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THE 'BATTLE' BETWEEN SCIENCE AND RELIGION
OVER EVOLUTION IN NINETEENTH CENTURY
NEW ZEALAND

A thesis presented in partial fulfilment of the requirements
for the degree of Doctor of Philosophy in History at Massey
University

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1985

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Abstract

This thesis describes and analyses the New Zealand response to the Darwinian theory of evolution in the second half of the nineteenth century. Traditional accounts, using a distorted version of the Huxley-Wilberforce debate as their model, have been triumphalist, positivistic, and militaristic. The bloody 'battle' between science and religion, according to these received views, resulted in the overwhelming victory of science, truth, and progress over religion, ignorance, and superstition. This model is inapplicable in the New Zealand context. Generations of reconciling Genesis with geology had prepared the Christian mind well for coming to terms with scientific discoveries, and adjusting interpretations of Scripture accordingly. After an initial period of caution and deliberation, churchmen within the major denominations came to terms with biological evolution as readily as they had earlier accepted the findings of geology and palaeontology. By the 1880's evolution became acceptable to most educated Christians. Scientists too, quickly accepted biological evolution but remained religious believers, and in many cases devout, practising Christians. Their religious view of nature was reinforced rather than destroyed by Darwin. The handful of freethinkers who proclaimed that Science had supplanted Christianity also belie the positivist model, for evolution became for them a surrogate religious faith. Science did effectively become secularized by the beginning of the twentieth century, but this was the work of devout scientists who wanted to prevent religious controversy from constantly holding back the progress of biology. The 'battle' between science and religion over evolution culminating in the final and decisive triumph of science was a myth.

Preface

I would like to record my thanks to all those who have been so helpful over the last three years. Dr Peter Lineham has been all that I could ask of a chief supervisor, and more. His never-failing enthusiasm, constant help with sources, insightful criticism and sympathetic counsel have put me permanently in his debt. I am grateful to all the members of the Massey University Department of History who have provided such a stimulating and congenial atmosphere to work in. Dr Kerry Howe has been a very friendly and approachable assistant supervisor. He has constantly helped me to keep the 'magnum opus' in a healthy perspective! Thanks to Professor W.H. Oliver for helping to supervise the initial stages of the thesis. Professor J.C. Davis and Dr David Thomson have provided valuable comments and criticisms. I would like also to acknowledge ideas and references from Professor Ian Breward, Professor G.S. Parsonson, Professor M.P.K. Sorrenson, Professor George Marsden, Sir Charles Fleming, Roger Chapman, Philip Fleming, and my father, Dr David Stenhouse, who has proved adept at clarifying complex zoological and philosophical issues over the phone. Special thanks to my brother David who was a great help in the final stages.

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CONTENTS

	Page
Abstract	ii
Preface	iii
Contents	v
Abbreviations	vi
Introduction	1
1. Science and Religion Before the <u>Origin</u>	10
2. The 1860's: The Phony War?	34
3. The 1870's: Trends in Science	82
4. The 1870's: Religious Responses to Evolution	125
5. The 1880's: Freethought, Evolution and the Churches	166
6. The 1890's: The Secularization of Science and the Emergence of Fundamentalism	219
Conclusion	274
Notes and References	281
Bibliography	312

Abbreviations

<u>CG</u>	<u>Church Gazette</u>
<u>DNZB</u>	<u>Dictionary of New Zealand Biography</u>
<u>FR</u>	<u>Freethought Review</u>
<u>JHB</u>	<u>Journal of the History of Biology</u>
<u>JRH</u>	<u>Journal of Religious History</u>
<u>LT</u>	<u>Lyttelton Times</u>
<u>NZE</u>	<u>New Zealand Evangelist</u>
<u>NZH</u>	<u>New Zealand Herald</u>
<u>NZJH</u>	<u>New Zealand Journal of History</u>
<u>NZJS</u>	<u>New Zealand Journal of Science</u>
<u>NZ Mag</u>	<u>New Zealand Magazine</u>
<u>NZ Meth</u>	<u>New Zealand Methodist</u>
<u>NZP</u>	<u>New Zealand Presbyterian</u>
<u>NZW</u>	<u>New Zealand Wesleyan</u>
<u>ODT</u>	<u>Otago Daily Times</u>
<u>TPNZI</u>	<u>Transactions and Proceedings of the New Zealand Institute</u>

Library Symbols

AP	Auckland Public Library
AR	Auckland Institute and Museum Library
CP	Canterbury Public Library
Du:Ho	Hocken Library, Dunedin
WTu	Alexander Turnbull Library, Wellington
WU	<i>Victoria University of Wellington Library</i>

Introduction: The Historiography of the Darwinian Debates

The famous debate between T.H. Huxley and Bishop 'Soapy Sam' Wilberforce at the Oxford meeting of the British Association for the Advancement of Science in 1860 has epitomized for many people the relations between religion and science in the nineteenth century. Wilberforce concluded an attack on Charles Darwin's recently published The Origin of Species by asking Huxley whether it was on his grandmother's or his grandfather's side that he claimed descent from the ape. Huxley turned to the scientist sitting beside him and remarked softly, 'The Lord hath delivered him into mine hands.' He rose, defended the Darwinian theory with quiet gravity, and concluded by observing that he would rather be descended from an honest ape than from a man who abused both talents and position in the service of falsehood and religious prejudice. Thus was launched the career of the world's first self-styled episcopophage.¹

This episode, incorporated uncritically into historical writing, has given rise to a mythology of astonishing proportions. The debate itself has generally been depicted as the triumph of scientific truth over religious bigotry and obscurantism. William Irvine asserts that 'Huxley committed forensic murder with a wonderful artistic simplicity, grinding orthodoxy between the facts and the supreme Victorian value of truth-telling'.² For the Danish historian Vilhelm Gronbech the debate was 'one of the great battles' of a war which 'ended in an overwhelming victory for science.'³ In the opinion of Reginald Stackhouse the subsequent conflict between science and religion

over evolution has followed the lines of the Huxley-Wilberforce debate, with 'the champions of religion arguing against evolution not so much with scientific reasons as with appeals to the Bible, and deriding the advocates of evolution as infidels.'⁴

These assertions prove the truth of Samuel Butler's dictum that 'God himself cannot remake history, but historians can.' On the Huxley-Wilberforce debate itself Sheridan Gilley has pointed out that the 'official version', on which all subsequent accounts have been based, was actually written by Huxley and Hooker, and was 'a wholly one-sided effusion from the winning side, put together long after the event, uncritically copied from book to book, and shaped by the hagiographic conventions of Victorian life and letters'.⁵

David Oldroyd has pointed out that Wilberforce was not in fact a completely uninformed obscurantist. Primed with scientific information by the eminent comparative anatomist Richard Owen, he successfully exposed real scientific weaknesses in Darwin's theory.⁶ As modern palaeontologist Martin Rudwick has pointed out, Darwin's emphasis on the imperfection of the fossil record to explain the absence of intermediate forms looked suspiciously like special pleading to those like Owen and Wilberforce who were acquainted with palaeontology.⁷ The received view of the Huxley-Wilberforce debate is distorted. Appropriated as a model for the relations between science and religion in the nineteenth century, this version has warped the general picture. What we have ended up with has been more like propaganda than history.

The received historiography needs to be broken up into its

component parts in order to be examined in detail. With few exceptions it has been blatantly triumphalist, depicting the overwhelming victory of science over religion. Bertrand Russell, for instance, argued in Religion and Science (1935) that 'science has invariably proved victorious' over traditional Christianity, and that Darwinism was 'as severe a blow to theology' as Copernican astronomy had been.⁸ Of course Russell openly rejected Christianity and this might be expected to be evident in his writing. Yet a supposedly neutral historian of philosophy like Herbert Schneider, writing on American responses, has argued that 'the theologians gave way ... only after waging a hopeless battle against superior forces.'⁹ Even a standard historical reference work like The New Cambridge Modern History asserts that 'the shock of the conflict between science and religion was profound, and it was the authority of religion, rather than science, that emerged weakened from it.'¹⁰

In addition to being triumphalist, the prevailing paradigm has been positivistic. Positivism was the brainchild of the nineteenth century French philosopher Auguste Comte. He saw human progress as consisting in the replacement of theological and philosophical explanations of natural phenomena by scientific explanations as society reached intellectual maturity. According to such a view scientific enlightenment and religious faith were mutually exclusive.

Thus historian of science William Coleman asserts that 'evolution ... provided a prominent battleground for the ongoing contention between science and religion for the allegiance of the

European mind'.¹¹ The New Zealand historiography, though embryonic, has evidently swallowed this positivistic assumption. G.S. Parsonson, writing on the Darwinian debate in the Otago Institute in 1876, asserts that the outcome of the debate was that 'one was either for Darwin or against him, or as his critics preferred to put it, for or against God.'¹² It was impossible, presumably, to both accept Darwin and remain Christian.

Not only were science and religion intractably polarized by evolution, according to traditional accounts of the British and American debates, but the relations between them were characterized by hostility and antagonism. The mere title of J.W. Draper's 1874 study entitled History of the Conflict Between Science and Religion illustrates the point sufficiently. A.D. White's A History of the Warfare Between Science and Theology in Christendom (1896) makes it even plainer. The military metaphor has appeared everywhere in twentieth century histories. In a chapter entitled 'Warfare between Science and Theology', Carlton J.H. Hayes writes that 'the fight began in earnest in the decade of the '60's over evolution and biblical criticism, and from 1871 to 1900 it raged on a wide front. The offensive passed early from "theology" to "science", whose heavy artillery was manned by such embattled Darwinians as Huxley, Tyndall, and Haeckel'.¹³ It has been taken for granted that religious men were the most rabid of the combatants, violently antagonistic to modern science. The New Cambridge Modern History again: 'The furious tide of criticism and the scornful ridicule which greeted The Origin of Species are well known.'¹⁴

Religious responses in particular have suffered from a grave lack of sympathetic historical investigation. The received view has insisted not only that scorn and abuse were the main weapons in the Christian arsenal, but that believers clung desperately to the letter of the Bible and rejected the revelations of science. Again and again it has been insisted that it was the literal truth of the Scriptures which was the issue for the defenders of orthodoxy: 'For the mass of Darwin's opponents who followed the leadership of Bishop Wilberforce it was the light which was reflected by his ideas upon the literal interpretation of scripture ... which was most obnoxious'.¹⁵ D.R. Oldroyd asserts that 'Darwin cast grave doubt on ... the plausibility of the literal truth of the Scriptures'.¹⁶ Presumably, on such views, most Christians still believed that the earth was only four thousand years old, and had been created in six literal twenty-four hour days.

The only exceptions, the assumption has been, were a few far-sighted liberals. 'Protestants of Calvinist, Lutheran, or more evangelical persuasion', it is claimed, '... rebuffed and long resisted the theory of evolution, meeting it with a withering fire of denunciation and vilification. Liberal Protestants ... were to do much in silencing the guns of theologians and scientists who so rashly put on their armour and answered the call of battle.'¹⁷ The 'orthodox', it has constantly been asserted, would have nothing to do with Darwin.¹⁸

The reason why the vast majority of Christians opposed Darwin tooth and nail was, of course, quite simple; they were all

'fundamentalists'. Oldroyd explains the religious reaction by asserting that the nineteenth century was 'a period in which fundamentalist thinking was very widely adhered to.'¹⁹ New Zealand historians, too, have fallen prey to this assumption. Debate in the Otago Institute could hardly be avoided, asserts Parsonson, given the fact that Dunedin was a 'fundamentalist stronghold'.²⁰ The fact that the term 'Fundamentalist' was coined in the United States in 1920, and ought historically to be applied to the militantly anti-modernist evangelical Protestantism which arose after that date, has not deterred historians. Even Catholics have been tarred with the fundamentalist brush: 'Over about the last thirty years of the nineteenth century the Catholic church adopted a substantially fundamentalist position, and by official decree the members of the Church were positively discouraged from taking up theological issues that might be related to the question of evolutionism.'²¹

Recent research has suggested that the foregoing assumptions need to be seriously questioned and revised, and that they cannot fairly be applied to British and American responses to Darwin. J.R. Moore, for instance, has argued that the all-pervasive 'military metaphor' has seriously distorted interpretations of the post-Darwinian controversies. He offers instead a non-violent interpretation, arguing that the crisis was largely resolved within the framework of established religious beliefs. He further suggests that only those Christians who remained theologically orthodox could accept evolution by natural selection as Darwin promulgated it. Religious liberals, on the other hand, were

forced to modify the theory in order to make it consonant with their own heterodox theology.²²

Moore acknowledges that his work extends to nineteenth century biology the standard revisionist view that Christian theology has been at least congenial if not essential to the development of modern science. M.B. Foster, R.K. Merton, and R. Hooykaas have argued that the development of physical science and technology in the sixteenth and seventeenth centuries was founded on the Christian (and especially the Reformed) doctrine of a contingent creation, ordered and superintended by a sovereign Creator, and that this led to the adoption of empirical methods in science and to the extension of causo-mechanical explanations of nature.²³ Moore extends this thesis to the post-Darwinian controversies in a convincing major re-interpretation.

Some work has been done on reactions to Darwinism in Australia. Walter Phillips suggests that in the early 1880's most clergy were still opposed to evolution.²⁴ The theory would seem to have made little headway in Australia until the mid-1880's at the earliest.²⁵

In New Zealand none of the assumptions of traditional accounts are borne out by the evidence. It was simply not the case that the evolution controversy resulted in the triumph of science over religion. Contrary to the positivist model, almost all the scientists who expressed an opinion on the matter accepted Darwinian evolution but remained religious believers, many of them devout and practising Christians. Their conviction that God was the Creator and Sustainer of nature was reinforced

rather than destroyed by the theory of evolution. The handful of radical thinkers who argued that Science had overthrown Christianity turned evolution itself into a surrogate faith, replete with miracles, millennial beliefs, and even a caste system. Science became for them a religion. Here again the positivist model cannot be sustained.

The assumption that the relations between scientists and churchmen were characterized by conflict and hostility also breaks down in the face of the evidence. Abuse and vituperation were conspicuous by their absence from addresses on evolution by both 'sides'. The relations between scientists and churchmen were characterized more by harmony and consensus than by bitterness and division.

This is not to suggest that evolution failed to precipitate any conflict at all. If an inflexible polarization/conflict model must be abandoned, it must not be replaced by an equally inflexible unity/harmony model. Tensions did arise. Yet the general level of conflict was never as high as it was in Britain, America, and Europe. And, more importantly, those conflicts which arose can almost never be adequately interpreted in terms of a simple conflict between science and religion.

For the fact was that most conflict over evolution took place either between orthodoxy and freethought (both of which were religions), or between liberal and conservative Christians. Yet though a few Christians fiercely resisted all forms of evolution, the churches were unequivocally not the reactionary 'fundamentalist' monolith of legend. Bible-believing Protestants

were not ipso facto intransigent wooden literalists. The idea that the earth was only four thousand years old, and that it had been created in six twenty-four hour days, had been abandoned well before Darwin by the vast majority of educated Christians, including many evangelicals. They had plenty of historical precedent for hermeneutical flexibility, and generations of reconciling Genesis with geology had prepared them, after an initial period of caution and deliberation, for easy acceptance of the theory of evolution. 'Fundamentalist' might be a tolerable description of the reactions of a few. As a blanket description of Christian responses it is woefully inappropriate.

