men, as I have observed, who in the region of Theology are most humble and most sane, are those who have spared no pains to make themselves familiar with the results of the best modern thought. . . . That recent criticism disturbs the simple faith of the past may be true, but it cannot disturb the eternal verities on which the universe is founded.²⁹

Watson's writings implied that, despite whatever tensions were created by scientific theories and Biblical criticism, the present age held the promise of a maturity and freedom for religion which had not previously been possible.

At the conclusion of his Gifford Lectures, Watson gave a final definition of religion:

Religion is the spirit which must more and more subdue all things to itself, informing science and art, and realizing itself in the higher organization of the family, the civic community, the state, and ultimately the world, gradually filling the mind and heart of every individual with the love of God and the enthusiasm of humanity.³⁰

²⁸J. Watson, "A Phase of Modern Thought", Rose-Belford's Canadian Monthly, III (November 1879), 472

²⁹J. Watson, "Some Remarks on Biblical Criticism", Queen's University Journal, XXII (7 November 1894) 26-27

³⁰Watson, Interpretation of Religious Experience, II, 327-328

It was typical of Watson's Idealism that in this statement he referred to religion as a "spirit" and not as a specific creed. The end of authority meant the end of dogma. Watson held that religion must return to the Christian ideal embodied in the teaching of Jesus. He believed that the ideas of Jesus were "so penetrative and profound that I am unable to conceive of anything higher in principle."³¹ These ideas, moreover, expressed an ideal of life which was in itself "intrinsically rational."³² The Christian ideal, in Watson's opinion, was based upon the harmony of all things, united by the central teaching of Jesus: "God is Spirit." Through his reason, man recognized the necessary existence of a spiritual reality, God. Through his knowledge and experience, he recognized the will of God, the Christian ideal, in the higher endeavours of mankind. Watson believed that every aspect of the "complex spirit of the modern world" brought man closer to an identification with God's love and goodness.

Every advance in science is the preparation for a fuller and clearer conception of God; every improvement in the organization of society is a further development of that community of free beings by which the ideal of an organic unity of humanity is in process of realisation; every advance in the artistic interpretation of the world helps to individualise the idea of the organic unity by which all things are bound together.³³

Watson's conception of religion entailed a strong belief in social progress and the active participation of the individual in the life of his community. It resembled, in this sense, the type of liberalism which

³¹Watson, Christianity and Idealism, xv-xvi

³²Ibid., xiv

³³Ibid., 287

would characterize the Social Gospel movement. As J. W. McEachran noted, Watson's religion was inspired "by the faith in the triumph of goodness - a faith which has a rational basis."³⁴

Watson's mature philosophy of religion was far removed from his early Calvinist training. This was largely due to the influence of Edward Caird at Glasgow University. Watson's study of Hegel, moreover, undoubtedly influenced his interpretation of the progressive realization of the universe's spiritual unity. The conclusion to Christianity and Idealism revealed the breadth of his religious conception:

The Christianity of our day must free itself from the narrow conception of life by which Protestantism has tended to limit its principles. It must recognize that the ideal of Christian manhood includes within it the Greek ideal of clear thought and the love of beauty, as well as the Jewish ideal of righteousness, and the Roman ideal of law and order, harmonising all by the divine principle of love to God and man, on the basis of that free spirit which has come to us mainly through our Teutonic ancestors.³⁵

Although he thought that the philosophy of religion required an understanding of the past history of theology, Watson regarded religion, J. A. Irving has noted, "as an ideal of conduct rather than a historical theology."³⁶ In Watson's opinion, the history of theology revealed man's liberation from a historical theology. The medieval dependence upon external authority must be replaced by a modern return to a belief in reason.

³⁴J. M. McEachran, "John Watson", in R.C. Wallace, ed., Some Great Men of Queen's (Toronto 1941), 45

³⁵Watson, Christianity and Idealism, 292

³⁶J. A. Irving, "Philosophical Literature to 1910", in C. F. Klinck, ed., Literary History of Canada (Toronto 1966), 441

Such a philosophy of religion possessed the flexibility which Watson believed was necessary in the modern age. 1

While Idealism maintains that the development of religion has been towards a spiritual conception of the universe, it is not committed to any a priori scheme of the precise steps by which the race has reached this result.³⁷

This allowed Speculative Idealism to accept both the findings of historical criticism and the discoveries of science, provided that these innovations did not go against the basic principle, "God is Spirit." Theories such as Darwin proposed were accepted by Watson as valid within the properly limited sphere of science. The first question considered by Watson in Comte, Mill, and Spencer had been the difference between science and philosophy. Since only philosophy properly dealt with existence in its completeness, its conception of the universe must provide the point of view from which to evaluate the results of science which dealt with the existence of specific objects. In "The Outlook in Philosophy", Watson wrote:

. . . while the results of these sciences must be thankfully accepted, they must be reinterpreted from the point of view of a spiritual unity, if we would construct an adequate theory of Reality as a whole.³⁸

In "A Phase of Modern Thought", he asserted that evolutionists must be opposed when they attempted to go beyond science's proper boundaries and to explain man's mental and moral development in a way which threatened the idea of a spiritual unity:

The moment we desert the point of view of things in space and time, to make some affirmation about their relation to intelligence, we pass over into the realm of philosophy and

³⁷Watson, "Outlook in Philosophy", 255

³⁸Ibid., 250

theology, and leave the realm of science behind.³⁹

Speculative Idealism demonstrated, however, that within its limited realm, evolution helped to reveal the essential harmony of the universe.

In Comte, Mill, and Spencer, Watson had argued that, far from destroying teleology, evolution suggested that an "immanent teleology" was displayed in the world.⁴⁰ Evolution revealed that the world constituted a systematic unity in which every element strove towards a definite end. Watson's philosophy of religion expanded the Speculative Idealistic conception of teleology by identifying the spiritual nature of the goal towards which humanity was developing.

The course of human history. . . is the process in which the individuals forming the spiritual organism of humanity rise to self-consciousness of the Principle which gives reality to them all. . . .⁴¹

Fundamental to Watson's position was a belief in the inter-dependent awareness of self and God, based upon the existence of reason in man and in the universe. Through an ever increasing awareness of self, man has obtained rationally a similarly increasing awareness of the reality, "God is Spirit", which gives unity and purpose to the universe.

The realization of this reality embodied the shared experience of all aspects of human activity. The principle "God is Spirit" bestowed a unity on mind and matter, finite and infinite, the world and God. Therefore, it provided the necessary focus from which to bring all the infinite varieties of human experience into harmony.

³⁹Watson, "A Phase of Modern Thought", 462

⁴⁰See Chapter "John Watson: Speculative Idealism and Darwin's Theory of Mental and Moral Development."

⁴¹Watson, "Outlook in Philosophy", 251

Man, in all his feeling, thought and action, experiences the divine, and the whole of his history is a record of his ever clearer comprehension of it. His experience of the spirituality of the universe constitutes religion, of which theology is the systematic and reflective expression.⁴²

Watson had argued that, when applied to man's mental and moral development, evolution created a world view incompatible with reason and individual freedom.⁴³ He concluded, however, that, properly understood, Darwin's hypothesis of evolution could reflect and reinforce the growing comprehension by man of the spiritual and rational nature of himself and his universe. The Darwinian hypothesis necessarily led man to look beyond mechanism and chance for the underlying motive and power of human development.

⁴²Watson, Interpretation of Religious Experience, II, 326

⁴³See pages 188-189 of the dissertation.

XIV

NATHANAEL BURWASH: INTRODUCTION

At the end of 1912 when Nathanael Burwash's nearly half-century association with Victoria University was drawing to a close, Newton Rowell, future Chief Justice of Ontario, sent him the following message:

Will you. . . permit me to say how great a blessing I believe your life and work have been to the Church and our Country. Your great contribution to the cause of higher education, the success of university Federation, the part you have taken in the statement of the fundamentals of our faith in the light of modern knowledge, and the combination in life and teaching to a generation of theological students of the broadest knowledge and the deepest piety, together make up an enduring monument such as is given to few men to rear.

Each of the concerns mentioned in Rowell's tribute - education, university administration, and theology - underwent profound changes which produced both growth and controversy during Burwash's career. Although Darwin's theory of evolution was only one of many new ideas which faced Burwash, his response to the scientific and theological questions raised by the Darwinian hypothesis is especially significant. Not only did this response affect the theological training received by a generation of Methodist ministers at Victoria University, but it also resulted in the formulation of a method to secure religion against external threats.

Of United Empire Loyalist descent, Nathanael Burwash was born near St. Andrew's, Lower Canada, on 25 July 1839. He received his first education locally and then attended Victoria College in Cobourg, Canada

¹Victoria University Library, Burwash Papers, Newton Rowell to Nathanael Burwash, 30 December 1912.

West, where he graduated as valedictorian with his Bachelor of Arts in 1859. The next year he entered the Methodist ministry and was ordained in 1864. During this period, Burwash held pastorates in four locations, all in Canada West: Newburgh, Belleville, Toronto, and Hamilton. While in Hamilton, he served as a volunteer chaplain for the troops sent to the Niagara peninsula at the time of the Fenian raids.² These years also exposed him to "the questions which were already taking hold of the lay mind" and which he believed himself incapable of answering in a manner which would "meet the wants of the age."³ Reflecting upon his early career in Belleville, Burwash later noted:

As yet I saw it only as a pastor wishing to help some of his people. But the next three years of pastoral labour in Toronto and Hamilton were to reveal the fact that little or nothing could be done in this or any other direction until the standard of Education of our entire ministry was raised and the work of that education placed upon a more efficient basis.⁴

In 1866 an appointment to the faculty of Victoria College provided him the opportunity for lifelong participation in higher education.

Burwash began his Victoria College career as a professor of Natural Science, a position opened by the resignation of Dr. Elijah P. Harris and the retirement two years earlier of the Reverend G. C. Whitlock. Burwash recognized that he was an unlikely replacement for these two

²C. B. Sissons, A History of Victoria University (Toronto 1952), 129. This experience led Burwash to write a letter published by the Christian Guardian on 23 June 1866, criticizing the handling of the Ridgeway engagement which had resulted in 10 militiamen killed and 30 wounded.

³Victoria University Library, Burwash Papers, Nathanael Burwash, "Sixty Years of Canadian Methodism", (1910), manuscript.

⁴Ibid.

professors of science:

The vacancies in Science were filled, not by two strong men, but by one young preacher from Hamilton with some scientific proclivities, but with his field still to master, and with better attainments in Theology than in Science.⁵

He judged that his selection had been determined by the economic state of the College: "The poverty of the institution made it impossible for the College to secure men of experience and established reputation."⁶ Before assuming his teaching duties, Burwash took a course at Yale University to augment the scientific knowledge that he had acquired at Victoria. He taught science until 1873 when he resigned to become Dean, and professor of Biblical and Systematic Theology in Victoria College's newly established Faculty of Theology. Upon the death of Victoria's Chancellor and President, Samuel Sobieski Nelles, in 1887, the Board of Regents unanimously chose Burwash as Nelles' successor. He held these offices until his retirement in 1913.