By the 1880's acceptance of biological evolution had become commonplace within the major denominations. There was little evidence that conservatives and evangelicals were markedly more resistant than religious liberals. Science did become secularized by the beginning of the twentieth century, but this was the work of devout scientists who wanted to prevent religious controversy from constantly holding back progress in evolutionary biology. The 'battle' between science and religion over evolution culminating in the final and decisive victory of science was, in New Zealand at least, a myth.

Chapter One: Science and Religion before the Origin

Prior to the publication of Charles Darwin's The Origin of Species in 1859 there existed a holy alliance between science and religion. In this chapter I shall examine prevailing beliefs about science and religion in Britain and New Zealand in order to provide the scientific, intellectual, and religious context for the colonial response to Darwin after 1859. Geology, I shall show, far from undermining Christian faith, was considered to be its ally, illuminating and interpreting the Genesis account of creation. Biological evolution was to be absorbed into the Christian beliefs of both scientists and churchmen with equal equanimity after Darwin.

Darwin's Visit 1835

H.M.S. Beagle sailed into Paihia from Tahiti on 21 December 1835. On board was the young naturalist Charles Darwin. I shall deal with Darwin's visit to the colony only briefly since apart from its intrinsic interest it has no great relevance to the ongoing discussion. Worth noting are the facts that Darwin was at least a nominal Christian himself at the time, that he admired the Christian missionaries, and that he apparently shared prevailing European assumptions about a racial hierarchy.

Already, in South America, he had made many of the observations he was to incorporate into his epoch-making The Origin of Species (1859). At Paihia only a single canoe came alongside to welcome the Beagle, and for Darwin this was a 'not very pleasing contrast, with our joyful and boisterous welcome at Tahiti'.¹ He was delighted to see English flowers in the gardens in front of the neat whitewashed houses of Paihia, and they contrasted markedly with the 'hovels' of the

natives. The next day he inspected some of the abandoned pas in the vicinity and visited Kororareka in the evening with the captain of the Beagle, Robert FitzRoy, who was to become Governor of New Zealand between 1843 and 1845. In Darwin's opinion the Maoris he observed there were 'of a much lower order' than the Tahitian: 'One glance at their respective expressions, brings conviction to the mind that one is a savage, the other a civilized man'. There was a twinkling in the eye of the New Zealander which he felt 'cannot indicate anything but cunning and ferocity'. Both their persons and their houses he found 'filthily dirty and offensive'.²

On the twenty third of December he was invited to visit the Waimate mission station by the Rev. William Williams. Guided part of the way by the British resident James Busby, and then by a local chief, he was amused on the walk by the Maori ceremony of rubbing noses, and keenly took in the botany and geology of the district. The station farm-house, with its well laid-out crops of fruit and vegetables, blacksmith's forge and water-mill suggested an English rural paradise. In Darwin's opinion 'the lesson of the missionary is the enchanter's wand'. He watched a party of 'natives' at cricket in the evening, and reflected 'when I thought of the austerity of which the missionaries have been accused, I was amused by observing one of their own sons take an active part in the game'. He spent a pleasant night with the Williams household: 'I never saw a nicer or more merry group; and to think this was in the centre of the land of cannibalism, murder, and all atrocious crimes!'³

On the 24th of December, taken to visit a neighbouring forest, he measured a huge kauri tree, and remarked on the absence of indigenous

animal species in New Zealand. Returning to the Bay of Islands in the afternoon, he spent Christmas Day there, attending divine service in the chapel at Paihia. On the 26th he went with Busby to Kawakawa to inspect the curious limestone formations at Waiomio. The old women attending a tangi at a nearby village Darwin described as 'most filthy, disgusting objects howling and cutting themselves'. This was hardly the dispassionate scrutiny of the nineteenth century social anthropologist. He was relieved to depart for Sydney on 30 December: 'I believe we were all glad to leave New Zealand. It is not a pleasant place. Amongst the natives there is absent that charming simplicity which is found at Tahiti; and the greater part of the English are the very refuse of society'. The only bright spot was 'Waimate, with its Christian inhabitants'.⁴ The relations between science and religion in the colony, if this brief sojourn was anything to go by, could not have been better.

Darwin's experiences with missionaries in New Zealand, as well as in Tahiti, aroused an interest which he shared with FitzRoy, who was an ardent evangelical Christian. While still at sea the following year they jointly wrote a pamphlet pressing for more Government support for missionaries in the Pacific. It was published in the South African Christian Recorder in September 1836, and was one of Darwin's earliest signed publications.⁵

His continuing interest in New Zealand was reinforced by the visits of friends: Ernst Dieffenbach (1839-41), Joseph Dalton Hooker (1840), John Lort Stokes (1848-51) and T.H. Huxley, who visited the Waimate mission in 1850. Darwin corresponded with a number of New Zealanders right up until his death in 1882. The content was almost

entirely scientific, Darwin requesting information or specimens, the colonial collectors being only too happy to oblige. Typical was a letter to Sir George Grey, then Governor of New Zealand, written in November 1847. Darwin suggested that digging in the mud under the stalagmite crust of limestone caverns like Waiomio would probably reveal bones of the contemporaries of *Dinornis* (the Moa). He considered there would be special interest on this point, 'New Zealand being at present so eminently instructive in a negative point of view, with respect to the distribution of terrestrial mammals'. He also asked Grey to keep an eye out for 'erratic boulders', since there was at the time a debate among geologists as to whether such boulders were transported by floods or by icebergs.⁶

Colonial scientists continued to correspond with scientists in Britain, Australia, America, and the Continent for the rest of the century. I shall seldom refer in detail to this correspondence, since it was almost entirely concerned with the exchange of specimens or information which, though fascinating to scientists, is outside the scope of this thesis. Almost never did scientists exchange comments of a personal, philosophical, or religious nature. Undoubtedly the enormous respect which colonists had for British savants, and the strict observation of Victorian epistolary proprieties, militated against this.

The Bible and Science before Darwin

Amongst the possessions most New Zealand colonists brought with them from the Old World was a Bible. The Authorized (or King James) Version was the only popularly accessible translation. In the margin of this version, opposite the first verse of Genesis chapter one, was

printed the date 4004 B.C. According to Archbishop Ussher of Armagh working in the seventeenth century, creation had occurred at nine o'clock in the morning of 23 October of that year.

Almost ninety per cent of the immigrants to New Zealand were Protestants, and theirs was very much a religion of the Book. Typical of the popular Protestant approach to controverted questions was Anglican missionary Richard Taylor's solution: 'Search the Scriptures'.⁷ The Bible, Protestants believed, was the highest and all-sufficient authority. And it was not a book which only the experts could understand. According to the classical Protestant doctrine of the perspicuity of Scripture, the plain meaning of the text was almost certainly the correct one. Biblical doctrines could readily be understood by the common man. This plain and common sense approach to the Bible was epitomised in Rev. Richard Taylor's description of the creation in Genesis chapters one to three. In his opinion this was 'not a series of vague conjectures or fabulous tales' but 'a plain, simple, consistent account', which every subsequent scientific investigation had fully confirmed.⁸

Yet it must not be assumed that Protestant Christians were all wooden literalists, who were compelled to reject science out of hand when it apparently conflicted with the Bible. Taylor himself had come to terms with geology for instance, and had abandoned the Ussherite chronology without the slightest distress in doing so. In an 1850 article 'Geological Observations on the Book of Genesis' he argued that the creation of the heavens and the earth in Genesis chapter one almost certainly involved vast periods of time calculated in millions of years. He held, as did many other evangelical Christians, that the

days of Genesis in the original Hebrew denoted not a literal twenty-four hour day but rather an epoch of indefinite duration. What the account intended to teach, he argued, was the 'primary truth' that God was the Creator of all things.⁹

This was a widely shared view. Eminent naturalist and evangelical Anglican William Swainson argued in 1849 that both the Ussherite chronology and the idea that the Genesis day was only twenty four hours long were merely 'human interpretations' of the scriptural passages, which everyone had given up in the face of the geological facts. Yet he pointedly insisted that

there is a most important distinction, between rejecting certain long admitted human interpretations of merely historical passages, and rejecting the bible as the revelation of God's will for our salvation Geology corrects the erroneous interpretation, but instead of overthrowing, confirms the claims of the bible to be the word of God.(10)

Swainson refused to tie the authority and inspiration of the first chapter of Genesis, which he continued to hold, to an outmoded pre-scientific understanding of the chapter. Many evangelical Protestants would adjust their views of the creation of the human race in Genesis chapters two and three in similar fashion in the 1870's and 1880's, and come to terms with Darwin with similar ease.

It was not just a handful of well-educated colonists like Taylor and Swainson who had abandoned the Ussherite chronology. New Zealand was a comparatively literate society, and books which reconciled science and religion were very popular amongst the wider reading public. Typical of the genre was Hugh Miller's The Testimony of the Rocks, or Geology in its Bearings on the Two Theologies, Natural and Revealed (1857). Miller was a very able self-taught geologist who had

come from a working-class background, and a Scottish Free Church Presbyterian. He too believed that the Genesis day was not a literal twenty-four hour day, but rather an immensely long geological epoch. In their accounts of pre-human history, the Scriptures were never intended to reveal scientific truth, he argued.¹¹ Miller's books induced considerable flexibility in interpreting Genesis chapter one amongst readers of all classes, including Scottish Presbyterians. They appeared in town and in small country libraries in New Zealand from the beginning of settlement.¹²

Natural Theology

As Hugh Miller's book demonstrated, the belief that the Bible was true was no blindly held article of faith for Protestant Christians. God's truth was unified, so it was held as inevitable that science would confirm Scripture. The Book of God's Works (Nature) must necessarily confirm the Book of God's Word (the Bible), for both books had the same Divine Author.

Bishop Joseph Butler's Analogy of Religion, Natural and Revealed (1736) had laid the groundwork. In this perennially popular work, Butler argued that the God of creation revealed by a scientific examination of nature had the same characteristics as the God of the Bible. New Zealanders in the nineteenth century continued to absorb its lessons.¹³

William Paley's Natural Theology (1802) had been similarly influential. On the basis of empirical evidence observable by everyone, Paley reasoned that the existence of an intelligent designer of the universe could be established as certainly as any other of mankind's most firmly held beliefs. Just as the existence of a

watch implied the existence of a watchmaker, so if one contemplated the intricate perfection of the human eye, one knew that a skilled creator had been at work. Providential design, he argued, was everywhere throughout Nature.

Typical of those books which attempted to provide scientific proof of God's attributes were The Bridgewater Treatises on the Power, Wisdom and Goodness of God as Manifested in the Creation, a series which appeared between 1833 and 1836. Julius Haast, a trained geologist and mineralogist who was destined to become one of the colony's leading men of science, arrived in 1858 from Germany. Among his possessions were British geologist William Buckland's contributions to the Bridgewater series, on mineralogy and geology.¹⁴ Haast's own speeches and papers to the Canterbury Institute in the 1860's and 1870's overflowed with the reverent spirit of the Treatises.

It was not surprising, then, that strong links should exist between science and religion in early New Zealand. Though most clergy received an essentially classical and theological education, many found the time to develop interests and ability in natural history. Thus C.M.S. missionary William Colenso might vary preaching and bible translation with botanical excursions in search of fern specimens. He quickly acquired a considerable reputation as a collector with eminent British scientists, like botanist J.D. Hooker.¹⁵ Richard Laishley was a Congregationalist minister at Onehunga and Thames. He was also a keen naturalist and natural history artist. His paintings of New Zealand butterflies, beetles, and birds were the product of hours of close observation of his subjects.¹⁶ The clergyman-naturalist was a

not uncommon figure in the colony.

Clergymen were interested in science and scientists were keen on religion. The Young Men's Christian Association was an interdenominational evangelical organization set up to encourage cooperation between evangelical Protestant churches with the aim of reaching youth. Prominent in the Auckland Association in the 1850's were three men who were to become leading men of science.¹⁷ Thomas Frederic Cheeseman was the son of a Methodist minister, and he became curator of the Auckland Museum, a leading light of the Auckland Institute, and a very able botanist whose work was recognised by election to the Linnaean Society.¹⁸ Andrew Sinclair was a devout Presbyterian, and was another enthusiastic botanist who had collected with British botanist J.D. Hooker in the Bay of Islands in 1841. He had also been involved in scientific discussions with Huxley and Darwin. Sinclair was tragically drowned in 1861 while exploring the Southern Alps with Julius Haast.¹⁹ Walter Buller was the son of the Methodist missionary James Buller. He was to establish an international reputation as New Zealand's foremost ornithologist, and to receive a host of scientific honours, all without abandoning Christian faith. In 1861 he received first prize in a competition run by the Association for his essay 'The Moral Welfare of New Zealand'.²⁰

Thus there existed a holy alliance between science and religion. This had continually been reinforced from the beginning of the century by discoveries in geology and palaeontology. The large-scale excavation involved in mining iron and coal in Britain had revealed successive layers of well-differentiated geological strata. The different strata each contained a distinctive set of fossils, some of

which were entirely different to presently existing species. Most people had hitherto assumed that the earth had had a relatively short life history, for neither Scripture nor science gave any reason for thinking differently. Whatever fossils had been found were assumed to be the remains of animals which had perished during Noah's flood. Now however, it had become apparent that a single flood, even if global in extent, could hardly by itself account for this multitude of widely separated and distinctive strata.

Lamarckian Evolution

This suggested to some that evolution might have occurred. Perhaps the most noteworthy of the pre-Darwinian evolutionists was Jean Baptiste Pierre Antoine de Monet, or the Chevalier de Lamarck as he is better known. Lamarck was professor of invertebrate zoology at the Museum d'Histoire Naturelle in Paris. He published a theory of evolution early in the nineteenth century in which he argued that organisms made efforts to meet the exigencies of their environment, and their bodies were modified accordingly. These modifications were passed on to their offspring. For example, the giraffe, Lamarck asserted

is known to live in the interior of Africa in places where the soil is nearly always arid and barren, so that it is obliged to browse on the leaves of trees and to make constant efforts to reach them. From this habit long maintained in all its race, it has resulted that the animal's fore-legs have become longer than its hind-legs and that its neck is lengthened to such a degree that the giraffe, without standing up on its hind legs, attains a height of six metres.(21)

Lamarck suggested that one species might actually change over the course of time into another.

Georges Cuvier: the fixity of species and geological catastrophism

However all such evolutionary theories were dismissed as speculative and unscientific by the most eminent biologist in the first half of the nineteenth century, Georges Cuvier. Professor of vertebrate zoology at the Museum d'Histoire Naturelle, he employed all his immense authority and prestige in rejecting Lamarck's ideas. He provided the paradigm in biology for the first half of the nineteenth century. In contrast to Lamarck, his biology was utterly fixist and non-evolutionary. But this was empirically rather than scripturally derived.

Cuvier's early work was carried out in the late eighteenth century on the bones of living and extinct animals of the elephant type, including the Siberian mammoth. Faced with jumbled piles of fossil bones the traditional Linnaean approach, of systematically classifying animals according to their obvious external characteristics, was of little help. Cuvier did not know what the extinct animal looked like when it was alive.

In attempting to solve this problem, his basic premise was that any organism must be adapted to its environment in order to function successfully in that environment. All of its different parts must cohere to form a viable, functional whole. A terrestrial carnivore, for instance, must have lungs for breathing, suitable limbs and muscles for running and catching its prey, teeth to tear and chew the flesh, and a suitable stomach and intestine for digestion. It must also have a central nervous system to integrate and co-ordinate all these activities. Given these assumptions Cuvier had extraordinary success in accurately reconstructing entire animals from fragmentary fossil remains. He divided the animal kingdom into four major

divisions using as his criterion the nervous system to construct a major new system of classification.