As did Queen's University, Victoria had a reputation for the liberalism of its teaching in the last half of the nineteenth century. By 1894, an editorial comment in the college journal, Acta Victoriana, jokingly referred to the College as a "hot-bed of evolution".⁷ The attitude towards science at Victoria was indicated in the inaugural lecture of Arthur Philemon Coleman who was appointed to the Chair of Natural History and Geology in 1883. Coleman's comments upon the unity

⁵Nathanael Burwash, The History of Victoria College (Toronto 1927), 220

⁶Ibid., 220

⁷Acta Victoriana (February 1894), 175

of truth reflected the metaphysical conceptions of philosophical Idealism:

The proper aim of science is to learn the truth, and one truth can never contradict another. . . . The facts of nature are the visible and tangible expressions of the Almighty's thought.⁸

It was obvious, however, from President Nelles' address at Dr. Coleman's installation that Charles Darwin would not have been considered suitable as a teacher at Victoria:

All due respect to the great name of Charles Darwin. Let us not complain that he was invested with the highest honors of a renowned English university, nor that he was laid at death with "triumphant obsequies" [sic] in Westminster Abbey, by the side of the illustrious and sainted dead. Let these things stand as a pleasing proof of the liberality of the age, and as a deserved tribute to Darwin's eminent gifts, his ardent devotion to science, his conspicuous candor, his spotless life, and his marked success in throwing new light on many of the apparent anomalies of nature. But for instructors and guides of youth, let us rather seek for men who, while possessed of a true love of learning, and competent ability to teach, still adhere to the faith of Christ, the religion of Newton, Kepler, and Faraday, and on this continent the religion of Agassiz, Dana, and Dawson. Such men, too, are less likely to teach for science what is yet only in the region of conjecture, and after the manner of Milton's half-formed lion, is still "pawing to get free its hinder parts" from the rude ground work of hypothesis.⁹

This address was a significant reminder that, whatever advances in the sciences were made at Victoria, the institution considered itself Christian and approached knowledge from within this religious context.

The central event in the history of Victoria College in Burwash's time was federation in 1887. Five years later, Victoria moved from Cobourg to Toronto to become a federated part of the University of Toronto. W. Stewart Wallace noted that it was Burwash "who deserved, if

⁸"Installation of Dr. Coleman to the Chair of Natural History and Geology", Acta Victoriana (January 1883), 9

⁹Ibid.

any individual did, the title of 'Father of University Federation'.¹⁰ Victoria's financial situation made the hope of greater support after federation a strong argument for the plan. Burwash believed too that the facilities that federation could provide were necessary to meet the demands of modern scientific instruction.¹¹ There was, however, considerable opposition from those who held that the identity and traditions of Victoria would be threatened by federation. At its best, federation involved risks and its acceptance owed much to the farsighted attitude of Burwash. In The University of Toronto and Its Colleges, Burwash described the "supreme motive" of federation:

The scheme afforded an opportunity for realizing a truly national university, which, in extent, equipment, and resources, might be worthy of the Province; and the advantage of combining for students of every creed the full vigour of the religious life, even in its distinctive peculiarities, with the enjoyment of the broadening influence of contact with the whole student body of the Province.¹²

This response was characteristic of Burwash's progressive realism which accepted the requirements of the present age and used these requirements as a basis for the development of his programmes and ideas.

Given the demands of his position at Victoria, Burwash's activities and accomplishments were remarkable. He was a prolific writer of religious articles and pamphlets and published four major theological

¹⁰W. Stewart Wallace, A History of the University of Toronto, 1827-1927 (Toronto 1927), 184-185

¹¹Sissons, Victoria University, 174

¹²Nathanael Burwash, "The Development of the University, 1853-1887" in The University of Toronto and Its Colleges, 1827-1906 (Toronto 1906), 52

works, including a two-volume Manual of Christian Theology on the Inductive Method in 1900.¹³ In 1906 he contributed chapters on the development of the University of Toronto to The University of Toronto and Its Colleges, and wrote The History of Victoria College, posthumously published in 1927. His other major literary work was a biography of Egerton Ryerson published as part of the "Makers of Canada" series in 1902. In the Methodist Church, Burwash was a member of the General Conferences, attended international meetings, and participated in joint committees to discuss church union. He lectured widely and achieved considerable success as a fund-raiser, attracting the donations which Victoria constantly required. In an editorial after Burwash's death on 30 March 1918, the Toronto Globe judged that "he was one of the most successful and distinguished moulders of public opinion in the whole Dominion."¹⁴

Burwash was usually associated with liberal positions within the Methodist Church and this brought him into repeated conflict with the General Superintendent, the Reverend Albert Carman. In a letter to his wife from the 1910 General Conference in Victoria, British Columbia, Burwash commented: "Poor Carman is very excited. He told me the other day that I was making the Savior speak like 'a drivelling idiot'."¹⁵

¹³Manual of Christian Theology on the Inductive Method (London 1900), 2 vols. Burwash also wrote the following theological studies: Wesley's Doctrinal Standards (1881), Handbook on the Epistle to the Romans (1887), and Inductive Studies in Theology (1896).

¹⁴The Globe, 2 April 1918, 6

¹⁵Victoria University Library, Burwash Papers, Nathanael Burwash to Margaret Burwash, 18 August 1910

Carman's excitement was undoubtedly a product of the Jackson controversy. While a minister of Sherbourne Street Church in Toronto, George Jackson had lectured widely on the Old Testament, supporting an interpretation based upon the higher criticism. His appointment as professor of English Bible at Victoria in 1909 provoked Carman into initiating a campaign against him. This campaign extended to the 1910 General Conference where Carman was prominent in a bitter debate on the question of Jackson's suitability. A supporter of Jackson, Burwash wrote to his wife:

If the chief officer of the church [Carman] can make assertions in a public address involving a man's character and standing in the ministry giving him no opportunity for defence then no one is safe. . . . And if he can appeal to the lowest prejudices of a class and impugn the motives of the most generous and consecrated of our members, I do not know what is to become of us.¹⁶

Jackson's appointment was upheld but twenty years earlier a similar controversy over the Reverend George Workman had resulted in Workman's resignation from Victoria. Although the different outcomes of these two controversies suggested the growing acceptance of the liberal theology supported by Burwash, the fact that the Jackson issue could still create a potentially disastrous split in the Church indicated the sensitive atmosphere within which Burwash dealt with such questions as Darwin's theory of evolution.

The response of Nathanael Burwash to Darwinian ideas is documented in his lectures and writings. This represented only one aspect of his general concern to define the relation of religious faith to science, but the implications of the Darwinian hypothesis remained a constant

¹⁶Victoria University Library, Burwash Papers, Nathanael Burwash to Margaret Burwash, 16 August 1910

theme whenever he considered the larger question. These matters were often employed by Burwash to illustrate the challenges posed to faith by modern science. Moreover, by formulating a response which enabled him to reconcile the acceptance of evolution with his religious faith, he was able to demonstrate to his students that science and religion could exist in harmony. This study will examine first Burwash's early attitude towards scientific knowledge in order to establish the intellectual context of his reaction to the Darwin's theory of evolution. Second, it will examine the nature and meaning of his position.

XV

NATHANAEL BURWASH: SCIENCE AT VICTORIA COLLEGE

On 27 August 1841, a provincial statute transformed the Methodist Upper Canada Academy, established by Royal Charter at Cobourg in 1836, into Victoria College. The attitude of the new college towards scientific knowledge was revealed in an address delivered by Egerton Ryerson at his first public appearance as Principal of Victoria College on 21 October 1841. Noting that the physical sciences had been neglected by the province's institutions of higher learning, which concentrated instead upon the teaching of the Classics, he stressed the practical benefits found in the study of the sciences:

If one branch of education must be omitted, surely the knowledge of the laws of the universe, and of the works of God, is of more practical advantage, socially and morally, than a knowledge of Greek and Latin.¹

Ryerson recognized the importance of the Classics, which "have been long and justly considered as forming an essential part of a liberal education."² He was clearly, however, determined that Victoria College would promote the physical sciences.

On these too-much-neglected parts of a practical as well as liberal education, a vigilant attention should be bestowed, as physical science generally is nothing but the knowledge of nature applied to practical and useful purposes.³

Until federation removed science from its jurisdiction, Victoria College

¹Egerton Ryerson, "Inaugural Address", in Nathanael Burwash, The History of Victoria College (Toronto 1927), 502

²Ibid., 499-500

³Ibid., 502

was to demonstrate this vigilant attention to the sciences. As Burwash commented in his history of the college, "From the beginning the cultivation of the sciences had been a prominent feature in the work of Victoria."⁴

During Burwash's undergraduate years at Victoria, science was taught by the Reverend George C. Whitlock and Dr. Elijah Harris. The Burwash papers preserve his notes on "Lectures on Botany by Professor Whitlock, 1857". Whitlock, whom Burwash described as "an ardent enthusiast in every branch of science",⁵ was a recent addition to the Victoria faculty, but, over fifty years old, he was an experienced teacher whose former pupils included President Nelles.⁶ Beginning with the cell, Whitlock guided his students through nutrition to organic electricity. Burwash's notes recorded such imparted wisdom as "the electricity in man is generally positive, that in woman negative" and "Frogs are 50,000 times more sensitive to electricity than a gold leaf electrometer."⁷ The notes, however, also included lectures on taxonomy and instinct which are especially significant since they represent the formal instruction for Burwash and his contemporaries on subjects which Darwin two years later would turn into controversial questions.

Whitlock taught a classification system based upon structure of

⁴Burwash, Victoria College, 238

⁵Ibid., 239

⁶C. B. Sissons, A History of Victoria University (Toronto 1952), 99

⁷Victoria University Library, Burwash Papers, Nathanael Burwash, "Lectures on Botany by Professor Whitlock, 1857", (Victoria College Cobourg, 1857), manuscript.

parts which followed the Natural System developed by Linnaeus in the eighteenth century. As presented, Whitlock's system did not conflict necessarily with Darwin's subsequent hypothesis. Linnaean classification is not incompatible with Darwinian evolution since both posit branching systems. In the Origin of Species, Darwin acknowledged the indisputable "ingenuity and utility" of Linnaeus' Natural System. He added, however, that "many naturalists think that something more is meant by the Natural System; they believe that it reveals the plan of the Creator."⁸ Unfortunately, if Whitlock commented upon the theological extension of Linnaeus' Natural System, these comments have not been preserved in Burwash's lecture notes. The lecture notes, however, indicate theological concern when Whitlock considered the topic of instinct. Whitlock carefully isolated man from the rest of the animal kingdom:

Results performed by animals similar to those performed by man through intelligence are not to be attributed to the same cause.

Man has a principle of logical abstraction of which the brute is destitute.⁹

Moreover, he posited a hierarchy of beings: "There are but three kinds of beings: material, spiritual, and divine. We cannot conceive of any other."¹⁰ According to Whitlock, man is, therefore, distinct from material animals and undoubtedly a spiritual being. This distinction was demonstrated by man's intelligence and, Whitlock implied, by man's will. He

⁸Charles Darwin, Origin of Species (Modern Library Edition, New York n.d.), 319

⁹Burwash, "Lectures on Botany by Professor Whitlock."

¹⁰Ibid.

suggested that, since animals lacked will, God designed animal instinct to ensure the harmony of nature through the conformity of action.

Whitlock's lectures contained ideas which related directly to a consideration of Darwin's theory of evolution. His statement "Organic bodies or living beings are subject to physical laws"¹¹ is a basic, but important, idea which expressed a view of the world compatible with the Darwinian concept of development. As noted previously, there was no necessary conflict between Whitlock's taxonomy as described in Burwash's lecture notes and Darwin's subsequent theory of the origin of species. So far as Burwash's notes record, the science taught by Whitlock enabled his students to meet the Origin of Species without requiring a fundamental change in their acquired knowledge. The Descent of Man, however, produced problems which Whitlock's lectures could not accommodate. When his discussion of instinct led to a hierarchical concept of being in which man's intelligence separated him from the animal, Whitlock was arguing from an Idealistic assumption about man's place in the universe. A similar Idealistic view of man would later be defended by critics of Darwin's hypothesis against the threat to metaphysics which they found in the Darwinian explanation of man's mental and moral development.

Burwash's own attitude towards science while a student is recorded in an essay, "The Coincidence of the Geological with the Mosaic Account of Creation", which he wrote in January, 1858.¹² Based largely upon Hugh Miller's Testimony of the Rocks, the essay examined in great detail the

¹¹ Ibid.

¹² Victoria University Library, Burwash Papers, Nathanael Burwash, "The Coincidence of the Geological Record with the Mosaic Account of Creation", (January 1858), manuscript.

geological record as it was then understood and compared this record to the Biblical account of creation. Burwash reached the same conclusion as Miller: since the Bible often used the word "day" to denote an indefinite period, it was possible to consider the six days of creation as long periods of geological time. Although the fact that the essay relied heavily upon Miller should not detract from its obvious mastery of complex detail and involved reasoning, the real importance of it is not its argument, but what it reveals of Burwash's intellectual development.

As did so many of his early writings, this youthful attempt to reconcile science and religion mirrored the position which the mature Burwash would argue in later works. The essay began with a declaration of faith in truth. Religion had nothing to fear from true science:

It is our intention. . . to examine the formation of the earth and compare the discoveries of science on this subject with the revelation of God, conscious that neither science nor revelation will suffer by the comparison since truth and the discovery of that, and not the propagation of any particular theory or doctrine is the object of all true science, truth itself we say is ever immutable and always consistent with itself. . . . [W]e shall rest satisfied if we succeed in awakening in one mind such a curiosity and shall lead to an examination of some of the many large interesting works written upon the subject.¹³

Burwash also declared his belief in the sanctity of study, including scientific inquiry:

Think not then that you are prying into the secrets of the Creation when you are discovering the greatness and beauty of His works. You are but doing His will. This was His design in forming them thus. In studying the works of nature either physical or intellectual you are expanding that work which should you commence it aright He has destined should continue through-out eternity.¹⁴

¹³Ibid.

¹⁴Ibid.

He cautioned, however, that science must be studied "with a mind being restored by redemption to its original power and purity."¹⁵ If God were left out of nature, science would be dead. Eighteen year old Nathanael Burwash wished to study science, but he was as well a devout Methodist. Science necessarily existed for him within a Christian context, and the priority of religion was the fundamental assumption upon which his ideas were based.

In 1860, a year after graduating from Victoria College, Burwash delivered two addresses that revealed his lifelong attitude towards the relation of science to religion. To a Belleville Seminary tea-meeting, he stated that a complete education required the harmonious study of both science and religion:

Let science and the great and universally believed principles of the Word of God go hand in hand and then education is complete and fit for heaven.¹⁶

An address to the Bible Society denied that any conflict existed between science and religion:

True science must be on the side of religion. . . . Only imperfection in knowledge conflicts. The Christian has something within, a holier, more divine evidence. The strongest of all proofs. One that all the philosophy of the earth will fail to shaken. . . .¹⁷

This second address suggested that Burwash had already found in his Methodism that reliance upon intuition which would enable him to accept

¹⁵ Ibid.

¹⁶ Victoria University Library, Burwash Papers, Nathanael Burwash, "Anniversary Addresses", (Newburgh, 1860), 26, manuscript.

¹⁷ Ibid., 31

the modern discoveries of science without compromising his religious faith. Less than a year after the publication of the Origin of Species, he had started to formulate a means of reconciling science and religion which would characterize his subsequent career as theologian and teacher.

As a student and young minister, Burwash was diligent, introspective and naive. His diary for the early sixties, "Sunset Thoughts", reveals a preoccupation with converting sinners, fighting temptation, and mooning over unrequited love for a mysterious Jeannie.¹⁸ His lack of sophistication became apparent in an incident which occurred during the second year of his Belleville ministry when he was twenty-four years old. The incident which, in Burwash's opinion, "largely influenced my after life" is described in an 1910 essay, "Sixty Years of Canadian Methodism", and mentioned in the preface to his major work, Manual of Christian Theology.¹⁹

In Belleville at that time, there was a group of young men who regularly attended services and contributed generously to the church but who, Burwash thought, "seemed to stand quite outside of all spiritual relation to the church."²⁰ He could not fathom their inner thoughts and feelings, a barrier which greatly disturbed him. He wrote, "My heart was specially drawn out towards these men."²¹ Undoubtedly after much soul

¹⁸Victoria University Library, Burwash Papers, Nathanael Burwash, "Sunset Thoughts", (11 November 1861 - 25 July 1866), manuscript.

¹⁹Victoria University Library, Burwash Papers, Nathanael Burwash, "Sixty Years of Canadian Methodism" (1910), manuscript, and Manual of Christian Theology (London 1900), I, v

²⁰Burwash, "Sixty Years of Canadian Methodism."

²¹Ibid.

searching, he decided to approach the group to see whether he could discover what was separating them from him. Selecting a man "of the most candid and generous spirit", he put the question to him directly. The meeting occurred in the young man's library. From the start it was obvious that a great gulf indeed existed between the two men. The young man was clearly a person of means and sophistication: Burwash remembered that the room was elegantly furnished and filled with good books.²² He listened to Burwash "with a kindly but not supercilious smile", and said at the end, "you do not understand us."²³ Lending Burwash Colenso's first volume on the Pentateuch and Theodore Parker's Ten Sermons on the Absolute Religion, he asked him to read the two books and then return to discuss the matter again.

At first Burwash believed himself prepared to meet the challenge. Had he not studied Paley, Butler, and the other standard works on the evidences? He soon discovered, however, that this preparation was inadequate. He confessed, "I read the books and sometimes seemed to find all certain ground sinking from under my feet."²⁴ He found that they questioned both the historical statements of scripture and the fundamental basis of philosophy. Sometimes doubt would so grip him while reading that

I would put down the books and on my knees seek anew that light and certainty which God has aforesaid given me when I saw that He in His holiness, His goodness, His truth and His love was the most certain thing in all the universe and so I returned to the battle, confident that in some way the difficulties must be unravelled and the truth made clear.²⁵

²² Ibid.

²⁴ Ibid.

²³ Ibid.

²⁵ Ibid.

He was always able to vanquish doubt and his faith remained unshaken. He realized, nevertheless, that somehow the questions presented in such books must be answered. While no record exists of a second confrontation between Burwash and the young man, the search for suitable answers drew him to new areas of study.. Already deeply engaged in New Testament studies, he now turned his attention to the Old Testament and to metaphysics, a subject which he had previously ignored.

Burwash believed that there existed a disturbing tendency in modern science to draw men from religion to a belief in a materialistic necessitarianism. He wrote, "I was discovering that many of our most gifted and intelligent young men were drifting away from an evangelical faith under the influence of the Modern Scientific Spirit."²⁶ Burwash held that the Methodist Church must be flexible enough to meet these young men, not with anathemas, but as "candid seeker[s] for truth and with full faith in the harmony of all truths."²⁷ In order to do this, Methodism required a better educated Ministry. Better education was the first step in meeting the new scientific challenge. "At twenty-four years of age", Burwash reflected, "I was squarely face to face with the problems of a lifetime and the labour which these problems involved."²⁸

Nathanael Burwash was responsible for the teaching of science at Victoria College from 1866 to 1873. Surveying these years, C. B. Sissons wrote:

. . . while no estimate of Burwash's work during his seven years as Professor of Natural Science has been preserved,

²⁶Ibid.

²⁷Ibid.

²⁸Ibid.

it is safe to say that native intelligence, strength of will, capacity for hard work, and a remarkable memory would combine to overcome any disadvantages of inadequate preparation.²⁹

Burwash's appraisal of his accomplishments was more modest. Referring to himself, he commented, "the successor of Dr. Harris had little or no opportunity for the advancement of his department", a condition he attributed to the financial situation of the College.³⁰ The scarcity of funds had influenced Dr. Harris' decision to leave and had caused, for reasons of economy, the College to hire the inexperienced Burwash as a replacement.³¹ With less than \$25 a year available for the laboratory and apparatus, work in the sciences at Victoria was inevitably circumscribed. The austerity of these years was described vividly by Burwash:

In Chemistry and Physics nothing could be done beyond maintaining the lectures with the most essential illustrations by experiment. Students' work in the laboratory was impossible. In Biology, Mineralogy and Geology the case was a little better. Simple tables with Bunsen burners or lamps were improvised; the students furnished their own apparatus, hammers, blow-pipes, magnifiers; in Botany, Mineralogy, and Biology some elementary work was done, and in Geology excursions were made, recent formations were examined, and fossils collected.³²

Such conditions did not affect instruction through the lecture method and perhaps someone better trained than Burwash would have accomplished more. Since, however, the College had neither the funds nor the facilities to attract such a person, Burwash's diligence and the qualities noted by Sissons undoubtedly assured that, if the science department did not

²⁹Sissons, Victoria University, 130

³⁰Burwash, Victoria College, 238-239

³¹Burwash's annual salary was \$800; Sissons, Victoria University,

³²Burwash, Victoria College, 239

advance during his tenure, Victoria's emphasis upon these subjects was at least maintained until better times provided the means for their advancement.

Improvement came in the 1870s when registration at Victoria, rather than decreasing as in the previous decade, steadily increased.³³ When Burwash left the science department for the theology faculty in 1873, the College was able to fill this vacancy with Dr. Eugene Haanel, a specialist in Chemistry and Physics.³⁴ Almost immediately, Haanel began a campaign to improve the facilities for scientific instruction at Victoria. As Burwash noted:

With characteristic German thoroughness he [Haanel] seized the situation before the end of the first year, and with masterful insistence secured from the Board of Trustees a grant of several thousand dollars and commission to proceed to Europe and secure apparatus for the complete refitting of the laboratories in Physics and Chemistry.³⁵

Funds were raised for the erection of Faraday Hall, the first science building in Ontario, which was completed in 1877. "In these improved facilities for scientific study", Burwash commented, "Victoria again led the way in the Province."³⁶ Haanel remained at Victoria until 1889 when, influenced by the uncertain future under federation, he accepted an appointment at the University of Syracuse.³⁷ Under his direction, the

³³Walter T. Brown, "Victoria and a Century of Education" in On the Old Ontario Strand (Toronto 1936), 109

³⁴Haanel's annual salary was \$1500. Sissons, Victoria University, 147

³⁵Burwash, Victoria College, 240

³⁶Ibid., 240

³⁷Haanel eventually returned to Canada and ended his career as a superintendent of mines in Ottawa.

sciences again advanced at Victoria and the department expanded with the appointment of Dr. Arthur Philemon Coleman to the Chair of Natural History and Geology in 1883.