This system was fundamentally non-evolutionary. Any change in an organism's members, particularly on the scale which Lamarck postulated, would upset the delicately balanced correlation of the whole. The organism would almost certainly die. If change was always for the worse, as Cuvier believed, then evolution could not, in principle, occur.

Of course Cuvier was not just a zoologist and comparative anatomist concerned with the internal parts and functioning of organisms. He was also a geologist and a vertebrate palaeontologist. He was well aware that fossil stratigraphy showed clear evidence for many changes in animal forms over time. To men like Lamarck and a handful of others this suggested that evolution had occurred. How did Cuvier reconcile the fossil record with his non-evolutionary biology?

He proposed that the geological history of the globe was interrupted from time to time by great 'revolutions' or 'catastrophes'.²² These catastrophes killed off all the creatures in the areas where the catastrophe occurred and their remains were interred and became the fossil record. After things had settled down again the area was gradually restocked, not by divine fiat for in Cuvier's opinion that had only occurred at the original creation, but by migration from surrounding unaffected areas of new forms. British geologists, however, preferred to think that the new species were specially created in situ.

The last Cuvierian catastrophe was identified by pious Oxford geologist William Buckland as Noah's Flood. Buckland's early work

reconciling Genesis and geology was very popular. He departed from Cuvier in Relics of the Deluge (1823) by insisting that the Deluge was not localised but universal. But when he used evidence of fossil bones being found in the Himalayas and the Andes as evidence that the flood had been deep enough to cover the highest mountains there was a widespread feeling amongst scientists not only that science had been twisted to conform to Scripture but also that Scripture had been twisted to conform to what Buckland erroneously regarded as science. This feeling was nicely expressed in the title of a paper written by John Fleming, a Scottish naturalist and Presbyterian minister, called 'The Geological Deluge, as interpreted by Baron Cuvier and Professor Buckland inconsistent with the testimony of Moses and the Phenomena of Nature'. True religion could afford to reject such 'faithless auxiliaries' as Buckland's science, Fleming argued.²³ Similar views were to be expressed in New Zealand in the 1870's and 1880's by devout scientists, who insisted that those who twisted science and Scripture into a forced harmony to accommodate their own preconceptions did a great disservice to both science and Christianity.

Charles Lyell and Uniformitarianism

The catastrophist geology of Cuvier and Buckland was highly unsatisfactory to Charles Lyell. His objections were basically methodological. Cuvier's occasional catastrophes were not presently observable. Geology could hardly become a rigorous science if cataclysmic events or, even worse, wild speculations like Buckland's were invoked every time a geologist felt himself short of a satisfactory explanation. Thus in his Principles of Geology (1830-1833) Lyell outlined his principle of uniformity. This was the

principle that the earth's geological past ought to be interpreted in terms of presently occurring and empirically observable processes. This was not purely a methodological assumption. There was plenty of empirical evidence in phenomena like sedimentation and glaciation to support the idea that geological change occurred as a result of the gradual action of ordinary forces over very long periods. The Darwinian theory of the evolution of species as a result of the gradual selection of naturally occurring variations over vast periods was basically uniformitarian and showed how much Darwin had been influenced by Lyell.

Lyell believed, in addition, that the earth was enormously old, perhaps thousands of millions of years old. This was no great problem for devout geologists for by the 1830's most scientists, including catastrophists, accepted the great antiquity of the earth. It was generally accepted that the Hebrew word 'day' in Genesis chapters one and two referred to an epoch of enormous duration. The basic premise of natural theology - that the Book of Nature and the Book of Revelation spoke with one voice - remained intact.

Robert Chambers

The only writer before Darwin who threatened to upset the holy alliance between science and religion with a detailed argument for biological evolution was Robert Chambers, an Edinburgh publisher who in 1844 anonymously wrote and published Vestiges of the Natural History of Creation. It created an immediate sensation. Not only did Chambers speculate that one species might change into another species, such as a goose into a rat in as little as two generations, but he even thought it possible to say something about the origin of life. He

cited experiments in which life had allegedly been created by the action of an electric discharge on solutions of potassium silicate and copper nitrate. It was later shown that a well-known organism, the mite, had inadvertently been dropped into the solution, and Chambers was mercilessly criticised.²⁴ His essentially Lamarckian evolution, and apparent philosophical materialism, were unequivocally rejected by the scientific world. William Swainson, a leading naturalist and Fellow of the Royal Society who arrived in New Zealand in 1841, rejected it in an 1850 review as repugnant to both science and Scripture.²⁵

Richard Taylor versus William Swainson over Genesis and Geology

Many of the tensions generated by the growth of science for religious men may be illustrated by comparing the views of Richard Taylor and William Swainson. They were two of the colony's leading men of science in the 1840's and 1850's, and both were earnest evangelical Christians. Taylor was a typical clergyman-naturalist. He had graduated M.A. at Cambridge in 1835 and spent considerable time on the Continent on botanical and geological excursions. He arrived in New Zealand in 1839, was an observer at the Treaty of Waitangi, and then led the Wanganui mission with courage and distinction.

Like William Colenso, Taylor was a collector for eminent British scientists. He had played an important role in bringing the first moa bones to the attention of Richard Owen, the famous comparative anatomist, who by following Cuvierian principles performed the prodigious feat of correctly reconstructing the moa as a gigantic, flightless bird from a single piece of femur (thigh-bone). Taylor also sent specimens of New Zealand flora to J.D. Hooker, who was the

director of Kew Botanical Gardens and a close friend of Darwin's. Hooker named the fungus-like plant dactylanthus taylori after him.²⁶

Taylor, as we have already seen, had abandoned the Ussherite chronology and the idea that the Genesis day was twenty four hours long. He was a geological catastrophist who followed Cuvier, and he accounted for the fossil record by postulating a pre-Adamic race of angels, for whose fall into sin the whole world was destroyed, as recorded in Genesis 1:2. The earth was then renewed and repopulated during the six 'long epochs' which were the days of Genesis chapter one.²⁷

Thus the first three verses of Genesis chapter one described a creation (1:1), followed by a catastrophe (1:2), followed after an indeterminate period by a re-creation (1:3 and following). This 'gap' theory had been given authority and prestige by a number of eminent scriptural geologists, including Presbyterian divine Rev. Thomas Chalmers, and Anglicans Rev. Adam Sedgwick, and Rev. William Buckland of Bridgewater Treatises fame. It was later adopted by C.I. Scofield in his Reference Bible, and thus continued to reach a fairly extensive evangelical audience in the late nineteenth and twentieth centuries.²⁸

The 'gap' theory allowed Christians like Taylor to accept the latest, most well-established scientific theories in astronomy and geology. For instance the nebular hypothesis of the French astronomer Pierre Laplace, who argued that the planets were formed by the cooling of the nebular gases which surrounded the sun, could be accepted by allowing an enormous time-scale for Genesis 1:1, as Taylor did. Similarly, the 'gap' theory explained the fossil record as evidence of a judgement on the earth's original inhabitants. Even Lyell's

uniformitarian methodology could be cautiously accepted. For Taylor the divine fiats of Genesis chapter one were realized, not instantaneously, but gradually and progressively, over enormous epochs.²⁹ Given the state of scientific knowledge at the time, this theory displayed considerable flexibility in interpreting Genesis. There was nothing anti-scientific, obviously obscurantist, or blindly literalistic about it.

However Taylor's interpretations of the verses following Genesis 1:3 appeared to raise problems. The chapter asserted that light appeared on the first day but the sun not until day four, which seemed impossible. But according to Taylor it was not. The second divine fiat, he asserted, was the production of the atmosphere. The earth was surrounded with a vast elevated canopy of water like Saturn, so that the sun, which had of course been created on day one, was not visible from earth. This canopy produced an extremely equable atmosphere on earth in which, untroubled by sudden fluctuations of temperature, humans could live for hundreds of years. This accounted for the tremendous longevity of Adam and his immediate descendants.³⁰ However the near approach of a comet, as an agent of the Lord's will, caused this aqueous canopy to break up and precipitate, hence the Noahic deluge as recorded in Genesis.

Yet in Taylor's opinion the Flood was not universal. That part of the world inhabited by humans was submerged and all flesh died except Noah and the ark. However the moa and marsupial families of Australasia survived to leave descendants. This attempt to account for the uniqueness of the Australasian fauna by arguing that they had escaped the Flood was an ingenious, if rather speculative, piece of

biblicist biogeography. The equable atmosphere disappeared with the destruction of the canopy, Taylor concluded, and the sun shone directly on the earth. This accounted for the sun's appearance on day four and after the creation of light. As the simple diet of the antediluvians was superseded by the use of animal food, the longevity of the patriarchs decreased, just as the Scriptures recorded.³¹

William Swainson, however, found this a rather forced reconciliation of Genesis and geology, and took Taylor to task in the pages of the New Zealand Evangelist, a monthly periodical put out by the Wellington Evangelical Alliance.³² Swainson had acquired a penchant for natural history as a youth, fascinated by his father's collection of shells. Zoological and botanical trips to Europe and North America had established his reputation, as a zoologist and a painter of birds. He became a Fellow of the Linnaean Society in 1816, and a Fellow of the Royal Society four years later.³³

He rejected Taylor's idea of a pre-Adamic angelic race whose sin caused a global catastrophe and the death of the ancient races of its inhabitants. This was 'mere conjecture'. Taylor ought, in Swainson's opinion, to have eschewed speculation, stuck to the facts, followed Bacon's inductive method more, and Aristotle's deductive approach less.³⁴ There was nothing in either science or Scripture to believe that any superior class of beings existed prior to Adam. Taylor's Geological Observations came into much the same class as Robert Chambers' Vestiges, in Swainson's opinion: 'These scientific romances on the wonders of world-making may please the speculative, and those who delight in the marvellous rather than the true; but the enunciation of one clearly ascertained geological fact, or one fully

established theological principle, is of more real worth than a whole volume of such doubtful speculation'.³⁵ Swainson was an inductivist, who liked both his science and his Scripture plain and unembellished. Exactly the same criticisms as these were to be levelled in the years ahead at the Darwinian theory by those who, while full of admiration for the facts Darwin revealed, felt that the theory violated true Baconian principles of induction. They preferred the older philosophy of science epitomized by Newton's dictum: 'Hypotheses non fingo' (I do not make hypotheses).

Yet Swainson had some rather speculative ideas of his own. He had attempted to popularize the quinarian system of classification in Britain in the 1830's, in which animal species (and even Irises) were arranged in circular groups of five according to analogies and affinities. The quinarian system was, he felt, in accord with the uniformity of the divine plan of creation. But it was not taken seriously by the British scientific establishment, and both Swainson and William Sharpe Macleay, the system's originator, left disgruntled, the former to settle in New Zealand, the latter in New South Wales.³⁶

By no stretch of the imagination can this brief and restrained controversy be represented as a clash between science and religion. Swainson simply found Taylor's harmonization of Genesis and geology rather forced and unnatural, without an adequate basis in either science or Scripture. Both men were ardent evangelical Anglicans, who held high views of both science and Scripture, and believed that the two must ultimately agree. In the decades ahead most colonial Christians would come to terms with Darwinian biology as readily as Taylor and Swainson had come to terms with geology.

It must be said, nevertheless, that Taylor did not come to terms with Darwin as easily as most educated Christians did. As late as 1872 he found Cuvier's synthetic theory more satisfactory all round than Darwin's. There were no transitional forms in the fossil record to support evolution, he argued, which was a plausible enough objection at the time. Thus Darwin's ideas were too 'speculative'.³⁷ Given the character of Taylor's own work this last charge was a case of the pot calling the kettle black.

The Beginnings of a Colonial Scientific Community

Both Swainson and Taylor were prominent members of the early colonial scientific community. Many of the immigrants to New Zealand were keenly interested in literary and scientific subjects, both for the intrinsic interest and with an eye to self-improvement. A Nelson Literary and Scientific Society had been formed on board the *Whitby* in 1841, and this was the forerunner of the Nelson Philosophical Society. In 1844 some sixty members attended a general meeting, at which the chair was occupied by William Fox, with Alfred Domett as vice-president, and Francis Dillon Bell as secretary.³⁸

A Mechanics Institute was formed in Nelson in 1846 whose aim was to promote literary and scientific progress with elementary education. No discussion of religion or politics would be allowed but books on those subjects were permitted. Typical lectures included 'The Advantages of Education' by Fox, 'The Science of Morality', by G. White, and 'Astronomy' by C. Heaphy. The Institute imported British papers and reviews in order to supplement the extensive libraries prosperous colonists brought with them, and to keep up with events 'at home'. By 1858 they included the Examiner, the London Times, the

Quarterly Review, the Edinburgh Review, the Westminster Review, the North British Review, the Athenaeum, Blackwood's Magazine, Punch, and Chambers Journal. Most of these periodicals would review the Origin after its publication in 1859.

In 1851 the New Zealand Society was founded at Wellington. It was modelled on two British institutions: the Royal Society founded during the English Restoration, and the more recently formed British Association for the Advancement of Science. The moving spirits behind its formation were Sir George Grey and Walter Mantell, son of the famous discoverer of the dinosaurs Gideon Algernon Mantell. At the first meeting it was decided that monthly meetings would be held to read papers received 'and for the discussion of matters connected with physical science, and its advancement in the colony'.³⁹ Its membership included the leading figures of colonial society: Grey, I. E. Featherstone, J. E. Fitzgerald, Mr Justice Chapman, G. Hunter, Alfred Domett, W. Waring Taylor, E.J. Wakefield, and A. Brandon, as well as clerical representatives Archdeacon Hadfield, Rev. Richard Taylor, and Rev. Jonas Woodward, who founded the Congregational Church in Wellington.

Divisive political and religious issues, it was made clear, were to be avoided. Following the rules of the English Royal Society, it was stipulated: 'The introduction of politics and polemics being totally inconsistent with the fundamental principles of a scientific society, any member guilty of introducing any subject of such tendency, shall cease, ipso facto, to be a member of the Society'.⁴⁰ Science, it was intended, would provide ideologically neutral ground, and would dissolve potentially divisive political and religious

differences. However the lack of support, lack of finance, and the lack of time these very busy men were able to devote to science in the early stages of colonization meant that the society languished and, after a couple of years, died out. It was revived again in 1858, but had to wait until the following decade to become solidly re-established as the Wellington Philosophical Society.

Darwin and The Origin of Species 1859

Both Taylor and Swainson rejected Robert Chambers' biological evolutionism in Vestiges. Cuvierian catastrophism remained the reigning paradigm in biology until the publication of Darwin's Origin in 1859. Species had either migrated, or been specially created anew, in order to repopulate areas destroyed by Cuvier's periodic catastrophes. Species were essentially fixed, or varied only within narrow limits, since to transcend these limits was considered inevitably dysfunctional. J.D. Hooker encapsulated prevailing beliefs in the second chapter of his Flora Nova-Zelandiae (1853). Plant species, he declared, must be regarded 'as permanently distinct creations, which have survived great geological changes, and which will either die out, or be destroyed, with their distinctive marks unchanged.'⁴¹

Darwin had the essential elements of the theory of evolution by natural selection assembled from the early 1840's. Yet he delayed publication until 1859. Partly this was because he wanted to gather sufficient evidence to make his case compelling. Deterred by the almost unanimously hostile reception given to Chambers' slipshod Vestiges, he was determined to avoid his work suffering the same fate. Partly he was naturally cautious, and aware that his theory was bound

to cause a considerable stir. Eventually his hand was forced by the arrival of a paper from the young naturalist A.R. Wallace outlining the theory of natural selection. Postponing publication of a much larger work, he hastily wrote The Origin of Species By Means of Natural Selection, or The Preservation of Favoured Races in the Struggle for Life. It appeared in 1859 and the first edition sold out on the first day.