Science at Victoria College was discussed in the journal Acta Victoriana. Founded in 1878 to inform both students and alumni, the publication helped to document College attitudes towards Darwin's theory of evolution during the period when Burwash taught his theology classes. The general view reflected in Acta on the question of evolution was perhaps best summarized in its report of an 1884 meeting of the British Science Association at Montreal:

There is found amongst scientists a strong desire to arrive at the truth, whatever may be the consequences to pet theories or whatever the alarms of weak-minded sticklers for orthodoxy, and great discredit is being thrown upon these time-honored jokes about Darwin and the monkey, which tickled our childish ears at every missionary meeting.³⁸

Articles with such titles as "The Benefits of Scepticism", "Science vs. Religion", "Charles Darwin", and "Does Evolution Hurt Us?" revealed a similar recognition of the fact that the Darwinian hypothesis had become an established scientific concept.³⁹ Darwin himself was usually highly respected. One article called him "pains-taking [sic?], methodical, clear headed",⁴⁰ and another declared that

³⁸"The British Science Association at Montreal", Acta Victoriana (October 1884), 6

³⁹"The Benefits of Scepticism", Acta Victoriana (October 1887), 8-9; "Science vs. Religion", Acta Victoriana (May 1891), 7-8; R.A.D. '91 [Reginald A. Daly], "Charles Darwin", Acta Victoriana (April 1890), 10-11; "Does Evolution Hurt Us?", Acta Victoriana (October 1893), 20-23

⁴⁰"Science vs. Religion", Acta, 8

Darwin formulated a complete and highly finished argument. Darwin's method was thoroughly scientific. . . by the candour and openness of his method, [he] made the "Origin of Species" the finest inductive argument ever wrought out.⁴¹

Critics of the Darwinian hypothesis, of course, would have disputed this opinion on Darwin's inductive argument.

The author of "Does Evolution Hurt Us?" went so far as to suggest that Christians could accept an evolutionary explanation of man's mental and moral development. He asked whether it was a compromise

to admit even all that the extreme advocates of the theory urge, namely, that physically, mentally, morally, he [man] is the result of that process? It would seem that, admitting all that these extreme evolutionists would claim, we are still the sons of God, made by Him after His own image and likeness, the crowning glory of His vast creative power that has been working through all eternity.⁴²

While this was a view more extreme than usually expressed in Acta, it was clear that reconciliation between evolution and religion was considered necessary and possible. In an article, "Forward", published in 1886, the two theologies concept of the unity of truth, an idea which Burwash supported, was defended:

Slowly but surely the truth is being realized that Nature and Revelation are but two books, in each of which the Supreme Being reveals himself, and that these two Books, having a common author, can not be discordant with each other.⁴³

Three years later, the harmony between science and religion was again upheld with specific reference to evolution:

⁴¹"Charles Darwin", Acta, 11

⁴²"Does Evolution Hurt Us?", Acta, 20-21

⁴³"Forward", Acta Victoriana (April 1886), 9

A few years ago, when the doctrine of evolution was sprung upon the world, it was again said that the Bible would be superseded. But the Bible is admitted today, by our strongest thinkers, to be in harmony with all true evolution.⁴⁴

The next chapter will analyze the way in which Nathanael Burwash defined the harmony between science and religion and the meaning of true evolution.

⁴⁴G.W.K. '88, "The Reserve Powers of the Bible", Acta Victoriana (February 1889), 8-9

XVI

NATHANAEL BURWASH: THE HARMONY OF SCIENCE AND RELIGION

Nathanael Burwash discussed the effect of Darwinian evolution upon the relationship of science to religion in lectures on theology delivered at Victoria University in the 1890s and the first decade of the twentieth century.¹ His basic assumption was that evolution should be considered as a scientific, rather than religious or philosophical, concept.² This meant that, like any scientific theory, evolution could be combined with materialism, pantheism, or theism. If it were combined with either of the first two, evolution, in Burwash's opinion, would become "the universal method of the universal cause acting upon necessitated impulse from eternity."³ If, however, evolution were combined with theism, it would become "not the essential law of all being, but a minor method of certain stages of being."⁴ The task which he undertook in his lectures was to demonstrate the inadequacies of the association of evolution with materialism or pantheism. Burwash believed that evolution was a threat to traditional religion only if it upheld either materialism or pantheism. He argued that, connected to theism, the scientific hypothesis of evolution would be acceptable and in harmony with religious belief.

¹The ideas in these lectures are found often in Burwash's Manual of Christian Theology.

²Victoria University Library, Burwash Papers, Nathanael Burwash, "Inductive Theology", Part.II, Lecture Synopsis, 1890-1899, manuscript.

³Victoria University Library, Burwash Papers, Nathanael Burwash, "Inductive Theology", #2 (1893), manuscript.

⁴Ibid.

Burwash noted that evolution implied a beginning in absolute simplicity. Complicated institutions of modern society were said to have evolved from the patriarchal family and tribe, planetary worlds and systems from nebulae, life from the monad, intelligence from mere sensitivity. Evolution implied a beginning, furthermore, because Burwash believed that evolution in infinite time was impossible:

The infinite is the immutable so far as fullness or perfection of being is concerned. Either on the principles of evolution the universe has had a beginning as all facts indicate or the universe has already in its eternity of being arrived at its end of being, infinite perfection. The external cannot be further evolved unless you can increase the infinite. Evolution then is of the finite and must have a beginning.⁵

If evolution must have a beginning, the nature of this beginning must next be considered. The questions to be decided were:

. . . can an infinite and eternal matter in ultimate simplicity of form by virtue of internal necessity make such a beginning? Can it even finite and graduate the evolution of itself?⁶

Could evolution start of itself, or did it require an external cause to begin the process? Burwash held that an external cause was a necessary prerequisite of the evolutionary process:

A beginning demands a beginner, i.e. a cause for beginning and the only conceivable cause is a personal will. Measure or degree of action and evolution or gradually expanding progress again demands a power to finite, order and expand, and the only conceivable form of such power is again will.⁷

Since evolution necessarily required a beginning, proof that the only conceivable cause of such a beginning must be a personal will would demonstrate the dependency of evolution upon theism.

⁵Ibid.

⁶Ibid.

⁷Ibid.

Although an attempt might be made to conceal this need for a personal cause to begin evolution by dividing the evolutionary process into infinitesimal increments, Burwash asserted that each such increment demanded a cause as much as the vast act of creating a world did. Whether the cause were viewed as initiating one vast development or initiating successive stages of development, there could be no escape from the need for an initiating force, a cause for every effect, in the evolutionary chain. Burwash cited four special instances in the history of the world in which the need for a cause of evolution especially appeared:

1. to account for motion in eternal, static and simple matter.
2. to account for the beginning of life.
3. to account for man in his intellectual and moral nature, i.e. the beginning of history.
4. to account for the Christ.⁸

In his opinion, each of these instances demonstrated that the cause or initiator of evolution must be something other than the "material and necessitated conception" of force or motion acting upon mechanical law. This cause could not have an internal, mechanistic origin since such produced motion and force are a process rather than an initiator and ~~can~~ neither increase nor diminish: "It simply carries forward that which is. . . ."⁹

Examining the first special instance, Burwash noted that motion from rest or change of direction could not be originated by the force involved alone, but required an external agent.

⁸ Ibid.

⁹ Ibid.

This is the physical problem of evolution. Whether we consider matter as eternally static or eternally dynamic, i.e. as an eternal balance or centre of force or an external movement in uniform lines these forces themselves can not originate a change.¹⁰

Likewise, he believed that each of the three other instances demonstrated that change presupposed an external cause. Concerning the Christ, for example, he wrote, "the divine, the consciousness of God cannot originate out of mere sense."¹¹ The alternative cause which Burwash defended was "the conscious spirit, moving towards its end. This implied personality and will."¹² If, however, personal will was a necessary requirement of evolutionary change, he argued that such change must be incompatible with the notion of chance or accidental variation:

The principle of accidental variation and survival of the fittest fails for in the order of necessary law there can be no accidental variation. This is a term used to cover ignorance.¹³

Burwash was willing to accept evolution, but he interpreted the developmental process in a way which excluded from it the distinctive Darwinian features of accidental variation and survival of the fittest.

The fact that a personal will was necessary to explain and justify the beginning of the evolutionary process indicated to Burwash that evolution must be connected with theism.

Evolution. . . as the method of the universe must lead us to theism. Will alone can cause the eternal incoherent homogeneous motion to begin to be heterogeneous and hence self destructive, resulting in coherence. Will alone can create the life which resists this new process. Will alone

¹⁰ Ibid.

¹² Ibid.

¹¹ Ibid.

¹³ Ibid.

can make that life the vehicle or instrument of thought by conscious eternal principles.¹⁴

Materialism was inadequate because something other than matter must provide the causal force to effect change. Burwash believed that this required materialists to resort to a form of pantheism which either attributed to matter concealed or latent powers that made it equal to God, or took the agnostic position that the first cause was unknown and unknowable. This materialistic pantheism was not viable because it contradicted the basic law of causality which asserted that cause was known from effect. In Burwash's opinion, if the cause of an effect were concealed or unknown, the result would then be sensation, not knowledge. This led to what Burwash considered was the inescapable paradox inherent in agnosticism:

Agnosticism is. . . intellectual suicide and destroys the very reasoning by which it is propounded. It does not satisfy but only deny our intellectual nature.¹⁵

The ultimate end, therefore, of the connection of evolution with both materialism and pantheism was agnosticism, and Burwash held that agnosticism resulted logically in an abnegation of knowledge.¹⁶

Burwash believed that he had successfully proved that any conceivable form of evolution demanded a "self acting and originating power behind the universe."¹⁷ Evolution demanded a creator. It was this

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Burwash would discuss this point further in his "Notes for a System of Inductive Theology", #1 (1893) as noted later in the chapter.

¹⁷ Burwash, "Inductive Theology", #2

requirement which made it inconsistent with either materialism or pantheism. Having established the need for a creator, Burwash then restated his argument in terms of potency. This restatement is significant because it revealed the similarity between the ideas of Burwash and John Watson. Burwash stated that the potency of the "possibility of all that is" could exist in only two forms.¹⁸ The first form was represented by the concept of material force unconsciously obeying fixed law. This form of potency negated the idea of evolution since it had been already shown that evolution required an external cause. Burwash concluded, therefore, that the only form of potency possible was found in the alternative concept of the will as conscious of self action, of power to begin in itself.

So far, Burwash had only repeated the steps of his already familiar argument of the need for an external cause. He then, however, proposed an additional association between the will of man and the will of God. He argued that the spiritual power or will of which men were conscious within themselves represented the true image of the eternal potency or causative power in the universe rather than the mechanical force which was observed in matter.

The Theistic philosophy posits an eternal First Cause of which our own conscious spiritual being is the counterpart. We may therefore know God from that which we find within ourselves.¹⁹

Here, Burwash's views were virtually identical to the Speculative Idealism of John Watson. Both men argued that knowledge of God and knowledge of man were necessarily inter-related: man could learn of God's nature by

¹⁸ Ibid.

¹⁹ Ibid.

understanding his own.

Burwash next considered the nature of the conscious power or will which caused evolution. He described four positive and possible eternal elements of power found within men from which the nature of the eternal power of the universe could be discovered. The first was the basic element of cause, efficiency or power: the ability to effect change. Consciousness of this causative power formed the second element, intelligence, and the ability to direct this power was the third element which Burwash called the "moral-motive." The fourth element was the will-power to act or not act in accordance with the elements of intelligence and moral-motive. This fourth element completed Burwash's interpretation of personality which he defined as "consciously intelligent will acting."²⁰ Despite this, however, personality did not imply any essential limitation of being. Personality demonstrated rather that, within the same essence, the objective and subjective might exist. Burwash held that the concept of personality implied a distinction between the person and his act, the me and the non-me, ourselves and our own thoughts. The direct counterpart of personality in man was found in the doctrine of the Trinity:

Such a [Trinitarian] God in the image of his Eternal truth or Word or Son can by the power of his own eternal Spirit begin in time to create the finite just as from eternity He is and has brought forth the Infinite.²¹

Burwash believed that God, his Word and his Spirit co-existed from eternity in one essence which provided the potency necessary for progress in development or evolution through his causal power in creation.

²⁰ Ibid.

²¹ Ibid.

In his lecture outlines, Burwash set down the following definition of evolution:

That law or order under which each successive phase or step of the movement of the universe as a whole and in each of its parts takes up into itself all that has gone before and adding there to some new increment of perfection passes it onward to the step which next follows.²²

He believed that God alone was not subject to this law of incremental development, although God worked through it in the world. In these lectures, he repeated his view that evolution might be either religious or irreligious, but was not necessarily irreligious. He wrote, however, that "Religion alone gives to evolution its most perfect power."²³ For Burwash, evolution needed religion: the scientific process embodied the way in which a necessary, personal God made his will known to the world. Evolution was "a potent instrument for the discovery of truth."²⁴ The possibility of truth, he held, rested in the existence of God.

Burwash's attitude towards evolution was reflected in his statement: "Make the best science of our day the handmaid of religion."²⁵ Religion must not be suspicious of new developments in science because, by its very nature, science could not stand still. Knowledge must be allowed to grow:

Faith must accept the science of its day, both to discern and to convey religious truth. The old prophets used the

²²Victoria University Library, Burwash Papers, Nathanael Burwash, "Religious Faith and Science", Systematic Theology, Part III, Division II: "The World as Related to God", 26 February 1906, manuscript.

²³Ibid.

²⁴Ibid.

²⁵Ibid.

science and language of old time but did not impose it for all time.²⁶

Burwash supported the Idealistic belief that all truth is one and harmonious. There was for him no conflict between science and religion because each had its own field of truth and its own means of reaching that truth. Religion used intuition, and science, observation, but both needed facts: "Observation works on facts and intuition works through facts."²⁷ He noted, however, that religion preceded science. While the facts of science were not essential to faith, "devout science lives in a temple of worship."²⁸ Modern science, moreover, did not negate the simple science of the Bible so much as restate it in terms more fitting the present sophistication of knowledge. Biblical science expressed the "thought and speech of the world's youth" and this made it suitable for the youth of every age. "The first of Genesis", he declared, "fits a child better than Darwin's Origin of Species."²⁹

Modern science was the subject of a lecture, "From the Myth to the Microbe: A Comparative Study of Ancient and Modern Science", delivered by Burwash in 1898. While acknowledging the accomplishments of contemporary scientists, he counseled humility:

. . . there comes no note of encouragement for a vain glorious boasting of the superior wisdom of our age. The very first men who looked out upon nature in all her pristine freshness were gifted with the same instinctive conviction of hidden power which underlies all our great modern Scientific theories. They thought of that power with more

²⁶ Ibid.

²⁸ Ibid.

²⁷ Ibid.

²⁹ Ibid.

profound reverence than our too confident age affords.³⁰
 Despite the advances made through the experimental method and the development of instruments to assist in observation, the modern scientist must return ultimately to the position of the ancients who used myths to interpret nature:

We gaze into the unseen and unknown as they did and fall back upon the imagination, the divining power of the poetic faculty, to give us a picture of that which we have failed to observe.³¹

Burwash referred to the hypotheses of the creation of the universe and evolution as modern examples of this timeless attempt to explain the unobservable:

We, like the men of olden time, have fashioned to ourselves a conception of the unseen, and almost of the unknown, in forms of what we see and know. And it may be that to the men of the year 2000 our hypothesis of today will seem as crude as to us appear the myths of Hesiod and Homer.³²

In this lecture Burwash restated his belief in the relativity of scientific explanation. Development in science reflected an increasing knowledge of the world and expressed such knowledge in terms suitable for the age in which the development occurred. Science, however, depended upon the prior truth of religion, since there was a fundamental religious motive to scientific investigation: "In seeking to know God, we learn slowly to know the world."³³ Moreover, the ultimate purpose of all science, ancient and modern, was to "reach into the same spiritual world of half hidden

³⁰Victoria University Library, Burwash Papers, Nathanael Burwash, "From the Myth to the Microbe: A Comparative Study of Ancient and Modern Science", 1898, manuscript.

³¹Ibid.

³²Ibid.

³³Ibid.

truth, a world in which we should stand uncovered as abashed as in the presence of God."³⁴

In 1898 as well, Burwash, lecturing to his theological class on the first two chapters of Genesis, revealed once more his attitude towards modern science. He called the two chapters creation "documents", noting that

Inspired men freely accepted the scientific and historic knowledge of their time, true as it was from their point of view, presenting facts according to the existent form of human knowledge.³⁵

Whatever the advance in modern science, the "simplicity and truth" of the Genesis account endured. To illustrate this point, Burwash cited Herbert Spencer's evolutionary theory of creation which, although expressed in terms of "integration of matter and concomitant dissipation of motion" producing a "definite, coherent heterogeneity" from an "indefinite, incoherent homeogeneity", still remained basically compatible with Genesis. Theories such as Spencer's merely stated old truths in modern language:

. . . the fifth or the fifteenth century B.C. could not anticipate the forms of the nineteenth century. But all unite and find harmony in the facts.³⁶

The inspiration and science that produced the Genesis account embodied important principles which subsequent discoveries had not invalidated:

- (1) They looked at the facts of nature.
- (2) They recognized order and progress in creation.

³⁴ Ibid.

³⁵ Victoria University Library, Burwash Papers, Nathanael Burwash, "The Creation Documents", Inductive Theology, Part II, Lecture Synopsis, 1898-1899, manuscript.

³⁶ Ibid.

- (3) They recognized second causes, especially the great natural elements.
- (4) Their religious faith did not hesitate to accept Science as revealing the works of God.³⁷

Burwash believed that such principles demonstrated the close enduring union between science and religion.

When Burwash dealt with the Genesis ii account of man's creation, he emphasized the need for interpretation. He stated that the Genesis explanation of man's origin was "not a bald literal chronological record", but "a symbolic representation of great and important facts in a form for perpetual remembrance."³⁸ The account contained facts which were not presented in a factual manner. Interpretation was required, therefore, to understand its symbolism. Unfortunately, the lecture did not give an answer to the question of how this account should be interpreted. To discover Burwash's solution, an expanded version of his lecture which formed part of the chapter, "Creation", in his Manual of Christian Theology must be consulted. Here, he suggested that the key to the interpretation was found in the prophetic style which characterized the account.

It was the constant habit of the prophets in all the ages to use both direct and tropical forms in the presentation of religious truth. . . . It was also characteristic of the prophetic teaching that they employed as the basis of their moral teaching facts of passing history, and traditions of ancient times with which the people were familiar.³⁹

This interpretation led him to the conclusion that the primary purpose of

³⁷ Ibid.

³⁸ Ibid.

³⁹ Nathanael Burwash, Manual of Christian Theology (London 1900), I, 422

the account was to explain a religious truth, "a fundamental view of man in his moral relations and of the origin of sin and evil", rather than a doctrine of man's creation.⁴⁰

Once this moral, or religious, interpretation of Genesis ii was accepted, any conflict between a scientific explanation of the mechanics through which man's creation was accomplished and the Genesis account would seem to be eliminated. This interpretation also involved no contradiction of the Mosaic scientific ideas contained in Genesis i. Burwash, therefore, recognized a basic difference between the two Genesis creation documents: while Genesis i revealed certain universal scientific principles, Genesis ii represented a fundamentally non-scientific statement of religious truth, expressed symbolically and requiring interpretation. The methodology which led Burwash to this distinction is significant. Evidently when apparent conflicts between natural science and scripture existed, biblical criticism might be employed to achieve a reconciliation. Furthermore, when such conflicts did exist, this resolution would reveal that science properly understood would affirm religious belief also properly understood. In one respect, religion was thus preserved, timeless and secure against contradiction, but in another sense understood anew in a new age.

Burwash believed that "Religion had nothing to fear from either intellectual or moral light. She has everything to fear from either intellectual or moral darkness."⁴¹ Religion, furthermore, had nothing to

⁴⁰Ibid.

⁴¹Victoria University Library, Burwash Papers, Nathanael Burwash, "The Correlation of Intelligence, Morality and Religion", n.d., manuscript.

fear from honest doubt. "Honest doubt", Burwash wrote, "and suspense of faith or judgment is the just tribute which we pay to the reason with which God endowed us."⁴² But he held that honest doubt is not identical with a refusal to accept anything which cannot be proved through the senses. He called this attitude "narrow, canting, dogmatic scepticism."⁴³

Honest doubt is not prejudgment which is prejudice but it is that suspense of judgment which seeks reasonable grounds for its acceptance of truth. It never presumes to limit the truth to the narrowness either of its acquired knowledge or possible capacities. Honest doubt is full of candour, but scorns prejudice.⁴⁴

Honest doubt could not be equated with agnosticism since he argued that the latter led logically to the denial of all knowledge and to the denial of the power to deny.⁴⁵ The doubt which Burwash considered honest did not question the existence of God. It was rather the doubt of Old Testament figures such as Job, "souls deeply pious, God fearing, truth seeking, but often amazed and crushed by that mystery of mysteries, evil and sin."⁴⁶

To prevent or overcome doubt in students, Burwash believed that it was necessary for religion to be taught in a manner which recognized the intellectual climate of the age:

To present religion to them [students] in forms repulsive to their taste and their reason and intelligence is to create, it may be, invincible and fatal prejudices

⁴²Victoria University Library, Burwash Papers, Nathanael Burwash, "The Poetical Books of the Old Testament - Introductory Lecture", 1880, manuscript.

⁴³Ibid.

⁴⁴Ibid.

⁴⁵Victoria University Library, Burwash Papers, Nathanael Burwash, "Notes for a System of Inductive Theology", #1 (Toronto 1893), manuscript.