The argument was essentially quite simple. Individuals within a species vary. Given the endless struggle for existence (the doctrine of Malthus), only those individuals best adapted to the environment survive, and pass on their characteristics to their offspring. In this way over countless generations, one species might gradually be transformed by the continuous action of natural selection into another and quite different species. Darwin adduced a vast range of empirical evidence to support his argument. I shall not go into detail here, for many of these arguments were repeated by his New Zealand followers and these will be examined in some detail in later chapters.

After outlining the theory in chapters one to four, he dealt quite frankly in chapter six with objections that might be raised to it. He admitted that transitional forms linking distinct species were extremely rare, but argued that this was due to the imperfection of the fossil record. It was very difficult to see how natural selection could account for the development of organs of extreme perfection like the eye, which Paley had insisted could only be seen as the handiwork of an intelligent Creator. Yet Darwin suggested that if each of the developmental stages of the eye was useful to its possessor then there was no insuperable difficulty, given sufficient time, in natural

selection developing such a complicated and intricate structure.

Two things accounted for the book's immediate impact. Its clear, readable style made it accessible to a wide reading public. And its tone was humble but unmistakably polemical. Darwin devoted the latter half of the book to a detailed survey of all those facts which evolution accounted for but which special creation did not. The gill slits observed in the developing human embryo, for instance, were inexplicable on the theory of special creation, but were readily comprehensible in terms of his theory of evolution, on the assumption that the embryo recapitulated the evolutionary history of the species. What impact would the theory have in Britain's southernmost colony?

Chapter Two

The 1860's: The Phony War?

In Britain the 1860's began with the famous battle between T.H. Huxley and Bishop Wilberforce. There was no corresponding clash between science and religion in New Zealand however. The colonial response to Darwin in the 1860's was marked by a low-key consensus approach to the issues raised by evolution, not by raging conflict. While still waiting for a clear lead from Britain, New Zealanders began tentatively to discuss the theory of evolution. Most leading scientists accepted the theory of evolution, found Darwin's mechanism of natural selection reasonably if not totally convincing, but interpreted it in theistic terms, and remained churchgoing Christians. Far from a unilateral declaration of war on the theory of evolution and its proponents, churchmen were cautiously receptive to it, and asserted that Christianity had nothing to fear from true science. Harmony and consensus dominated the Darwinian discussions in the 1860's, not hostility and division.

It is difficult to discuss developments in the 1860's in terms of broad patterns, or even to place individual views within a spectrum of opinion, since there were very few people who discussed Darwinism in this decade in comparison with succeeding decades. Where possible I have tried to relate the relatively inchoate response of the 1860's to major developments which occurred in succeeding decades, in order to make sense of them within a broad interpretive framework.

The Dissemination of Darwinism

Overseas developments were followed with considerable interest in the colony. Colonists devoured reviews of the Origin in the major

British periodicals. They presented a wide range of opinions. T.H. Huxley in the London Times was extremely favourable. Bishop Wilberforce in the Quarterly Review was not. In his opinion the essence of the Origin was 'our unsuspected cousinship with the mushrooms'. The theory was wantonly speculative, he charged. It was incompatible not only with the revealed word of God, but also with man's supremacy on earth, his gift of speech and reason, his free will and responsibility, his fall and redemption, the incarnation of the Eternal Son, and the indwelling of the Eternal Spirit.¹ For the sake of a balanced account it must be said that Wilberforce, instructed by the famous comparative anatomist Richard Owen, also had some very cogent scientific objections to the Darwinian theory.²

Much discussion was aroused in Britain in 1861 by the explorer Du Chaillu's stories about gorillas. What were the similarities between apes and men? Protestant subscribers to Punch in the colony must have been amused to read in the issue of 14 December 1861 about a deputation of Irish 'hooligans' led by gentlemen named Mr O'Rangoutang, Mr G. O'Rilla and Mr Fitzcaliban.³

The colonial press kept the public up to date with the progress of opinion at home. In 1864 the entire text of Sir Charles Lyell's presidential address to the British Association at Bath was reprinted in the Lyttelton Times.⁴ Lyell was extremely cautious with regard to evolutionary theory, and did not mention Darwin's name at all except to agree with him that the geological record was extremely fragmentary. Colonists could gain no clear lead from such an equivocal address and must have found it difficult to make up their minds, particularly when such an eminent scientist plainly could not. It was

not until 1868 that Lyell publicly came out in favour of evolution.

A number of New Zealanders corresponded with overseas scientists, French, German, British and American. Generally it was only information or scientific data which were exchanged, but sometimes a more personal note was sounded. Joseph Dalton Hooker, who was the director of the Royal Botanical Gardens at Kew and a leading Darwinian, remarked in a letter to George Grey, for instance, 'Now Darwin is at work on a book on man ! which will I expect, turn the scientific and theological worlds upside down.'⁵ Darwin himself wrote in a letter to Julius Haast 'It amuses me to learn how the battle of Evolution rages at the Antipodes'.⁶ It must have been flattering for men like Grey and Haast to be taken into the private confidences of such eminenti. Such opinions may have imported tensions into the New Zealand scene which would otherwise not have existed. For, as we shall see, colonial science and theology were not turned 'upside down' by Darwin's Descent of Man, as Hooker suggested they would be. Neither did the 'battle' of evolution 'rage' in the Antipodes, as Darwin overdramatically suggested.

Not all scientific literature, however, was welcome in the colony. The church settlements, in particular, sought to have some say about which books were held in their libraries. One of the rules of the Lyttelton Colonist's Society stated: 'Books which are discovered to have an immoral or pernicious tendency' shall be removed from circulation. Similarly the Church of Otago Library stipulated: 'No book shall be admitted which inculcates erroneous doctrines, or which is of an irreligious or immoral tendency.' In 1861 the Library contained Darwin's Voyage of the Beagle (1832), but neither Robert

Chambers Vestiges, nor the Origin.⁷

Darwinism reached adults through periodicals, newspapers, private correspondence, and public lectures, but almost certainly children were kept blissfully unaware of such contentious issues. Evolution did not reach school textbooks in the nineteenth century. John Brown Park's A School Primer of the Geography and History of Oceania published under the patronage of the Otago Education Board in 1866 dealt only with the history of New Zealand from the time of European settlement.⁸ James Wylde, an engineer and a member of the Canterbury Institute, published A Geography and History of New Zealand for the use of Schools in 1868. The section on natural history included material on the kiwi and the extinction of the moa, but there was no time frame suggested and no hint of evolutionary explanation.⁹ Even the most ardent devotee of the Usherite chronology could not have objected to their children reading such innocuous textbooks. The teaching of evolution in schools was not to become an issue until the 1920's and 1930's.

'Modern science' was purveyed to schoolchildren in pious, wholesome form. Typical was a course of lectures on Geology given by Julius Haast in February 1867 to the pupils of the Presbyterian Boys College founded by his friend Rev. Charles Fraser. He made no detailed attempt to harmonize Genesis and geology, and he certainly made no concessions to the Ussherite chronology. The formation of the universe and of the earth were explained in terms of vast epochs of time, and Haast showed no reluctance to recount the distinguishing palaeontological features of the various geological periods. Man was introduced as part of the organic life present during the great

glacial period in Europe and New Zealand. Unlike Thomas Huxley, popularizer of scientific discovery in Britain, Haast never left his audience bereft of a religious perspective. Throughout his lectures he insisted on the harmony and progression of creation and told the boys that, if he could not make scientific geologists of them, he should at least make them lovers of the Great Book of Nature.¹⁰ The attendance of the boys was good, and they applauded loudly. Haast's religious rhetoric must have allayed parental apprehensions about subject-matter for the series was repeated later in the same year.¹¹ The spectacle of a leading scientist lecturing on geology at the invitation of a Presbyterian minister is of course inexplicable on a polarization/conflict model of the relations between science and religion.

The Scientists: Militant Agnostics or Reverent Believers?

Colonial scientists were unlike the militantly agnostic British scientists T.H. Huxley and John Tyndall, and even less like the aggressively atheistic German scientists Buchner and Haeckel. Most remained devout and practising Christians, and belie a positivist model of colonial science. Huxley and Tyndall were in any case hardly typical of British scientists. In a survey published in 1874 Darwin's step-cousin Francis Galton, the pioneer of eugenics, was surprised to find that out of almost 200 leading British scientists seventy per cent called themselves members of the established Churches of England and Scotland and the recently disestablished Church of Ireland. Numbered amongst the remaining scientists were Nonconformists, Wesleyans, Catholics, and Bible Christians. When asked whether the

religion taught them in youth had had a 'deterrent effect on the freedom of your researches', the scientists responded overwhelmingly to the contrary. Almost ninety per cent replied 'none at all'. Galton's scientists 'did not in fact perceive a great conflict between their science and religion'.¹²

Colonial scientists fit this British pattern. I shall discuss the views of a few representative figures here and return to this theme in later chapters. In 1860 Captain F.W. Hutton published a review of Darwin's Origin.¹³ Elected Fellow of the Geological Society in the same year he was well qualified for the task. He began by dealing with a recent Spectator review of the book written by Rev. Adam Sedgwick, Woodwardian Professor of Geology in the University of Cambridge. Though he admitted that it contained a great body of important truth, Sedgwick argued that Darwin's theory was not inductive, his materialism was 'atheistical', and indicated a 'demoralized understanding'.¹⁴ Hutton did not mince words in describing these views as 'gross ironical misrepresentations' and 'inflated pomposities'. Direct creation, which was Sedgwick's alternative to evolution, did not explain the origin of species in a scientific sense at all, Hutton insisted. It was 'a mere assertion, an evasion of the question, a cloak for ignorance'.¹⁵

Hutton emigrated to New Zealand in 1865 to become one of the colony's leading professional scientists, and its most ardent Darwinian until the arrival of T.J. Parker in 1881. At this early stage of the review he looked for all the world like he was going to become an antipodean Huxley. He was an ardent evolutionist and an outspoken opponent of clerical revilers of Darwin. But this Anglican

minister's son did not feel compelled, in accepting evolution, to abandon Christianity. In the review he castigated those believers who attacked new opinions on the 'old and ridiculous grounds' of their antagonism to Holy Scripture, 'as if the Word was not based on the sure foundations of truth'.¹⁶ Hutton plainly believed that the Biblical revelation and evolutionary science were mutually confirmatory, not contradictory.

He unequivocally rejected the Lamarckian theory of evolution, which explained changes in species in terms of an individual's power of self-transformation. As he put it:

Did our progenitors, however remote, conceive the idea of nails to our fingers, eyelids to our eyes, or lashes for our eyelids?Could we suggest any more convenient arrangement, or disposition of our parts? And if we, standing at the highest pinnacle of knowledge, cannot suggest a sportive variety, even, of ourselves, how much less can we consider that mere brutes, or insensate plants, should have any innate power of themselves to cause the slightest improvement of their organization? (17)

Hutton found this Lamarckian conception self-evidently absurd since it suggested that organisms were able to alter their physical structure in order to satisfy felt needs.

Hutton preferred Darwin's theory to Lamarck's. So many important biological problems could be solved by it that in his opinion three great truths were unassailable: the 'struggle for life', the impact of the environment on organic life, and 'the existence, at least, of a principle of natural selection'.

The greatest objection to the Darwinian theory, in Hutton's view, was a philosophical one: 'its reliance on natural causes and chance in effecting the changes'.¹⁸ In his opinion the 'beautiful perfection' of the human body and the 'wonderful adaptations' of animals 'seem so

skilfully planned, that it is impossible to regard them as effects of chance, and not as inapproachably perfect designs'. Though a convinced evolutionist, he was so impressed by the intricate and marvellous adaptations of organisms to their environment that neither a Darwinian explanation, which emphasized the blind, impersonal 'naturalistic' selection of random variations, nor a Lamarckian explanation, which emphasized the individual organism's power of self-transformation, seemed adequate. Hutton believed that the Creator had provided in his first 'type-plans' for their 'future illimitable adaptations to the ever-changing scenes presented in the progress of our earth's ever altering conditions'.¹⁹

However Hutton did not restrict the Creator's role in the evolutionary process to merely drawing up the original 'type-plans'. The Origin was of course deistic; Darwin concluded the book: 'There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one.'²⁰ Hutton, by contrast, insisted on interpreting evolution, and indeed all natural processes, in theistic terms. 'Why', he asked, 'may we not look around us and believe in the universal bowing of all nature hourly, daily, unceasingly to the unerring laws and sustaining power of God? Why should we not see in every change His presence and His will?'²¹

This providential interpretation of evolution satisfied both Hutton's scientific and his religious convictions. God created species by means of the 'natural' laws which Darwin outlined. As his later career testified, it did not impede his ability as a scientist at all. His biology was all that the most stringent positivist could have demanded, and his work was rewarded by election to the Royal Society

in 1892. In these respects Hutton may be compared with Asa Gray, who was Darwin's foremost American advocate, professor of natural history at Harvard, and a committed Christian. Both Hutton and Gray defended Darwin against the attacks of special creationists, and at the same time insisted that there was nothing in evolution to shake Christianity.²²

Hutton's review struck Darwin as 'very original'. He wrote to J.D. Hooker that Hutton was 'one of the very few who see that the change of species cannot be directly proved, and that the doctrine must sink or swim according [sic] as it groups and explains phenomena'.²³ He also wrote to Hutton congratulating him on 'the highly original, striking, and condensed manner with which you have put the case I am much pleased to see how carefully you have read my book, and, what is far more important, reflected on so many points with an independent spirit'.²⁴

In 1861 Hutton again wrote on the Darwinian theory for The Geologist.²⁵ This time he confined himself strictly to the scientific issues. He began by summarizing the theory: given the facts of individual variation and the struggle for life, the law of natural selection, together with minor causes like habit, use and disuse of organs, the effects of food, climate etc., accounted for all forms of organic life. Hutton was not unusual in allowing some weight to the minor causes. As we have seen, given the prevailing uncertainty about the mechanics of heredity, few biologists, including Darwin, were willing to reject Lamarckian factors entirely.

Like Darwin, Hutton allowed objections their full weight. Admitting the 'almost entire absence' of intermediate forms, he argued

that given the geological difficulties involved in fossil formation this absence was not surprising. The sudden appearance in the fossil record of closely allied species, particularly in the lowest fossil bearing strata, seemed to favour the traditional idea of direct creation rather than 'descent with modification'. Hutton explained the dearth of transitional forms by arguing that the progenitors of these species had lived during a period of geological elevation, their remains were eroded or eaten, and thus they left no fossils. However as the progenitor species developed into the fossil forms the land subsided and this provided excellent geological conditions for fossil formation. Hence the apparently 'sudden' appearance of groups of closely allied species. Not everyone would be satisfied by these explanations of the imperfection of the geological record. The lack of intermediate forms remained a real problem for Darwin until the mid-1870's, when transitional forms began to fill in the lacunae.²⁶

In conclusion Hutton argued that since 'transmutation' could explain nearly all the facts of biological science it must be looked upon as a very probable hypothesis, more probable than any other yet put forward. Although it rested on 'presumptive evidence alone', and had many dilemmas to overcome, the general lesson was that scientists should not be deterred from framing hypotheses and constructing theories.²⁷ This was an intelligent and fair-minded review by a convinced Darwinian. But as his previous Geologist review had made clear, Hutton did not feel compelled, in accepting the Darwinian theory, to abandon traditional religious belief.