⁴⁶Burwash, "Poetical Books of the Old Testament."

against it.⁴⁷

Religion must be prepared to abandon unnecessary elements which might create barriers to faith in the modern age:

We must. . . turn away from all these artificial and complex forms of religious faith, from creeds and traditions and theologians, not because we decry them or condemn them. They may have their use, but they are not the faith which brings the inward witness.⁴⁸

Burwash held that the church must be prepared to accept what was fact, rather than what her imagination considered ought to be fact:

It would be a misfortune if the Church undertook to teach universal science with that science bound hand and foot in the chains of dogmatic preconceptions. An absolutely infallible church can logically make such a claim. Protestant Christianity cannot. She must permit each great truth to speak for itself, and to unfold itself freely to the inquiring mind of man. She must permit the inductive method everywhere to prevail.⁴⁹

With this affirmation of the inquiring mind, Burwash maintained that man's intelligence demanded that unity of thought in a final cause which was found in the true finality of God in his world.

We believe theism to be the truth and, if truth, it is one of the central elements of the higher education.⁵⁰

This unity in theism enabled the church to perform a valuable and necessary function in education. Science must be allowed freedom of enquiry

⁴⁷Victoria University Library, Burwash Papers, Nathanael Burwash, "Our Duties to Young Men in Our Schools and Colleges", n.d. [circa 1886], manuscript.

⁴⁸Victoria University Library, Burwash Papers, Nathanael Burwash, "Intuitive Certainty in Religion - An Address to the Students of Michigan University", January 1900, manuscript.

⁴⁹Victoria University Library, Burwash Papers, Nathanael Burwash, "The Broadest Facilities for Higher Education, the duty of the Church", n.d. [circa 1905-1906], typescript.

⁵⁰Ibid.

but, since all truth resided in the perfect final unity and harmony of the theistic conception of God as first cause, there could be no conflict between scientific and religious truths. If there were conflicts, one of the truths must have been misapprehended. There were, however, tests which Burwash believed could be used to judge the validity of supposed truths:

. . . Is it not possible that our ultimate philosophy or science of all matter may. . . be helped by testing her conclusions by the light of the philosophy which deals with the spiritual, or that the science of our secular and political life may gain some higher light from the religious and the moral?⁵¹

Physical processes tested chemical results and chemical processes tested physical theories. Might not religion, Burwash asked, provide an ultimate form of test?

Within a Christian context, Burwash argued for the freedom of scientific enquiry. The church would not need to limit this form of enquiry because by definition true science could not conflict with the church's basic beliefs. Burwash assumed always that true science would accept the philosophical implications of a theistic religion and work within the boundaries established by this religion. In a lecture delivered in Belleville on 25 June 1862 entitled "Schools and Schoolboys, a Lecture on the Education requisite for the Present Age", he had considered the moral influence of teachers:

To enforce creeds and to teach doctrines is no part of his business. But does he walk daily in the fear and love of God. . . Or is he one of those men who in their heart say there is no God. Beware of such an one. Whatever may be his creed let your teacher be a God fearing, a God loving

⁵¹ Ibid.

man. Look not upon this, my friends, as a matter of little importance. It may make the difference of heaven or hell to immortal spirits.⁵²

Twenty-one years later, he wrote:

In physical science, while directly beyond the field of the Church's work, yet by far the majority of the grandest and most successful works belong to institutions in close relations to the Christian Church and in harmony with the Christian faith.⁵³

One of his favourite scriptural passages was Jesus' statement: "If ye abide in my word then ye truly are my disciples; and ye shall know the truth and the truth shall make ye free."⁵⁴ Both science and religion were legitimately seeking after truth, but Burwash stressed that, at its most profound level, this truth resided in the Christian religion. For Burwash, it was this fundamental Christian basis to truth which gave the church the right to become involved in all aspects of education.

We believe that both the university and the church may greatly profit by the part which the church may take in university life. We take this position because we believe in the perfect unity and harmony of all truth.⁵⁵

Burwash was able to accept evolution by demonstrating that its only logical context was a Christian, theistic conception of the universe. This conception, however, necessarily modified the Darwinian explanation of evolution. Natural selection and survival of the fittest could fit

⁵²Victoria University Library, Burwash Papers, Nathanael Burwash, "School and Schoolboys, a Lecture on the Education requisite for the Present Age", (Belleville, 25 June 1862), manuscript.

⁵³Victoria University Library, Burwash Papers, Nathanael Burwash, "The Relation of the Christian Church to the World's Education", 1883, manuscript.

⁵⁴Burwash, "Broadest Facilities for Higher Education."

⁵⁵Ibid.

into Burwash's scheme only if both were viewed as the means through which God worked His will in the universe. There was no room left in this process for the element of chance. God alone has absolute truth but Burwash held that God could reveal truth through science as well as through revelation. Since, however, religion by its nature took precedence over science, the best and most fruitful work in science would be done in Christian institutions and by Christian scientists.

XVII

CONCLUSION

The responses of John William Dawson, Daniel Wilson, John Watson, and Nathanael Burwash to Darwin's theory of evolution span a period of over half a century. Dawson's first review of the Origin of Species appeared seven years before Confederation and John Watson's last major writings on the subject were published two years before the outbreak of the First World War. During this period, the Canadian nation was formed, and grew from four provinces to nine. The material and intellectual development of the nation was equally remarkable. As Carl Berger has noted, by the end of the century, Canadian nationalists were expressing their delight in the improvement of the country and were looking forward with optimism to the inevitable emergence of a great country in Canada.¹ If material improvement provided tangible evidence of progress, Canadian intellectual traditions sustained hope for the future by contributing to a sense of identity amidst the rapidly changing and challenging ideas of the late Victorian world. The four responses to the Darwinian hypothesis which have been outlined in the preceding chapters represent the consolidation of ideas fundamental to an understanding of the intellectual history of Canada in this period.

The responses demonstrated the continuing importance of the two theologies' tradition in Canada. The Paleyite view that both nature and scripture revealed God's will was central to the writings of John William

¹Carl Berger, The Sense of Power (Toronto, 1970), 109-115.

Dawson. Dawson believed that

there is nothing unphilosophical or improbable in the supposition that the same truths may be struck out on the one hand by the action of the human mind on nature, and on the other by the action of the Divine mind on that of man.²

The Darwinian hypothesis posed two major problems for Dawson's adherence to the two theologies. The concept of design seemed threatened by the mechanistic alternative of natural selection which denied that immutable species were created by God and through the stress on random destruction contradicted the concept of a beneficent God.³ Charles O'Brien has noted, moreover, that "it was unthinkable to Dawson that the same God who had created man in His own image and likeness could have allowed him to live as a brute for millions of years."⁴ Believing in the immutability of species, Dawson could not accept any theory of evolution. The Darwinian hypothesis was especially a threat since it posited a means of development, natural selection, which could only be associated with a God far removed from the one of Dawson's religious faith. As "a student of nature and the Bible" Dawson found no evidence for the role of a divine creator in Darwin's theory of evolution.

The responses of Watson and Burwash, while clearly reminiscent of the two theologies, went beyond this position and came to terms with the theory of evolution to an extent which Dawson could not achieve or accept. By the time that they were writing on Darwinism, men such as Edward and

324 ²John William Dawson, The Origin of the World (Montreal, 1877),

³Charles F. O'Brien, Sir William Dawson (Philadelphia, 1971), 185

⁴Ibid., 185

John Caird had used Idealism, based largely upon the philosophy of Hegel, to argue against the concept of Paley's Natural Theology. In his Gifford Lectures of 1890-1891, and 1896 later published as The Fundamental Ideas of Christianity, John Caird stated:

Christianity knows no such being as a "First Cause" or "an Almighty Creator and Governor of the world" - a being framed at best after the image of man, an anthropomorphic potentate seated on a celestial throne, publishing laws and dispensing rewards and punishments after the manner of an earthly sovereign or magistrate. By its cardinal doctrine of the unity of God and Man, Christianity has dissolved the dualism which such notions involved, bridged the gulf between the finite and infinite which, apart from Christianity was never spanned, and by its conception of the self-realization of God in humanity, solved the problem which baffled the greatest minds of ancient times.⁵

According to Caird, "there is. . . no such thing as a natural religion or religion of reason distinct from revealed religion. . . . Christianity is natural religion elevated and transmuted into revealed."⁶ The revelation was progressive and rational: Caird upheld "the idea of God as Infinite, Self-revealing Spirit or Mind."⁷ Through his faculty of reason and the knowledge which he obtained, including that from natural science, man gained revelations about this Infinite Mind which transformed the two theologies into one:

The externality which nature seems to possess, dissolves away before the thought that grasps it. As part of an intelligible world, every object which intelligence contemplates is its own object; and as it enters into knowledge and yields up its essence to the mind that lays hold of it, it becomes for that mind a revelation of its own latent wealth, or rather of its capacity for participating in the

⁵ John Caird, The Fundamental Ideas of Christianity (Glasgow, 1904), I, 22.

⁶ Ibid., 23-24

⁷ Ibid., 143

wealth of the Mind for and in which all things have their being.⁸

It was this concept of unity within the divine, rational mind which allowed John Watson to reconcile evolution with his philosophical and religious beliefs and which was evident in the response of Nathanael Burwash to the Darwinian hypothesis.

Watson's Speculative Idealism proposed that man is capable of knowing reality and that this reality is rational. From his earliest writings on evolution, he defended the primacy of man's reason rather than the Darwinian concept of instinct as an explanation of morality and argued for the unity of truth; "every advance in science is the preparation for a fuller and clearer conception of God."⁹ The essential unity of the universe as an expression of the Divine Reason is reality:

Man, in all his feeling, thought and action, experiences the divine, and the whole of his history is a record of his ever clearer comprehension of it.¹⁰

Watson cautioned, however, that scientific advances must be interpreted from the standpoint of spiritual unity in order to construct an adequate theory of reality. Nathanael Burwash used the argument from design in his examination of evolution but his response extended beyond Natural Theology to encompass the spiritual unity posited by the Cairds and Watson. Burwash wrote that "we may. . . know God from that which we find within ourselves" and "in seeking to know God, we learn slowly to know the

⁸Ibid., 187

⁹John Watson, Christianity and Idealism (Glasgow, 1897), 287.

¹⁰John Watson, The Interpretation of Religious Experience (Glasgow, 1912), II, 326.

world."¹¹ Where Burwash differed from Watson was in his emphasis upon intuition rather than reason: "in religion the intuitive elements of faith, especially the religious intuition, is first, and reason is but a guide to discriminate the true from the false in the conceptions which they furnish."¹² He held, however, that

While in all cases it [religious truth] must ultimately be received as an inward conviction, and in that respect resembles intuitive and necessary truth, yet these convictions in all religions arise from facts of nature, history, or individual life which are regarded as revealing God, or from the teaching of men regarded as specially qualified to interpret these facts.¹³

Burwash believed that "faith must accept the science of its day, both to discern and convey religious truth."¹⁴

All four responses embodied the concept of teleology as opposed to unplanned, mechanistic development. Dawson stated that there would be no theological objection to evolution considered as "the development of the plans of the Creator in nature."¹⁵ He held, however, that Darwin and other evolutionists had replaced the divine plan with chance and the operation of mechanistic causes. Daniel Wilson argued that it was impossible

¹¹ Nathanael Burwash, "Inductive Theology", #2 (1893), manuscript, Victoria University Library. "From the Myth to the Microbe: A Comparative Study of Ancient and Modern Science", (1898). manuscript, Victoria University Library.