Julius Haast's inaugural presidential address to the Philosophical Institute of Canterbury in 1862 made it equally clear

that the age of the agnostic scientist had not dawned in the colony. On the progress of science in Canterbury he asserted '...there is not the least doubt that we shall see good results, if true love for science, one of the purest and holiest feelings which an all-wise Creator has planted in our hearts, be the guiding star of our union'.²⁸ Here was a prominent colonial scientist, accorded international recognition by the award of a doctorate of philosophy from Tübingen in the same year, speaking as an ardent religious believer. In the Antipodes science and religion were firm friends.

He pleaded for the recognition of natural science in schools by appealing to its moral value: it would save youth 'from evil courses' and increase appreciation of the 'manifold blessings which the study of nature places within his reach.'²⁹ He went on to declare: 'Is there any science which, better than astronomy, can prove the high position assigned to man by our great Creator?'³⁰ Haast had evidently been delighted by reading William Whewell's contribution to the Bridgewater Treatises entitled Astronomy and General Physics Considered with Relation to Natural Theology (1833). The rhetoric of natural theology in the context of this address was a convenient way to immunize science against the charge that its pursuit led to infidelity, and also to reinforce the Christian faith.

Haast then ascended to a positively rhapsodic plane: 'There is a charm in these fluctuations of the soul, which gives an indescribable impulse to scientific research.... Shall I remind you of the many lives sacrificed on the altar of science in tropical Africa?' It was a fervent mixture of scientific and religious metaphor and rhetoric:

Is there a spot on earth, where naturalists have not willingly risked their lives, in the hope of making better

known to us, the indescribably perfect and beautiful works of the Creator?...can we find anywhere in the world's history, instances of greater heroism than has been shown, by the soldiers of science?(31)

Evidently science, as well as Christianity, had its martyrs and its missionaries. Haast's language revealed the tensions latent in natural theology. Its adherents might worship at the shrine of science as readily as at the feet of Christ.

He expressed delight at the popularity of his geological collections: 'How often have I been struck with the eager zeal, with the desire for knowledge, displayed by all classes of settlers who have come to inspect the collections made during our geological survey'. There was of course a religious lesson for the public: 'Each and all will... learn, in the contemplation of God's works, that all that has been made is indeed "very good"'.³² What was so convenient about natural theology, particularly in the context of the Institutes, was its doctrinal imprecision. It permitted Anglicans, Nonconformists, and even Roman Catholics to join in a common subscription.

After reviewing the progress of the various branches of science in New Zealand, Haast went on to look at the theory of the French astronomer Adhemar. According to Adhemar, a change in the earth's axis, occurring once every twenty-one thousand years, caused the formation of an enormous mass of ice at the poles during alternate colder seasons and the rushing of water from one pole to another. This, Haast decided, provided a possible explanation for the Deluge 'of which even the least civilized people are shown to have interesting traditions'. He suggested that New Zealand, and the South Island in particular, would be well suited to study this interesting subject.³³ Haast's interest in Adhemar's theory suggests that he held

a genuine personal interest in reconciling Genesis and geology.

It would be facile, therefore, to suggest that his religious rhetoric was purely formal. It was too excessive. And anyway New Zealand did not have anything like the same social pressures for purely nominal religious conformity that Britain did. It had no powerful established Church able to discriminate against non-adherents. It might have been just as easy, if Haast had been so inclined, to completely avoid religious language within the Institutes. James Hector avoided it almost entirely in his official speeches and scientific papers, and found this no barrier to dominating colonial science as head of the Government Geological Survey and Manager of the New Zealand Institute.³⁴

To dismiss the religious utterances of men like Haast and Hutton as perfunctory formalism thus goes way beyond the evidence. To express religious views within the Institutes, as Haast did, was quite likely to betoken personal Christian conviction and practice. Haast's own churchmanship, if peripatetic, was continual. He was born a Catholic, his children were baptized in the Church of England, and in the 1870's he took his family to the German church in Canterbury.³⁵ It was a broad faith however. Haast had become a Freemason in his younger days and his Masonic apron and diploma were among the belongings he brought to New Zealand, a curious anomaly given his Catholic upbringing. Churchgoing for the family of a scientist was not without its tensions. As Mary von Haast complained to Miss Collet in 1876, 'when one hears Sunday after Sunday the same harangues about belief and the wickedness of people using their reasoning powers, it makes one despair of the human race ever becoming really intelligent'.

Nevertheless she was convinced that it was not right 'not to have some definite form of religion.'³⁶

At the end of his 1862 address to the Canterbury Institute Haast dealt explicitly with the Origin, which as a work of natural history 'must be regarded as the great work of the age'. He compared natural history before Darwin with astronomy before Galileo, Kepler, and Newton. The problem had been that philosophers were 'under the impression that all organisms were governed by some strict immutable law of existence, for which they sought in vain'. Darwin's chief merit, Haast considered, lay in the 'truly philosophical spirit' in which he approached the question, as well as in the great mass of facts collected.

Haast's summary of the theory was ambiguous, and this was significant:

All organisms are derived from a very few primordial forms...these forms only live through the 'struggle for existence', which under the operation of a law termed that of natural selection, have best adapted themselves to the circumstances of climate, etc., by which they have been surrounded, and which have, in obedience to that law, gradually risen higher and higher in the scale of organic life.(37)

It would appear that Haast read the Origin through Lamarckian spectacles. He was still apparently unable to shake off the idea that organisms had some innate power of self-transformation. Though he had no qualms about evolution in general, it seems unlikely, on this reading, that he understood the operation of natural selection in the same way that Darwin did.

He went on to point out that Darwin did not conceal the 'enormous difficulties' against which he contended, which of course afforded

'the best proof of the sincerity of his views'. Victorian morality, it seemed, even pervaded science; Darwin's humility and sincerity plainly engendered sympathy for his ideas. The Origin, Haast pointed out, had especial relevance for New Zealand, as it bore on the subject of the extinction of the genera *Dinornis*, *Palapterix*, and *Nestor*, the colony's extinct indigenous bird species.³⁸

The great Darwin himself read a copy of the address sent by Haast, and replied: 'I have seldom read anything more spirited and interesting than your address. The progress of your Colony makes me proud, and it is really admirable to see a scientific institution in so young a nation. I thank you for the very honourable mention of my Origin of Species'.³⁹ No doubt Haast felt extremely honoured.

Haast and Hutton, then, were reverent believers rather than aggressive agnostics. They felt that Darwinism and Christianity were quite compatible. Both gained international recognition for their contributions to science: Haast was elected Fellow of the Royal Society in 1865 and became the first New Zealander to receive the gold medal of the Royal Geographical Society. Hutton also became an FRS, as already noted, and was elected president of the Australasian Association for the Advancement of Science in 1902. Their conviction that evolution and Christianity were compatible was typical of professional scientists.

James Coutts Crawford, for instance, was an able geologist who had worked for both the government and the Wellington provincial geological surveys. He was a fellow of a number of prestigious international scientific bodies, including the Geological Society, and president of the Wellington Philosophical Society and governor of the

New Zealand Institute. He contributed many papers to the Transactions of the latter body, mainly on geology. He was also a member of the Legislative Council and resident magistrate and sheriff of Wellington from 1867 to 1872.⁴⁰ Darwin did not cause him to abandon Christianity. He remained an active and prominent Anglican, and was a lay representative to the fourth Synod of the Wellington Diocese.

James Gow Black, before coming to the colony as first professor of natural science at the University of Otago in 1871, was a professing Christian and a regular Presbyterian churchgoer.⁴¹ Christian profession and practice would appear to have been the rule rather than the exception amongst scientists in the 1860's. In succeeding chapters I shall go on to discuss the views of other scientists who shared the view that evolution and Christianity were compatible, including men like George Malcolm Thomson, Thomas Kirk, Robert Gillies, Walter Buller, and A.P.W. Thomas.

Hutton and Haast may have been ready converts but the Origin threw other scientists into complete confusion. William Colenso, for instance, was a former C.M.S. missionary and a Fellow of the Linnaean Society, and was described by J.D. Hooker as 'the foremost New Zealand botanical explorer'.⁴² He wrote an essay entitled 'On the Geographic and Economic Botany of the North Island of New Zealand' for the Dunedin Exhibition in 1865. On the question of evolution the essay was full of confusion, not rabid 'fundamentalist' denunciation:

Were all existing species created at once? Or are species still being created? or has such creation ceased? ... Has a species a power of evolution and metamorphosis per se, which knows no bounds? Have there been in past aeras [sic] any potent occult elemental forces at work, differing only in intensity, combination, and constancy from what now are, through which sub-varieties, varieties and species were the more readily involved [sic]?(43)

This tangle of fiat creationism, Lamarckianism, and Darwinism produced a very confused botanist.

Probably Colenso's confusion was that of many self-taught amateur scientists who found the revolution in biological thinking more difficult to grasp than did professional scientists like Hutton who were in touch with the latest developments overseas. As late as 1891 Colenso still found the question of creation or evolution too 'deep and difficult' for him.⁴⁴ Nevertheless, like Haast and Hutton, he simply cannot be accommodated in a simple polarization/conflict model. His scientific interests did not lead him away from Christianity; he was reinstated as an Anglican clergyman in 1894. Far from vitriolic denunciation, he never had anything but praise for both Darwin and Huxley.⁴⁵

A few self-taught scientists, however, were exceptions to the general rule. They became ardent Darwinians but, without ever becoming militantly agnostic, had little time or sympathy for religious traditionalists who had reservations about evolution. William Travers, for example, unequivocally advocated Darwinian evolution in a lecture series delivered in Wellington between 1868 and 1870. He was a lawyer and a member of the House of Representatives for a number of constituencies between 1853 and 1878, and had developed a great interest in botany and ornithology.⁴⁶

The first lecture in the series was a paper delivered to the Wellington Philosophical Society in July 1868 in which he reviewed the two principal theories respecting the origin of organic life.⁴⁷ His summaries were so elegant and precise that they are worth quoting in full. The first was the traditional Cuvierian catastrophism advocated

by men like Rev. Richard Taylor:

the surface of the globe, at an early period, became divided into a number of great areas of population, each of which contained a distinct fauna and flora, distinguishable by characteristics proper to that particular area only; and ... the various species now found within it have from time to time been since created in order to supply the place of representative species which have since died out.

The second theory was Darwinian evolution:

every group of organisms has a purely derivative origin, and each existing species is but the modified descendent, preserved by means of natural selection, of some other species: ... in most cases so great a divergence has taken place from the original type, as to transgress the conventional circle which we draw round the generic type, and induce us to refer it to some other genus than that to which it would originally have been assigned.(48)

The problem with the first theory, according to Travers, was that, if true, it would render futile all scientific attempts to trace the origin of present and past species. Their origin would be sufficiently elucidated in the dogma that 'they were created on the spot'. Notwithstanding the 'weighty difficulties' which, like Hutton, he candidly admitted still surrounded the theory of natural selection, Travers accepted the explanations it afforded.⁴⁹

James Hector, in a review of Travers' paper, remarked that it was highly satisfactory that a member of the Wellington Society should, by close observation of nature in New Zealand, arrive at conclusions on the subject almost identical with Darwin's.⁵⁰ The Wellington Philosophical Society, it would seem, might aptly have been renamed the Wellington Mutual Admiration Society.

Travers addressed the theological aspect of the evolution question in a public lecture, the second in the series, delivered at the Colonial Museum in August 1869. He set out to hold himself free,

he declared, from 'those theological dogmas which attempt to put arbitrary limits of time to man's presence upon earth, and to dictate the character in which he first appeared'.⁵¹ Instead he proposed to deal with the question purely in light of 'recent scientific investigations'. He agreed entirely with the writer who argued that science and religion may be at variance if 'religion means belief in certain dogmas and adherence to certain ritualistic forms ... but if the exercise of religion consists in search after truth ... and devotion to the Great Author of all then there can be no conflict'.⁵²

Travers was a pious natural theologian rather than an aggressively agnostic positivist. Yet to reduce religion to 'the search after truth ... and devotion to the Great Author of all' was some distance from orthodox Christianity. Probably this Great Author functioned essentially as a moral policeman. Indeed the only real use he had for Christianity was as a club with which to beat into line recalcitrant religious conservatives. He charged those who misrepresented scientific conclusions, and perhaps he had Bishop Wilberforce in mind here, with an offensive lack of Christian humility and charity.⁵³ Significantly no-one took Travers to task for these words, for to object would have been to introduce the odium theologicum, a discordant note into a high-minded Victorian scientific society which was intended to be above that sort of thing.

The second part of Travers' Colonial Museum lecture, delivered in October 1869, dealt with the geographical distribution of species. He agreed with Darwin that the study of fossil forms in each particular area showed existing species were derivative and not 'primordial or independent creations'. This would have implications for some

religious believers: 'those who have been accustomed to trust to Ussher's chronology, and to look upon our globe... as having been created within a few thousand years, will be utterly unable to accept, because they cannot comprehend, such a hypothesis'.⁵⁴

He concluded the series on 27 August 1870. Denouncing the indiscriminate and reckless destruction of the forest, he asserted that colonists were careless of native flora and fauna unless they were immediately and directly profitable. The plains of Babylon and Nineveh, he recalled, once truly described as flowing with milk and honey, had now become a howling desolation. He went on to make a significant observation:

I may be told that these are evidences of God's wrath against the people who inhabited those countries; but setting aside all questions of controversy as to whether the Great Author of Nature ever so deals with man as intentionally and mischievously to interfere with the conditions of life, it is clear that it is to man's action, as a primary cause, that we may attribute the misery and desolation to which they are now reduced.(55)

Travers 'Great Author' was a somewhat distant deity. Beneath a cloud of reverent rhetoric the Christian God, keenly and intimately involved in His own creation, was disappearing, at least for this politician-scientist.

The Establishment of the Institutes

1868 saw the establishment of the Auckland, Wellington, and Otago Institutes, as well as the parent and governing body the New Zealand Institute. They were set up to encourage the advancement of science, literature and the arts in the colony. Members gathered at monthly meetings to read, discuss, and criticize papers on a wide variety of subjects. In practice science dominated.

Papers presented to the New Zealand Institute in 1868 covered a wide range of topics. Julius Haast presented a paper 'On the Measurements of Dinornis bones'. James Hector, who was the Manager of the New Zealand Institute and editor of its Transactions, read a series of papers on recent earthquakes in the colony. William Skey, who was an analytical chemist to the government Geological Survey, presented a paper 'On a new Mode for the direct Desilvering of Argentiferous Gold'. James Coutts Crawford contributed an essay 'On the Geology of the North Island of New Zealand' which he had written for the New Zealand Exhibition. Thomas Kirk and Captain Hutton had been exploring Great Barrier Island together. They enlightened the Auckland Institute on its botany and ornithology respectively.⁵⁶

The professional scientific community was not large. The government Geological Survey, Colonial Museum, and Colonial Laboratory had been set up in 1865 under the directorship of James Hector and, together with the provincial Geological Surveys and Museums, and institutions like the Otago School of Mines, these provided most professional scientific positions. The universities began to provide jobs from the 1870's, but the expansion of the professional scientific community was always held back by government niggardliness, especially with pragmatists like Premier Seddon at the helm in the 1890's. Large-scale expansion and investment in science had to wait until the twentieth century.

Despite their small numbers this group, along with enthusiastic amateurs like Colenso, Travers and Walter Buller, dominated colonial science in the second half of the nineteenth century. They presented the vast majority of papers to the Institutes, and dominated

discussions. Many, like Hutton, Kirk and Hector, did not have university degrees in science, and were largely self-taught.

Clergymen were active and prominent in the Institutes from their inception. Presbyterian Rev. Charles Fraser M.A., F.G.S., contributed a paper 'On University Education' to the Transactions in 1869. Anglican Rev. Arthur Stock, who was a capable amateur astronomer, read a paper to the Wellington Society 'On a Remarkable Meteor observed in Wellington, November 8, 1869'. Fellow Anglican Rev. A.G. Purchas, who was a pioneer in the discovery of coal near Auckland and in the processing of flax, outlined to the Auckland Institute the preparation of artificial stone.⁵⁷

The churches were also well-represented in the governing bodies of the Institutes. In 1868 Bishop C.J. Abraham was vice-president of the Wellington Society, Charles Fraser was secretary of the Philosophical Institute of Canterbury, A.G. Purchas was on the council of the Auckland Institute, and Archdeacon H.W. Harper was vice-president of the Westland Naturalists and Acclimatization Society.⁵⁸ In 1869 Rev. D.M Stuart, the leading Dunedin Presbyterian minister, was on the council of the Otago Institute. Anglicans were always well-represented in the Philosophical Institute of Canterbury, and Presbyterians similarly in the Otago Institute. The Wellington Philosophical Society never contained many clergymen. It was dominated by the capital's corps of professional scientists, led by Hector, and was always the most self-consciously 'scientific' of the Institutes. Clergymen continued to be conspicuous, both as officeholders and as ordinary rank and file members of the Institutes, until the mid-1880's when they began gradually to thin out. By the beginning of the

twentieth century they had all but disappeared. This process will be examined in more detail in later chapters.

Given the presence of clergymen it is not surprising that the Institutes were to be the scene of considerable discussion and debate over evolution in the following decades. They were also well endowed with geologists, botanists, and zoologists, all of whom were being forced to come to grips with Darwin. Indeed the natural sciences were particularly well represented in these early years because New Zealand was a young, undeveloped country scarcely able to subsidize the expensive apparatus and technology required for pure research on a large scale. The New Zealand Institute's annual government grant of 500 pounds was not increased for fifty years. However the pursuit of natural history cost little but the time and energy necessary to capture beetles or to collect moa bones. Thus botany, zoology, and geology flourished, particularly when stimulated by the demand from overseas scientists like Darwin and Hooker for specimens and information. The scientists, too, were interested in establishing their own reputations. They were involved at first-hand in providing empirical evidence for evolution, as well as in applying the theory to the question of the origins and distribution of New Zealand's own flora and fauna. So although evolutionary debate was postponed in the 1860's, it could not be avoided forever.

The Presidential Addresses: Science and Jacob's Ladder

The addresses given by colonial eminenti at the foundation of the Institutes set the social, economic, and religious parameters within which they would develop. A brief survey of the content of the addresses is in order, so as to set the future development of colonial

science in context, and to analyse the conflicting forces within it. Despite the fact that both Darwin, and evolution, were studiously avoided these addresses are significant. For although Darwinism and Christianity were officially considered to be compatible, nevertheless for some people the authority of science subtly began to supplant the authority of Christianity. The beginning of this process is discernible in the presidential addresses.

Sir George Bowen's address to the New Zealand Institute as its first president exemplified the tensions inherent in colonial science. He made it clear that the pursuit of science would not be divorced from wider economic considerations, and that the government had no intention whatsoever of subsidizing scientific dilettantism. The Legislature's main aim in founding the Institute, said Bowen, was to provide guidance and aid for the colonists in 'subduing and replenishing the earth'.⁵⁹ In the decades ahead colonial science would be hamstrung far more by penny-pinching pragmatists, particularly in the Liberal period, than it ever would be by religious conservatives who had reservations about the theory of evolution.

Bowen sounded a democratic note. The discoveries of coal, gold, copper and iron proved that every colonist in a new and unexplored country was more or less a scientific observer. These valuable discoveries were due not so much to science as to chance, he argued, 'if that term can be properly applied to any of the great dispensations of Providence'.¹¹ In this interesting interpretation of mineralogical discoveries, it is clear that providential interpretations had not yet been rendered superfluous by the advancing explanatory power of science. What seemed like chance was interpreted

by Bowen as the action of Providence. Captain Hutton interpreted the apparently fortuitous operation of natural selection in exactly the same way.

Bowen went on to emphasize the necessity for technical and scientific education. That was not to disparage mathematics or classics, but 'in common with the foremost philosophers, scholars, and statesmen of the present day', he was convinced that it was neither wise nor 'politically and socially safe' to cultivate exclusively those branches of learning.⁶¹ Science, it was plain, was power, and it was essential that it be cultivated, popularized, and instilled into the minds of the young in order for a nation to compete in the international arena. Similar nationalist and imperialist rationales for the pursuit of science were to be expressed again and again within the Institutes.⁶²

Science revealed 'for our adoration the Divine ideas which are at the basis of all things', Bowen concluded. He went on to cite Genesis 28:12, comparing knowledge to Jacob's ladder 'the base of which rested on the primeval earth, while its crest was lost in the glory of Heaven'.⁶³ It was a most significant analogy, and illustrated the religious tensions generated by the growth of science. On the one hand the language suggested that expanding scientific knowledge would not upset traditional religion. But on the other hand the analogy implied that science might also be seen as a ladder to bridge the gap between heaven and earth, a new way of salvation. Some colonials would opt for the former interpretation and the lesser view of science. But others would opt for the latter interpretation, and would turn science into a religious faith to supplant Christianity.

The themes articulated by Bowen were repeated by the foundation presidents of the other Institutes as the ethos of colonial science was established. Mr. Justice Ward's attitude to science, as president of the Otago Institute, was as pragmatic and utilitarian as Bowen's. Surveying the history and philosophy of science from Plato to Hume he asserted that it was 'our own great countryman' Francis Bacon who showed that 'the highest end of wisdom is to be of use'. Every new scientific discovery added a new source of wealth to the colony and a fresh incentive to immigration.⁶⁴ Alfred Eccles echoed this view to the same body later in the year. The most useful and practical end of the Institutes, he declared, was to obtain knowledge of the raw materials that might be found or economically produced in the colony, and the best means to utilize them.⁶⁵ Science, it was plain, was money.

Ward went on to call for an investigation of the phenomena of spiritualism by men of science 'unswayed by imagination or superstition'. Believing that 'whatever is of Christianity should bear the strictest scrutiny in the clear light of day', he argued that spiritualistic phenomena would probably be explained scientifically, by some as yet unknown natural law. Here science and Christianity, far from being at war, went hand in hand to investigate these mysterious phenomena. Exhaustive acquaintance with the laws of nature, of course, might have to wait until 'we stand face to face with Him by whom those laws were given', he argued. Thus Ward denied science epistemological paramountcy and it took its place within but not supplanting a Christian framework, in which human knowledge was necessarily limited.⁶⁶ Without being in the least obscurantist, he

took a humble view of science, and opted for a conservative interpretation of the Jacob's ladder analogy.

Thomas B. Gillies told the Auckland Institute as its president that there must be collectors of facts as well as generalisers, and that members should play the former role, only occasionally hazarding a theory or speculation.⁶⁷ This was the dominant view of the colonial role in international science, and these sentiments were to be repeated many times in the years ahead. Most were prepared to acquiesce and to adopt this subservient role. Rarely do the early volumes of the Transactions and Proceedings of the New Zealand Institute contain anything but careful description and classification of botanical and zoological specimens. But Gillies had acquired political acumen from his years as Postmaster-general and Secretary of Lands in the Whitaker-Fox ministry, and latterly as superintendent of Auckland province. Disputes over controversial theories like Darwin's could easily endanger the viability of the struggling young Institute, and this was something all the presidents were determined to avoid. This was one reason why Gillies advised members to eschew theory and speculation, and a reason why all the presidents diplomatically avoided the question of evolution.

Beyond the practical, utilitarian advantages of science, according to Gillies, lay 'the higher pleasure, the nobler advantage, of thereby bringing ourselves into nearer communication with the great Creator of all. They are His works, His handwriting, to be read and studied by all men...'.⁶⁸ Here was the concordist natural theologian par excellence. Unlike some believers who, confronted with evolutionary science, retreated into a simple biblical literalism in

their view of creation, Gillies adopted a liberal position. 'The records of nature are as truly His word as His written revelation', he declared, and 'are His own fingers' writing, not passing through the filter of human language, uncorrupted by age or translations, and are not more liable to be misunderstood or misinterpreted than what we have been accustomed to call the Word'.⁶⁹

Historical criticism of the Biblical texts had evidently led Gillies to have some reservations about its accuracy and to adopt the view that nature, with science as its approved interpreter, was at least as reliable a revelation as Scripture. Some arch-conservatives in religion argued that the study of physical science led men to conclusions antagonistic to the teachings of revelation. This was a fallacy, Gillies argued, which arose from the 'foolish idolatry' which looked on the Bible as being 'the Word of God, instead of accepting it as what it professes to be, only a Word of God'. His conclusion: 'There is one only who is the Word', by which he meant Jesus Christ.⁷⁰

The basic premises of natural theology were still apparently intact. But biblical criticism had led Gillies to minimize the authority of the Scriptures, and to correspondingly elevate the authority of nature. In physicotheological terms he opted for God's Works over God's Word, and for the authority of science over the authority of the Bible. Given a degree of uncertainty about the trustworthiness of the written revelation, it seemed only sensible, and indeed positively devout, to emphasize the reliability of natural revelation. Yet in the years ahead some would follow Nature rather than the biblical revelation. For these people it would be a short,

simple, and logical step to full-blown social Darwinism and the adoption of the kind of racial and eugenic views which orthodox Christians were to find horrific. These developments will be discussed in later chapters, but their theological roots began here.

The essential function of the religious language in the presidential addresses, then, was to baptise science. It was a political rite, as much as it was a Christian one. The rhetoric was sufficiently free of doctrine to happily accommodate virtually all religious persuasions. This was all to the good since sectarian conflict, all were agreed, was one of the worst evils of the Old World to avoided in the New. In a high-minded scientific society it was absolute anathema.

The Institutes had a cathartic function, both politically and religiously. Politicians who had been at each others' throats during the day could retire to a meeting of the Wellington Philosophical Society at night and amicably discuss the latest fossil discoveries, the day's hostilities rapidly fading. Similarly, men of all religious persuasions (or none) might admire the majesty of the Creator as epitomized in the great Kauri tree, since the Book of God's Works, unlike the Book of God's Word, did not give rise to divisive doctrinal disputes. Natural theology provided the Institutes with a convenient, unsectarian, inclusivist religion. Once given a religious rubber stamp, of course, science could be turned to the use pragmatic presidents really had in mind: making money.

Butler and the Bishop

Although overt conflict between science and religion was largely

avoided within the Institutes in this opening decade, that did not stop Samuel Butler from attempting to use evolution to make churchmen look silly. The closest New Zealand came to a clash comparable with the Huxley-Wilberforce debate was a protracted controversy between Butler and Bishop C.J. Abraham of Wellington in the columns of the Christchurch Press between 1862 and 1863. Far from polarizing Cantabrians, it bored them. Butler, the enthusiastic Darwinian of 1862, became by 1879 a just as enthusiastic opponent of natural selection and the tyranny of the 'church scientific', his whole being in revolt at the idea that the universe was mere mindless mechanism.

Bishop-baiting was a somewhat unusual role for Butler, given the fact that he was the son of a canon and grandson of a Bishop who had himself been intended for the church. But comparative study of the Gospels, begun at Cambridge and continued on his Canterbury sheep station Mesopotamia, destroyed his faith in the Resurrection and Ascension of Christ.⁷¹

Late in 1862 he published a "Dialogue" in The Press between two speakers 'F' and 'C', the first posing as a warm advocate of Darwinism, the second as a religious traditionalist. Upon C's declaration that he simply did not like the Origin, F began to catechize him in order to refute his misunderstanding. He used local examples to illustrate the Darwinian 'struggle for life'. Cats on the sheep stations, for instance, competed amongst themselves for a diminishing supply of quail. C was convinced only that the theory was 'very horrid' and 'utterly subversive of Christianity'. F was unwilling to admit any irreconcilable conflict between Darwinism and Christianity, and concluded by recommending that C read the Origin

again.⁷²

A reply from an anonymous correspondent was immediately forthcoming, and Butler, friendly with J. Colborne Veel the editor of The Press, was sure it was Bishop Abraham.⁷³ Abraham argued that the Origin was merely a rehash of the evolutionary speculations of men like Giordano Bruno and Erasmus Darwin with which everyone was familiar. Such scepticism was not without scientific basis. There was little evidence in the fossil record of transitional forms linking distinct species, and Darwin had admitted that this was a real problem for his theory. It was clear from the tone of the article that Abraham was mildly vexed rather than rabid. Arguing that scientific questions really had nothing to do with religious ones, he concluded: 'were it not for their supposed effect upon religion, no-one would waste his time in reading about the possibility of polar bears swimming about and catching flies so long that they at last get the fins they wish for'.⁷⁴ The Bishop found the theory patently absurd.

Butler, provoked, charged Abraham with misrepresenting Darwin in a scandalously slovenly manner: 'A theory which the British Association is discussing with great care in England is not to be set down by off-hand nicknames in Canterbury'. Darwin must not be misrepresented as believing that a fly-catching polar bear might develop into a whale, he asserted. To impute such 'nonsense' to him was 'disgraceful'.⁷⁵

Other correspondents soon joined in. Despite the fact that apart from a single brief reference Darwin had avoided the subject of human origins in the Origin, it was the implications of evolution for man that concerned them. 'Darwin and the Novelists' argued that nobody

could accept Darwin's conclusions as absolutely proven. Max Muller, who was the leading philologist in Britain, had shown that the power of speech was an impassable chasm between man and all other animals. Man was hardly the most powerful animal and therefore hardly the best adapted to survive the struggle for existence.⁷⁶ This correspondent's arguments would be reiterated by religious conservatives in the years ahead. 'Nimmer Beschweift' ('Never-Tailed') wondered whether 'Darwin's great theory' might be applied to all creatures except man, 'for we happen to know that man was created in a certain image ... and that he is specially distinguished above all animals'.⁷⁷

Butler and Abraham continued to argue about the bear. Under the nom-de-plume 'The Savoyard' Abraham, quoting from an early edition of the Origin, proved conclusively that Darwin did say that he saw no difficulty in a race of bears 'being rendered by natural selection more and more aquatic in their structure and habits, with larger and larger mouths, till a creature was produced as monstrous as a whale'.⁷⁸ On such a reading the theory certainly did look fantastic, particularly for men like Abraham who were steeped in the fixist biology of Cuvier, and who were sceptical about the almost unlimited time which Darwin assumed for the process. Butler backed off, concluding his last letter with the observation that the Canterbury public must by now be 'dead sick of Darwin'.⁷⁹

Butler had two further articles published in The Press, including 'Darwin among the Machines', which was the genesis of Erewhon. However if he seemed to be heading towards anti-clericalism and scientific naturalism whilst in the colony, his return to England saw a gradual about face. He wrote a number of books on evolution

including Life and Habit (1877), Evolution Old and New (1879), Unconscious Memory (1880), and Luck or Cunning (1885) in which he disputed Darwin's originality in the historical development of evolutionary theory. Paradoxically the charge that Darwin was unoriginal had been levelled at Butler by Bishop Abraham in 1862. Butler also rejected the primacy of natural selection, and instead proposed a theory of evolution based on the conscious will and unconscious memory of organisms.⁸⁰ By the late 1870's his aversion to Darwin's mechanism of natural selection was paradoxically exactly the same as that of many of those colonial Christians whom he had ridiculed in 1862: elevated into an all-embracing philosophy it made the universe blind, mechanistic, and impersonal.⁸¹

Darwin rejected Butler's attempt to re-pristiniate Erasmus Darwin's and Lamarck's theories, and ignored Butler's accusations of personal treachery. Butler concluded that natural science too was an oppressive religion, with Darwin and Huxley as its high priests, and he became a sworn opponent of all establishments, ecclesiastical or scientific. He completed a curious and circuitous pilgrimage by eventually preferring the church.⁸²

The Reception of Darwinism in Nelson 1869

Despite Butler's deliberate attempt to create controversy in 1862, Cantabrians quickly tired of Darwinism. Consideration of a more typical early discussion – the reception of Darwinism in Nelson in 1869 – illustrates and reinforces this point that evolution was received with equanimity into colonial society. All those who contributed to the discussion were convinced concordists, asserting that science and religion were compatible. The relations between the

participants were characterized by consensus, not by bitterness and division. However it must be said that this was more a negative consensus, borne of an aversion to conflict, than a positive consensus, arrived at after a satisfactory resolution of the intellectual and theological issues.