¹² Nathanael Burwash, Manual of Christian Theology (London, 1900), I, 31

¹³ Ibid., 7

¹⁴ Nathanael Burwash, "Religious Faith and Science", Systematic Theology, Part III, Division II: "The World as Related to God", (26 February 1906), manuscript, Victoria University Library.

¹⁵ Dawson, Origin of the World, 363.

to prove, or conceive of, an actual transitional creature linking man's morality and intelligence to the lower animals. Implicit in Wilson's argument was the view that such development through a missing link could not reflect the design of a creative will for the world. Watson upheld a teleological view of life but he believed, unlike Dawson or Wilson, that evolution could reveal an "immanent teleology" in which every element in the world strove towards a definite end.¹⁶ He suggested that acceptance of teleology was a prerequisite for any properly understood theory of evolution. This position was supported by Burwash who held that development must be purposeful and divinely directed. Burwash believed that the only cause for development or change was "the conscious spirit, moving towards its end."¹⁷ He held that a "self acting and originating power behind the universe" was required to effect evolution.

The concept of a spiritual unity and teleological development of the universe is complemented by the philosophical Idealism evident in all four responses. Although probably only Watson of the four would have formally considered himself a philosophical Idealist, a concern for the effect of the Darwinian hypothesis upon metaphysics and the use of Idealistic arguments are found in all the responses. Dawson believed that evolution threatened to produce "a system of debased metaphysics" and that the mutability of species would make philosophical classification impossible by reducing all things to a mere series.¹⁸ He used an

¹⁶J. Watson, Comte, Mill and Spencer; an Outline of Philosophy (Glasgow, 1895), 123.

¹⁷Burwash, "Inductive Theology", #2 (1893).

¹⁸John William Dawson, The Story of the Earth and Man (London, 1872), 318-319.

Idealistic interpretation of man's place in a hierarchy of existence in the universe, similar to the chain of being concept. Man existed on a distinct plane with different grades above and below him. Wilson upheld the primacy of mind in considering "first mind, then matter" to be the order of the universe and he believed that man's reasoning faculty placed him on a distinct plane of existence.¹⁹ Burwash would undoubtedly have rejected the label idealism as inappropriate when applied to theology. He believed that:

Theology, philosophy, and science, are. . . intimately related. They all point in the same direction, but each along its own pathway. They should never be confused. They should be mutually helpful.²⁰

Yet, in his belief in the unity of truth, "the natural and supernatural blending, the human and the Divine working together. . . a true development, leading up to the fullness of truth", he clearly shared the same general position found in the writings of John Watson. Writing to his wife in 1908, Burwash noted: "I am just finishing Professor Watson of Queen's on the philosophy of religion. It will be of use for this winter's lectures."²¹

Watson's philosophical position was explained fully in his writings and its sources may be discerned readily. His Speculative Idealism had its antecedents in the Hegelian critique of Kant and the subsequent

¹⁹ Daniel Wilson, Caliban: The Missing Link (London, 1873), 4, 190-191

²⁰ Burwash, Manual of Christian Theology, 4

²¹ Nathanael Burwash to Margaret Burwash, 15 September 1908. Burwash Papers, Victoria University Library.

neo-Hegelian philosophy associated with Edward Caird, Benjamin Jowett, and T. H. Green. For Dawson, Wilson, and Burwash no such precision is possible in defining the nature of the Idealism in their writings. Regardless of philosophical specifics or schools, however, if Idealism is defined as the view that the nature of reality is mental- or spiritual- or mind-dependent, then clearly the responses of Dawson, Wilson, and Burwash display an acceptance and use of Idealism. Concern for the ultimate nature of reality was a product of their religious beliefs which was reflected in their responses to Darwin's theory of evolution. From this metaphysical enquiry came the Idealistic concepts that ultimate reality could not be perceived apart from the existence of a Divine Mind and that there was a necessary unity of natural and spiritual in one truth.

Despite the bonds of teleology and Idealism, each of the four responses was in an important sense formulated in isolation. In his study of Dawson, Charles F. O'Brien referred to Dawson's intellectual isolation.²² Dawson's intransigent opposition to evolution and his involvement in other controversies, notably his interminable defence of Eozoon, occurred with little assistance from those who shared a similar position. The leading North American opponent of Darwinism was undoubtedly Louis Agassiz but Dawson broke with Agassiz in 1860 over conflicting definitions of species. Agassiz was a polygenist who upheld the multiple creation of the same species, including man, in different locations while Dawson in Archaea defended the monogenist position that each species was created only once. Dawson and Agassiz had differed earlier on Agassiz' glacial

²² O'Brien, Dawson, 182

hypothesis which posited a recent ice age. Dawson's response to evolution could receive little support from Sir Charles Lyell, although they enjoyed a longstanding friendship. In 1860 Dawson wrote Lyell: "Allow me to give a word of caution against allowing any one to identify Darwin's hypothesis with your doctrine of modern causes. As a disciple of yours, I should be very sorry for this."²³ Lyell's religious convictions made it difficult for him to accept entirely the Darwinian hypothesis but the publication in 1863 of his The Geological Evidences of the Antiquity of Man suggested a degree of sympathy for Darwin's position which Dawson could not accept. Moreover, Dawson was isolated by his scientific training. As O'Brien noted, Dawson was one of the last of the older generation of "naturalists", educated in the earlier part of the century, whose ideas were being challenged by younger specialists in the sciences graduating from new schools. Finally, there was the physical isolation of Canada which provided little opportunity for intellectual contact with other scientists working in similar areas and the heavy administrative and teaching demands of his position at McGill.

Intellectual isolation is evident, too, in the Canadian career of Daniel Wilson. To a significant degree, however, this isolation was self-imposed. As has been noted earlier, Wilson's major archaeological work was accomplished before he immigrated to Canada and he tended to pursue more eclectic interests at the University of Toronto. The archaeological evidence which he obtained on Canadian field trips was used to expand and support interpretations established in his Scottish writings.

²³Daniel Wilson to Charles Lyell, 11 June 1860. Lyell Papers, University of Edinburgh.

The scientific position, therefore, which Wilson maintained throughout his career had been formulated before the publication of the Darwinian hypothesis. Like Dawson, Wilson felt the physical isolation of Canada and he too had pressing demands upon his time as an administrator at the University of Toronto. It is clear, however, that despite his complaints to friends in Scotland, he relished the involvement in public and academic issues which his university responsibilities brought. Finally, even more than Dawson, Wilson belonged to the old school of naturalists. His formal education in the sciences was not especially extensive and there is little evidence that he maintained much contact with other archaeologists or anthropologists. Indeed, the term "man of letters" may best express Wilson's interests. It is understandable that, when he wished to present objections to The Descent of Man, he turned to literature and Shakespeare's Caliban rather than rely upon his archaeological knowledge of man's ancestry in prehistory.

The fact that John Watson left Scotland for Canada in 1872 tended to isolate him from much of the subsequent philosophical work done in England. During a time when the ideas of T. H. Green, who died in 1882, were being examined critically by many of his original followers such as F. H. Bradley and Bernard Bosanquet, and by proponents of alternative systems, notably G. E. Moore, Watson remained unchanged in his adherence to the basic principles of the neo-Hegelian philosophy which flourished at Oxford and Glasgow in the 1860s and 1870s. As a young professor at Queen's with heavy lecture commitments and often in ill-health, he undoubtedly lacked the time required to assimilate fully the changes in Idealism effected in England after Green's death. It is significant that

Edward Caird's own philosophical ideas reveal an arrested growth since Caird was the major influence upon Watson's philosophy. Although Caird had been at Oxford in the critical years of the 1860s, he left before the end of the decade to teach at the University of Glasgow. While at Glasgow, Caird's approach to philosophy was historical rather than speculative. Thus, when he returned to be Master of Balliol in the late 1890s, he experienced a sense of isolation from the direction of contemporary philosophy.

It may be that Watson's philosophy remained relatively static because its initial form best suited the Canadian intellectual tradition which was heavily influenced by religious thought. As Melvin Richter noted in The Politics of Conscience, Idealism in mid-Victorian England tried to meet the need felt by Evangelicals to resolve the crisis of faith brought about by science and scholarship. In Richter's opinion, T. H. Green hoped "to turn the attention of those disciplined in Evangelical families away from the means of personal salvation in the next world to improving the condition of this one."²⁴ The intention was to focus religious concern upon social betterment. As long as Idealism placed this emphasis upon religion, it remained especially relevant to the Canadian experience and might help to explain, for example, the temperance movements in Canada, or point in the direction of the later social gospel movement. The problem was how to resolve the tension between the individual and the state in realizing social improvement. The emphasis placed upon the state by some later Idealists created a situation which

²⁴ Melvin Richter, The Politics of Conscience (London, 1964), 19

was probably incompatible with the social and constitutional position of Canada in the late nineteenth century.

Isolation becomes somewhat meaningless when Nathanael Burwash's response to evolution is considered. In one sense, his writings reveal a sympathetic awareness of contemporary theological thought. Burwash's Manual of Christian Theology and his lectures indicate that his theology was able to accommodate higher criticism and recognized the value of such interpretations as the Cairds' concept of progressive revelation. His theology, however, was based upon intuition rather than dogma or authority:

. . . authority alone cannot command living faith. When this [living faith] has taken place, authority or external influence of any kind is no longer needed. We are no longer under tutors and governors, but have found the Christ, through whom we know the truth which makes us free. We submit to authority, acquiesce in or consent to its dictates, or truth to its direction. But all this implies our spiritual weakness, ignorance, blindness.²⁵

Burwash's Methodist faith provided him with a certainty about religious truth that allowed him to comprehend the theological and scientific interpretations of his day without fear. Unlike Dawson, Wilson, and to some extent Watson, Burwash did not attempt to refute the Darwinian hypothesis in his response to Darwin's theory of evolution. There is no sense of attack in Burwash's response but rather a constructive use of the reality of the general acceptance of evolution and an awareness of the influence which this acceptance would have on all facets of thought.

Carl Berger in The Sense of Power noted that "throughout the late nineteenth century the task of reconciling scripture and science

²⁵Burwash, Manual of Christian Theology, 233.

proceeded apace, and an optimistic accord was ultimately achieved."²⁶ This accord was based upon the view that evolution is the method of God working through nature, suggesting that history is progressing to fulfil the Divine plan. In Berger's opinion, this concept of evolution when applied in the form of social Darwinism to political communities encouraged the emergence of the conception of mission in the work of such men as Sir George Parkin and Principal Grant for the unity of the Empire: "They felt themselves in tune with a cosmic law of life."²⁷ Despite this reconciliation between science and religion and the optimism which it produced in Canadian imperialists, controversy concerning Darwin's scientific ideas continued into twentieth century Canada. This dispute was fed by the reaction to higher criticism, religious fundamentalism such as characterized William Aberhart's Calgary Prophetic Bible Institute, and the unanswered scientific questions raised by the Darwinian hypothesis. The accord, however, remains significant since it provided a means of securing religious faith for all those who could not deny the Darwinian hypothesis. The responses of Watson and Burwash contributed to the accord by incorporating the concept of design into the evolutionary process, making possible the replacement of pessimism and uncertainty by optimism and confidence.

The effect of Dawson's and Wilson's responses to Darwin's theory of evolution is not as evident since, as Charles O'Brien has perceptively commented, "Political and military history are often said to be written

²⁶ Berger, Sense of Power, 224

²⁷ Ibid., 224

by the victors: much the same is true of the history of science."²⁸ Although the scientific work of Dawson and Wilson has been superceded, this should not detract from its importance to the history of science in Canada. The significance, however, of their work is more evident in the broader context of Canadian intellectual history. Dawson's support of the two theologies' tradition was reflected in the attitude of Canadians towards Darwin's theory of evolution perhaps more than the advances of Watson and Burwash. Wilson's response to evolution likewise asserted a view of man and his relationship to the universe which might be used to sustain faith without requiring a total rejection of Darwinism since it conceded physical evolution. Moreover, Wilson's views on race, pessimistic though they were when evolution was considered, also suggested a direction that would be taken by later Social Darwinists. In their responses, Dawson and Wilson sustained or suggested interpretations - the two theologies and social Darwinism - which would later be transformed. Dawson opposed evolution on the grounds that it negated the evidence of God in nature; later students of Darwinism would reach the understanding which Berger described by reconciling science and religion in a manner which indicated the survival of the two theologies' tradition. Wilson opposed the application of Darwinian evolution to man's mental and moral development because it seemed to threaten his concept of Anglo-Saxon superiority; later Social Darwinists would use evolution to demonstrate this superiority.

The responses of Dawson and Wilson to the Darwinian revolution support Thomas S. Kuhn's assertion that life-long resistance to a new

²⁸O'Brien, Dawson, 1

paradigm by those who have committed themselves to an established tradition of normal science is to be expected. For naturalists of Dawson's and Wilson's generation, religious belief required a belief in teleology that, as David Hull has noted, "had been part of the conceptual framework of Western science from ancient Greece until the time of Darwin."²⁹ In the opinions of Dawson and Wilson, Darwin's employment of natural selection negated teleology by removing the concept of design from development. In the mind of Dawson, Darwin's hypothesis also challenged the inductive method which had become part of the normal science of his day. Dawson's argument against Darwin's theory of evolution drew heavily upon his belief that Darwin had not presented sufficient proof and, furthermore, that Darwinian evolution could not be proved by induction. Calling for a return to "sound induction" in science, Dawson asserted that "the old idea of created design. . . undoubtedly rests on an inductive basis."³⁰

Dawson was born in 1820 and Wilson four years earlier. Approximately two decades separated them in age from Burwash, born in 1839, and Watson in 1847. This was a significant chronological gap between the two pairs of men in light of the date of the Darwinian hypothesis. Dawson and Wilson had received their education in science and were established in their careers before the publication of the Origin of Species. When Burwash and especially Watson began to teach, the Darwinian revolution had been sufficiently accepted to place critics of Darwin's hypothesis

²⁹David L. Hull, Darwin and His Critics (Cambridge, Mass., 1973), 55

³⁰John William Dawson, Nature and the Bible (New York, 1875), 144-145

clearly on the defensive. Natural selection continued to raise doubts in the minds of many scientists but the concept of evolutionary development was firmly established. Moreover, this concept of development was inextricably associated by the general public with the writings of Charles Darwin, despite whatever reservation might exist concerning natural selection. As Alvar Ellegard had noted, "writers in the non-scientific press seldom made any clear distinction between evolution pure and simple and the peculiarly Darwinian doctrine of Natural Selection."³¹ Since neither Burwash nor Watson was a naturalist in the sense of Dawson or Wilson, each could respond to the challenge of Darwin's hypothesis to teleology without being directly influenced by traditional science. In their responses, however, both Watson and Burwash recognized the distinction between evolution and natural selection.

John William Dawson rejected evolution as an explanation of the development of species. Daniel Wilson stated his acceptance of the concept of evolution and extended this acceptance to the application of the Darwinian hypothesis to physical development. He could not accept, however, that evolution and the Darwinian hypothesis explained man's mental and moral development. Both John Watson and Nathanael Burwash believed that a properly understood concept of evolution was not a threat to a theistic interpretation of man's mental and moral development and could also be employed to understand better the operation of God's plan for man in the natural world. Explicit, however, in their call for a proper

³¹Alvar Ellegard, Darwin and the General Reader (Goteborg, 1958),

understanding of evolution was the rejection of natural selection as it applied to human morality and intelligence. Rejection of this application of natural selection was common to all four responses. Except for Dawson's response, the major concern was not the theory of evolution but the use made of natural selection in the Darwinian hypothesis to explain a method of development. Natural selection denied the concept of reality and truth fundamental to the religious and philosophical assumptions which governed the four responses. Because they could not accept natural selection, Wilson, Watson, and Burwash could not accept the Darwinian hypothesis despite their willingness to admit the possible validity of evolution in nature. All four responses must, therefore, be considered as rejections of Darwin's theory of evolution.

The responses of Dawson, Wilson, Watson, and Burwash to Darwin's theory of evolution demonstrate that, while they addressed themselves to a scientific question, such considerations did not determine ultimately the nature of their responses. This is evident even in the case of John William Dawson whose response was expressed in the most clearly scientific terms of the four. Although Dawson used his experience as a geologist as the basis for his response to the Darwinian hypothesis, the scientific methodology of his response was designed to defend non-scientific beliefs. His writings on evolution reveal that the scientific merits of Darwin's theory were for him subordinate to its religious and philosophical implications. The fundamental concern of all four responses was the effect which Darwin's theory of evolution had upon understanding the relationship of man to nature and God that a theistic conception of man's mental and moral development supported. Dawson and Wilson rejected the Darwinian

hypothesis for a theistic alternative. Watson and Burwash attempted to achieve a reconciliation of evolution and theism. For all four men, however, natural selection proved to be an insurmountable barrier.

When the four responses are evaluated in light of the ongoing discussion of Darwin's ideas, it is clear that the enduring significance of each is not equal. The influence of Daniel Wilson was undoubtedly the most transitory of the four. His response is important primarily in the history of Canadian ideas as a unique reply to Darwin's argument in The Descent of Man. Wilson's attitude towards Darwinism suggests that he was an example of a transitional figure, representative of those who, despite an apparent willingness to accept initially the physical implications of Darwin's hypothesis, balked at its explicit extension to man. He became an opponent, however, without formulating any precisely defined alternatives. Rather than pointing in the direction of further argument, his response remains, therefore, an illustration of an immediate, personal reaction to the problem as it appeared in 1871 but which did not suggest a solution other than rejection.

The response of John William Dawson has had little effect upon the subsequent course of the Darwinian debate. Many of his objections, nevertheless, displayed a perception which was not recognized during his time. His steadfast defense of religious orthodoxy and of his own scientific causes, notably Eozoön Canadense, disguised the value of his critique to a considerable extent. Dawson posed questions concerning the limitations of natural selection and the lack of geological evidence and time for the evolutionary process which nineteenth century evolutionary thought could not answer. His critique as well in its scrutiny of the use of

hypotheses by evolutionists foreshadowed later scientific thought. Although Dawson's contributions to the discussion of evolution have been largely eclipsed and his geological findings superceded, the scientific position which he argued is in some respects closer to a contemporary interpretation than that of the evolutionists whom he opposed.

John Watson's response to the Darwinian hypothesis provided his age with a solution to the conflict between science and religion. Its enduring effect is difficult to evaluate. Within the context of his Idealism, his consideration of the philosophical implications of Darwin's ideas retains a recognized significance. By the turn of the century, however, developments in philosophy carried the discussion beyond the limits of Watson's response and the philosophical position of John Clark Murray anticipated better the future direction which philosophy would take with science. In twentieth century Canada, the ideas of G. S. Brett at the University of Toronto offered a philosophical view of science which Watson's Idealism could not encompass. Despite the fact, however, that changes in philosophy lessened the importance of Watson's Idealism, he exercised as a philosopher a major influence upon ideas in Canada until the First World War.

The response of Nathanael Burwash seems not as developed as that of Dawson or Watson. Evolution was less of a difficulty for him than for the others. The element of threat is not evident in his consideration of Darwin's ideas or of modern science since his religious belief allowed him to accept scientific advances. Rather, therefore, than assuming that a conflict existed between science and religion, he drew upon the intuitive certainty of his faith to explain the place of the Darwinian

hypothesis within his concept of truth. For Burwash, it was a question of properly understanding the Darwinian revolution, and not of challenging its validity. As has been noted, his understanding of evolution entailed the rejection of natural selection and, therefore, of the Darwinian hypothesis. Burwash, however, did not perceive that this was the necessary consequence of his position. Instead, he believed that his interpretation of Darwin demonstrated the unity between the findings of science and religious belief. As in philosophy, subsequent developments in theology would provide additional solutions to the problems raised by modern science. The general influence of Burwash's response endured, however, into the twentieth century, since it contributed to the liberalism evident in the theological training at Victoria College.

Although their writings achieved for Dawson and Watson a recognition beyond Canada, the four men exercised little influence upon the international discussion of Darwinism. This is understandable since their arguments become distinctive only within the intellectual context of late nineteenth century Canada. Their responses, therefore, are more important for what they suggest about Canadian intellectual history than for their enduring contributions to the Darwinian debate. Idealism, teleology, the two theologies, and progressive revelation demonstrate the need felt for a metaphysical answer to the questions raised by Darwin's hypothesis, especially concerning a theistic interpretation of man's mental and moral development. A fervent and vigorous religious climate has had a fundamental effect upon the development of ideas in Canada. Through their responses to the Darwinian revolution, Dawson, Wilson, Watson, and Burwash revealed the continuing importance of their religious tradition and provided ideas which helped to ensure its survival during the perilous

challenges of their age.

This study examines the responses of four Canadian scholars to the Darwinian revolution. The intellectual context of such responses in Canada, however, cannot be appreciated adequately until more is known about both the traditions already established and the impact of such related concerns as positivism, higher criticism, and later Social Darwinism. A survey of the periodical literature in late nineteenth century Canada reveals, for example, that discussions of modern science frequently referred to positivism and Herbert Spencer as well as to Darwinian evolution. The attitudes expressed by the various religious denominations require study as does the teaching of philosophy and the sciences during this period. It may be especially fruitful to explore the views expressed in the Baptist and Roman Catholic Churches. The history of Canadian philosophy remains to be surveyed and the history of science in Canada deserves similar attention. As recent studies have indicated, Darwinism is an evident and enduring theme in Canadian literature. The responses of individuals such as Goldwin Smith, John Clark Murray, and George Monro Grant should be considered. Biographical work is, of course, required on each of the four principals of this study. While it is possible to indicate contributions to Canada's intellectual history arising out of the responses of Dawson, Wilson, Watson, and Burwash, many questions remain to be answered concerning the effect which the Darwinian revolution had upon ideas in Canada.

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