On 15 June 1869 C.W. Richmond delivered a lecture in the Provincial Hall in Nelson entitled "Man's Place in Creation". Richmond was a very influential figure in the political and intellectual life of the colony. He had been Colonial Secretary and Treasurer under Stafford, Minister of Native Affairs from 1858 to 1860, and was a judge of the Supreme Court from 1862.⁸³ He had been born and brought up a Unitarian, a faith which was thoroughly rationalistic on theological questions.

He began by arguing that it had always been admitted that in terms of physical structure man was a member of the animal kingdom. But once only a little lower than the angels now Darwin and Huxley inter alia seemed to show that he was 'hardly removed one grade above the Apes, and just as much as these the creature of material necessity'.⁸⁴ Reviewing recent research in comparative anatomy and taxonomy in relation to the question, he regretfully concluded that 'it is plain on Mr. Darwin's theory, that these beasts are entitled to put in a detestable claim of cousin-ship [sic] to Man'.⁸⁵

Richmond explicitly repudiated the positivism of Hume, Comte, the Mills and Bain, as well as philosophical materialism: 'Materialists [may think] if they can, that their own Meditations, Feelings, Aspirations, are simply oxidation in Cerebral tissues of so much phosphorous', but science must not 'dictate to Mankind on subjects

which transcend her sphere'. Man's moral and spiritual capacities, the Judge decided, were his chief distinguishing characteristics, and his physiological affinity with the brutes merely confirmed one of the oldest human convictions and one of the first religious lessons: that man had a double nature, bestial as well as angelic. There was nothing in evolution to shake religion, he concluded.⁸⁶

This lecture was reviewed by the Nelson Examiner. Many people would be relieved, it declared, 'to be told by such an authority as Judge Richmond that science can be reconciled with religion, and that the belief in immortality need not be given up although the brain of a man is very like that of an ape'.⁸⁷ Significantly the reviewer (probably Alfred Domett) did not take the Judge to task for his religious heterodoxy. As long as Richmond was overtly 'pious', it did not apparently matter that he was not an orthodox Christian. He was also rather sceptical of the audience's ability to follow all of the Judge's 'fine-spun' scientific arguments: 'Such an audience will receive a dictum from the rostrum about free will, or the immateriality of the mind, with the same applause which they are always ready to accord to a quotation from Hugh Miller to prove that Genesis and Geology do not contradict each other. More than this lazy assent can scarcely be expected.' In his opinion, it was quite possible that both man and the 'stinging nettle' had 'grown up from one primordial protoplasm by the molecular changes caused therein by some unknown force', though he denied that this view was materialistic.⁸⁸

'A Working Man', refusing to be deceived, objected to what he called the 'strong materialistic tendency' of this last statement. He

was determined to provide an 'antidote' to such poison 'for the youth of Nelson'. He embarked on a lengthy and fervent scientific and philosophical rejection of the eternity of matter, all, he pointed out, 'without once referring to the Bible, where the evidence against the eternity of matter is overwhelming.'⁸⁹ This was typical of the determination of many conservatives to avoid arguments based on the letter of the Scriptures. Another conservative who signed himself 'Philo' echoed this fear of materialism. The reviewer's assertion that man had grown up from primordial protoplasm was a 'pure and simple assumption without the faintest proof.' Darwin had attempted to carry his conclusions far beyond their legitimate limit, he argued.⁹⁰

Archdeacon H.W. Harper remained unconvinced about the Judge's assertion that man and ape were physiologically alike. Even Huxley had pointed out, he argued in a letter to Richmond, that the largest gorilla skull had a capacity of 35 cubic inches whilst the smallest human skull had at least 46 cubic inches: 'Is not this a real distinction of an anatomical kind?' Harper did not reject the idea that, as he himself put it, man was 'plainly one of the animal Kingdom'. But in the Darwinian theory he could only see degrading materialism:

I fear that minds which accustom themselves to doubt the first creation of man - fresh and pure from the hands of his Creator and reduce him to the development of a brute, naturally doubt the re-creation of Man, and ignore that which follows out of the Incarnation, viz.: the sacred responsibility of Man's condition now as redeemed in Christ and made capable of ultimate salvation.(91)

Some two months later Richmond delivered another lecture at Nelson, this one entitled "The Modern Aspect of Natural Theology". The lecture was published in the Transactions and Proceedings of the New

Zealand Institute, and reprinted in the British National Reformer, which was a leading secularist organ edited by G.J. Holyoake.⁹² The previous lecture might well have been delivered by a broadminded Anglican Bishop, but in this one Richmond's distance from Christian orthodoxy was more apparent. His view of the historical relations between science and Christianity was ironic: 'the Australasian colonist is amused to learn, that by the Christian Father Lactantius, the Antipodes were held to be impossible; by St. Augustine, contrary to Scripture; by St. Boniface, of Mentz, beyond the latitude of salvation'.⁹³ He was little concerned to harmonise science and Scripture, the biblical revelation taking a distant second place in his theology to nature.

The de-divinisation of nature by Western science, argued Richmond, explained the 'passionate opposition' of a large section of the religious world to the extension of scientific knowledge. The Darwinian school posited a quasi-mechanical procession of known laws to explain species formation which seemed to rob the traditional view, with its emphasis on unique creative acts, of its miraculous character. This difficulty, he asserted, arose from a false antithesis between miracle and natural law. The power of God was no more at work in a miracle than in nature. To illustrate this point he drew an analogy between the Resurrection and the birth of babies: 'as a physical wonder, what is the resuscitation of a single life, whilst in the birth of Human infants (to speak only of this Planet) the new creation of living souls takes place by thousands every hour?'⁹⁴

He rejected the idea that evolution demolished the argument from design, though the simplistic teleology of Paley had to be abandoned,

and the Universe henceforth to be regarded 'not as a piecemeal series of particular contrivances to adapt particular creations to pre-established laws, but as a mighty whole in which all parts are mutually related'. Without this divine regard for order, of course, science would be impossible, the universe an 'indecipherable Enigma'. It was a matter of regret and a 'great error', Richmond concluded, that Darwin himself appeared to misinterpret the theological bearing of his own ideas, writing as if his theory tended to supersede the notion of intelligent design.⁹⁵ This assertion would be echoed by both scientists and churchmen in the years ahead. The lecture was an intelligent defence of natural religion against that science which overstepped its legitimate limits.

It did not go down entirely well, for all that, with the local Anglican Bishop. Bishop Suter felt it necessary to remind the clergy and lay representatives of the twelfth Synod of the Diocese of Nelson that in spite of the Judge's reverential and religious tone, theism was not Christianity. Suter's fair-minded attitude to the Judge personally did not allow him to minimize the fundamental theological differences between their creeds: 'amidst honeyed words, and professed identity of views Christianity and its essence may be politely shown to the door, or rudely thrust out, and many will walk with us just so long as we keep out of view the distinctive features of our creed'.⁹⁶

Although he was a firm evangelical, Suter was no inflexible biblical literalist. Though the Bible was the 'revelation of God', he freely admitted that there were undoubted difficulties in its interpretation, and that God had not yet given an infallible comment.

On scientific subjects he argued that the Bible used popular language. Far from science disproving the Bible Suter claimed that it actually verified and elucidated obscure passages. The sudden conflagration of the star Tau in the Northern Crown early in 1868 was, he argued, 'a revelation from science of the possibility of an event which Christian revelation predicts as certain', by which he meant the biblical apocalypse.⁹⁷

Suter went on to deal with the Darwinian theory. Far from rejecting it outright, he accepted that it might apply to animals and plants. But human 'mental phenomena', he asserted, could not be exhaustively accounted for in terms of natural selection. This was judicious and open-minded liberalism, not reactionary outrage. In Suter's opinion, the complexity of the organic world testified to the operation of a personal mind, not to the operation of an unthinking force nor of blind chance. He felt that Darwin needed to adduce more facts to support his 'development theory' before he would irrevocably abandon the 'Mosaic form' and special creation. Given the fact that large gaps remained in the fossil record, this was by no means an intransigently obscurantist position. He also insisted that it was dangerous to give credence to scientific men like Darwin or Huxley outside their own particular spheres of competence.⁹⁸

Suter felt that the Judge had speciously attempted to play off science and Christianity against each other. He attempted to show that Christianity was sensitive to science's insistence on the regularity of natural law. The Bible, he argued, upheld the majesty and permanence of law, the exceptional character of miracles bearing witness to the general rule of law. He resolutely refused to

capitulate to scientific naturalism however. To those who urged the church to preach a Christianity without miracles and a religion without doctrines he had a short and simple answer: 'Christ has come and spoken, and miracles were the manner, and doctrines the matter of what he said'. Christians professed and maintained an historical faith, he insisted, not a mere abstract morality.⁹⁹

Stepping back from the details and reviewing the general tenor of the Nelson discussions it is clear that consensus rather than conflict dominated. Certainly Bishop Suter insisted that Judge Richmond's theism was not Christianity. But that was as heated as debate got. The similarities between their two positions far outweighed the differences. Both cautiously accepted the Darwinian theory, denounced materialism, and insisted that Darwin explained away neither religion nor man's moral and metaphysical uniqueness.

As a correspondent to the Nelson Examiner declared, the differences between the Judge and his reviewers were less important than the common ground they shared. The main thing, he argued, was that all concerned were 'strongly opposed to materialism'.¹⁰⁰ So long as materialism was kept at bay, and peace prevailed, most colonists who felt like this correspondent were probably not too concerned about the theological distinctions which Bishop Suter found so important. They were concerned more with religion-as-social-cement than with religion-as-transcendent-truth.

The Initial Responses of Churchmen

As Bishop Suter exemplifies, contrary to the received view that the Origin was met by a 'furious tide of criticism ... and scornful ridicule',¹⁰¹ the initial responses of churchmen in this decade were

characterized by caution, deliberation, and open-mindedness. The churches did not rush to come to grips with Darwinism. Surprisingly little mention was made of it at all. Neither science nor Darwin were mentioned by Selwyn (or any other preacher) in Auckland Diocesan Synod sermons from 1859 right up until 1875. The Primate never touched on such questions in General Synod over the same period. Getting churches established, and ministering to a scattered flock already unsettled by the voyage over were the paramount considerations. Further unsettlement was to be avoided. Archdeacon H.W. Harper at Hokitika articulated this feeling when he suggested that C.W. Richmond's discussion of evolution might have been 'an unwise choice for our local Coast people ... for fear of materialistic views which might disturb minds utterly incompetent to discuss them.'¹⁰² Moderator Peter Barclay, similarly, felt that Presbyterian ministers had 'other things to do' than to deal with science and philosophy in public ministry and he warned against meeting the charges of false and anti-religious science from the pulpit or indeed anywhere else.¹⁰³

The comparative silence may also be explained by the fact that, given the theological unrest in Britain both over evolution and especially over the controversial Essays and Reviews (1860), no clear lead on these questions was given to colonial churchmen. However the dearth of ecclesiastical reactions to Darwin in this decade may indicate simply that, apart from those with a particular scientific or philosophical inclination, most clergymen were not particularly concerned about Darwinism, and were quite certain that Christianity had nothing to fear from his theories. It was certainly not the case that Darwinism induced a paralyzing spiritual crisis for the churches.

The official stance of the major denominations on the science-religion question was concordist. All insisted that nature and revelation must agree. Bishop Suter, as we have seen, articulated the Anglican position, while Rev. Peter Barclay spoke for the Presbyterians. In 1866 he told the General Assembly of the Presbyterian Church of New Zealand as Moderator that 'within their own province, we honour science and philosophy, and would endeavour to have them interpenetrated by the spirit of Christ.'¹⁰⁴ The churches were not antagonistic to science per se.

Yet though official spokesmen insisted that true science and true religion agreed, the question remained: was Darwinism true science? Anglicans like Suter, Harper, and Abraham, as we have seen, were less convinced about this. Canon James Stack displayed typically cautious attitudes. On 27 February 1867 Darwin, busy collecting material for his forthcoming The Expression of the Emotions in Man and Animals, wrote to Julius Haast requesting that he pass on a questionnaire to someone in close touch with the 'Natives'.¹⁰⁵ Haast sent it to his friend Canon Stack at Kaiapoi in North Canterbury where he was engaged in missionary endeavours. Stack's letter back to Haast, written on 20 May 1867, revealed his position on Darwin's theory:

Though I do not agree with his theory of development as at present stated, I think it is highly probable that, as he or others who take up the particular branch of science, to which he has devoted his great powers, advance in knowledge, many of the difficulties that stand in the way of reconciling his theory with the Mosaic account of the creation of the various orders of animal life will be cleared away.(106)

This was a far cry from rabid obscurantism. Stack expressed the highest regard for Darwin's scientific abilities. And his hesitancy over the Origin merely echoed that of a number of leading scientists

in the period. Sir William Thomson (later Lord Kelvin) had argued in an 1865 paper from computations on the rate of heat loss of the earth's crust that the earth was only about 98 million years old, or in other words that it was not nearly as old as the uniformitarian geologists' suggested and as natural selection required. Thomson had no doubt that evolution had occurred, but these calculations were sufficient, he felt, to disprove natural selection as the primary evolutionary mechanism. Fleeming Jenkin's review of the Origin in 1867 had also posed serious difficulties for Darwin. Jenkin argued that blending inheritance tended to cancel out the variations which were the raw material for natural selection.¹⁰⁷

Thomson's objection to the immense time-scale required by natural selection later proved groundless when further progress in geophysics showed the earth to be much older than he estimated. Jenkin's objection was also eventually defused with the rediscovery of Mendel's work at the end of the century which showed that inheritance was particulate rather than blending. But given these objections, as well as the admitted lack of intermediate forms in the fossil record, it was not surprising that Stack had reservations about the theory on scientific, as well as on religious grounds.

Stack was firmly convinced that any conflict between science and religion was apparent rather than real. 'The discoveries of science and the revelation of the Bible must agree; and if they do not always appear to do so, it is from some error in deciphering the Book of Nature or the Book of God's Word.' This admission that both books needed deciphering was a far cry from simplistic literalism. 'I shall feel it a privilege', he replied in a letter to Haast, 'if, by any

observations I can make, I can in any way advance the progress of truth'.¹⁰⁸ Darwin was delighted with the answers which Stack obtained to the questionnaire, 'though few, decidedly the best and clearest I have received from any quarter', and later sent him a copy of The Expression of the Emotions with the author's compliments inscribed.¹⁰⁹ Here was kindly co-operation between Anglican missionary and sage scientist, violent vituperation conspicuous only by its absence.

As a student at Islington College in England Stack had been influenced by F.D. Maurice and Charles Kingsley, both of whom immediately accepted the Darwinian theory.¹¹⁰ Stack found a kindred spirit in Christchurch in Rev. George Cotterill, a Cambridge M.A., and together they talked over evolution:

Writers who were scouted as infidels and condemned unheard, like Darwin and Huxley and Tyndall, we read and pondered over, being convinced in our own minds that the Book of Nature was as truly a revelation of God as the Bible itself; and that these two Books must be compared one with the other before the truth about Him could be known.(111)

If Anglican churchmen were initially somewhat hesitant about accepting the Darwinian theory Nonconformist ministers mostly avoided evolution. But they were not in the least hesitant about denouncing the 'profane and vain babblings and oppositions of science falsely so called'.¹¹² There was a growing tendency to deny the doctrine of a superintending Providence, and to assert that the Creator has little to do with the government of His world, Rev. Peter Barclay told the General Assembly of the Presbyterian Church of New Zealand. Such people talk about

"the grand foundation conception of universal law", "the invariable operation of a series of eternally impressed consequences", while the only God they admit is some unimaginable apirituality, very different from the great and

living God, the sovereign LORD of all. To such prayer is an inconsistency and an impertinence.(113)

In Barclay's opinion such assertions were not those of true science at all.

Yet Barclay was not anti-science. Whilst insisting on the efficacy of prayer, he insisted that it did not operate in extraordinary, preternatural ways quite beyond the ordinary course of nature: 'Cannot God hear and answer without a visible link?'¹¹⁴ This was an intelligent attempt to reformulate the doctrine of prayer in line with science's insistence on the regularity of nature without reformulating the doctrine out of existence. In the years that lay ahead the same objections as Barclay's to that science which stepped beyond its bounds would be raised, and similar reformulations of Christian doctrines would be attempted.

Barclay's denunciation of anti-religious science was typical of the zeal with which Presbyterians approached theological debate. But it is essential to avoid depicting Presbyterianism as a reactionary monolith, dominated by narrow-minded biblicists hostile to science. Presbyterians held science and scholarship in the highest regard. Certainly they insisted, against 'Romish tradition', that the Bible was the religion of Protestants.¹¹⁵ As Robert Scrimgeour put it in an 1869 article in the evangelical Presbyterian periodical The Evangelist, the Bible was 'Sufficient, Authoritative, Supreme, and Exclusive'. Yet Scrimgeour also insisted, and this was just as venerable a Protestant doctrine, that it was the right and duty of every man to examine the Bible for himself. He candidly admitted that there ^{were} obscure passages which were difficult to interpret, not only those involving prophecy, but also those involving geography and

natural history.¹¹⁶ In the years ahead some Presbyterians, like the ultra-conservative editor of The Evangelist Rev. James Copland, would emphasize the authority and inspiration of Scripture and fight evolution tooth and nail. But most educated Presbyterians would follow Rev. James MacGregor and Rev. William Salmond, whose private judgement convinced them that evolution was true, and compatible with Genesis.

Conclusion: The Phony War?

What was conspicuous about the colonial response to Darwinism in the 1860's was its quietness. In comparison both with Britain and with the volume of debate in the following decades there was very little discussion in New Zealand. The colony experienced nothing like the tensions between science and religion that Britain did, though as I have pointed out there are strong reasons for rejecting the view that the Huxley-Wilberforce debate provides an appropriate model for understanding the relations between British science and religion. The closest New Zealand came to a comparable clash was between Samuel Butler and Bishop Abraham. It was a storm in a teacup, and Butler himself soon rejected natural selection and battled the 'church scientific' with as much passion as the most ardent 'fundamentalist'.

The decade unequivocally belies any polarization model of the relations between science and religion. Hutton castigated clerical reaction as a fellow-believer aghast at the prospect of a disastrous and unnecessary breach between science and religion. He would play this mediating role with equal conviction for the rest of his life. Julius Haast, establishing the Canterbury Institute, was full of praise for the Creator and for what science revealed of His works. The

founders of the Institutes made it clear that science would be pursued very firmly within the prevailing moral and religious status quo.

Clergymen were engaged in coming to terms with the Darwinian theory. A few, like Bishop Abraham, initially rejected it, and had cogent scientific grounds for doing so. But the dominant clerical response must be seen in terms of a spectrum of opinion ranging from polite scepticism to cautious receptivity. Rabid rejection was conspicuous largely by its absence. All were convinced that true science and true religion agreed, that Christianity was not threatened by the progress of science, and that Darwinism would eventually be proved or disproved scientifically.

There were a number of other reasons why the 1860's was quiet over these issues. Colonists were preoccupied with other things: the New Zealand wars in the North; the Gold rushes in the South; getting established on the land or in the towns everywhere else. That a consensus approach to the science-religion question dominated was not surprising, given the predominance of the view that unity of religion was a requisite for moral health and social cohesion. Thus the 1860's passed relatively peacefully over the evolution question. To see it as a decade of 'phony war' is still to be dominated by the polarization paradigm, to assume that a war must inevitably take place.

Yet for all that, beneath a placid surface and despite repeated assurances that science and religion in general agreed, there were subtle tensions developing between science and Christianity. It was not at all clear, for instance, that the actual religion of the Institutes was Christianity rather than natural religion. Ominously, influential men like C.W. Richmond and T.B. Gillies argued that nature

spoke more reliably of God than the biblical revelation. In the decades ahead some would reject the Bible entirely and adopt instead an evolutionary faith. And if the Nelson discussions were any indication, most people simply wanted to avoid wrangling about doctrine and were quite happy so long as materialism was denounced and morality, social stability, and the future life thereby remained unthreatened.

Chapter Three

The 1870's: Trends Within Science

Discussion about the Darwinian theory began in earnest in the Institutes in the 1870's, and it reached a climax in Dunedin in 1876. Leading scientists rapidly accepted biological evolution, and it became normative within the Institutes. Yet the Institutes did not become irreligious. Presidents, professional scientists, and ordinary rank-and-file members proclaimed that Darwinism and Christianity were complementary, rather than contradictory. All who commented agreed that the atheistic evolutionism Ernst Haeckel attempted to popularize was dangerous nonsense. The relations between scientists and churchmen continued to be characterized more by consensus and harmony than by bitterness and division as both sides attempted to mitigate interim misunderstandings.

I shall also look in some detail in this chapter at the beliefs of colonial 'social Darwinists', those who advocated the application of the principle of selection to human society. They advocated that the State, rather than Nature, should do the selecting. Sceptical of orthodox Christianity, and inclined to turn evolution into a surrogate faith, they saw the extinction of the Maori race, and of 'unfit' classes of Europeans, as ethically desirable, since it ensured social 'progress'. Such evolutionary ethics were strongly rejected by Christians, who saw in social Darwinism their fears about materialistic science being realised. Thus real tensions were aroused in this decade by evolution. Yet the conflict cannot be interpreted in science versus religion terms. Social Darwinism was hardly a legitimate deduction from Darwinian biology.

The Otago Institute Debate 1876

Darwin had left the subject of human evolution virtually untouched in the Origin, apart from the cryptic sentence: 'Light will be thrown on the origin of man and his history'.¹ Yet it was the implications of evolution for man which everyone was concerned about. Charles Lyell outlined the slowly accumulating fossil evidence for the great antiquity of the human race in his The Antiquity of Man (1863). T.H. Huxley demonstrated man's evident physiological affinity with the apes in Man's Place in Nature (1863).

In The Descent of Man (1870) Darwin fleshed out the bearing of natural selection on human evolution. Humans, he argued, 'were descended from a hairy, tailed quadruped, probably arboreal in its habits, and an inhabitant of the Old World'.² Even mind, morality, and religion were explained in evolutionary terms. Intelligence was highly developed in man because it had survival value. Morality, too, was produced by natural selection, he argued. Those groups which emphasized co-operation and self-sacrifice were more likely to succeed in the struggle for existence than groups whose members killed each other. Darwin left nothing sacred untouched. All that had previously been considered uniquely human capacities - tool-using, conceptualization, self-consciousness, language, conscience, sense of beauty - had primitive counterparts in the animal kingdom, and had been developed in man by natural selection rather than divine intervention. Even belief in God Darwin compared with the instinctive reverence of a dog for its master.³

From its foundation in 1868 right up until 1876 the name of Darwin had scarcely been mentioned in the Otago Institute or for that

matter, with few exceptions, in the other Institutes. Partly the silence must have been due to hesitancy about the scientific status of the theory, though by 1870 anyone reading British scientific periodicals could hardly have failed to have been convinced. But even those who were convinced that evolution was scientifically reputable must have been wary of making a public issue of it, for in the early 1870's schism would almost certainly have crippled the Institutes. Where Darwin had been mentioned, by Haast in 1862 and by Travers in 1869, or the Darwinian theory was implicit as in Captain Hutton's paper 'On the Geographical Relations of the New Zealand Fauna' in 1872, little discussion had ensued, and no controversy.⁴ Of course all agreed that polemics were out of place in a scientific society. Most also accepted the idea that the colonial role in science was observation and collection of facts, leaving generalization and theorizing to the 'Masters' at Home. All these factors militated against divisive discussions.

The Council of the Otago Institute, however, felt in 1876 that their meetings had become too dull and technical as a result of this approach, and were inducing too little discussion and interchange of thought. The answer, they decided, was a series of popular lectures on current topics of interest. I shall describe the course of this lecture series before going on to analyze it in some detail with respect to my ongoing historiographical discussion. The narrative itself makes it quite plain that the debate cannot be interpreted in terms of the polarization of science and religion. There certainly was debate, but the most ardent advocates of Darwinism were themselves devout religious believers. The most vociferous religious anti-

Darwinian was almost immediately converted to biological evolution. The discussions were conducted in a gentlemanly tone, with rabid 'fundamentalist' diatribe conspicuous only by its absence.

The incumbent president Robert Gillies gave the first lecture in the series in the University Buildings on 22 August 1876. The subject was 'The Pedigree of Man', and the attendance, predictably, was large.⁵

Gillies was an important figure. Educated at Glasgow University, he had been part of the provincial surveying service, and helped found the Otago Institute. His scientific ability was recognized by election to the prestigious Linnaean Society. He was also an ardent evangelical Christian: a prominent member of the Prisoner's Aid Society, local treasurer of the London Missionary Society, and an elder at Knox Presbyterian Church, Dunedin.⁶

Gillies began the lecture by reviewing The History of Creation (1868), by the eminent German biologist and ardent Darwinian Ernst Haeckel. This was a book which combined brilliant evolutionary biology with blatant philosophical materialism. Gillies had no sympathy at all with the 'purely Materialistic' portions: 'In these it is a book which fully deserves every word that has been laid to the door of Evolution as Atheistic'. In this attitude, it may be noted, he undoubtedly had the entire support of Hutton and the overwhelming majority of the Institute.

Yet contrary to what the polarization paradigm would lead us to expect, Gillies accepted biological evolution, and declared that it had now become the basis for classification in systematic zoology and botany. He went on to review Haeckel's twenty-two stages in the

phylogenetic ancestry of man. Human evolution began with protoplasm, and developed through the ascidians (sea-squirts) which were the connecting link between the vertebrates and the invertebrates. The twentieth stage, according to Haeckel, was the development of the ape-like progenitors of the human race which had become extinct. The twenty-first stage was the development in man of an upright gait, and of primary mental powers. The twenty-second stage was the development of language, the formation of ideas, and of the 'higher consciousness'.

Gillies accepted this theory of human descent, but felt that Haeckel's schema was flawed. It left the beginning of life unexplained, and in Gillies' opinion mystery would always remain at this point. The jump from the worms to the ascidians, he felt, was too great, and thus the gap between vertebrates and invertebrates was too wide. Too much was inadequately accounted for: the separation of the sexes; the origin of amniote animals (reptiles, birds, and mammals); the sudden appearance of placental mammals; and the origin of articulate speech. Haeckel's recapitulation theory - that the developing embryo recapitulates the evolutionary history of the species - was also unproven, he asserted.

F.W. Hutton, by now lecturer in geology in the University of Otago and a dominant figure in colonial science, thanked the president for this 'admirable summary' of Haeckel's theory. But he felt that Gillies had been too cautious. No other theory but 'descent' had the slightest scientific evidence in its favour, he proclaimed, and the evidence in its favour was 'irresistible'. In terms of his physical structure man was more like an ape than a bat was like the lower

animals. Hutton, it was plain, was a thoroughly committed evolutionist. Yet he was not without religious sensitivity, for he quickly admitted that there was no direct proof that the mind of man had been immediately developed from the beasts. This was Hutton's way of immunizing the theory against the charge that it bestialized man.

Cleverly, this devout Anglican went on to garner further support amongst the god-fearing members of the Institute by depicting evolution as a new stage in the development of Judaeo-Christian ethics. Their ancient forefathers had been cruel and thought it right to kill those who did not belong to their own family or class. However 1850 years ago Jesus had taught that such clanship was immoral, he declared. Now they were being taught to extend their sympathies beyond the human race, that it was wrong to be cruel to animals. This was the true theory of descent, Hutton concluded, and if it was considered degrading then he was quite ready to be considered degraded by believing it.

Bishop Nevill rose at this point and declared that the existence of a descending scale of complexity in the organic world was never doubted. But he remained unconvinced by this theory of evolution. He had never read anything which proved descent from the 'primordial germ or atom', as Haeckel had attempted to do. And no clearly marked out passage from one species to another had been established, he added. Accepting the palaeontological facts, he asserted that the true explanation of the fossil record was that the Creator had proceeded on a gradual scale, 'superadding' to a species some faculty or attribute the others did not possess.

He was not an entire ignoramus about science, it must be noted.

He had gained second class honours in the natural science tripos at Cambridge, and took a keen amateur interest in geology and botany.⁷ But at this stage he could see no room for God in an apparently materialistic evolutionary process, and felt that gaps in the fossil record counted against it anyway. Following the German idealist nature philosopher Lorenz Oken, he preferred a transcendental and non-evolutionary explanation of the increase in complexity and organization of organic forms over time.

William Salmond, newly arrived professor of Divinity for the Presbyterian Church of Otago and Southland, and keen to flex his theological muscles, announced that he was more strongly convinced than ever before that evolution was utterly speculative. The existence of a graduated scale was no proof of the 'development' theory. He preferred Nevill's transcendental interpretation. It was really comical to see the way Haeckel leaped over spaces of ten thousand years, he declared. And if Hutton was right that it was wrong to be cruel to beasts, why was it not equally wicked to kill beasts as well as men? To represent the theory as proven was the height of folly, Salmond concluded, and it was entirely misguided for the theologian to trouble himself by making war against it.

Gillies, plainly embarrassed by Salmond, quickly concluded the evening's discussion. He regretted the turn the discussion had taken, he declared. However he had studied the subject for himself and become an evolutionist, and he believed that if others did the same, and he singled out Salmond explicitly, then they too would become evolutionists. Implicit in this exhortation was an appeal to the traditional Protestant insistence on the right of private judgement,

which Gillies' plainly believed would facilitate conversion of recalcitrant co-religionists to evolutionary views. Evolution presented no difficulty to those holding the Christian faith, he proclaimed in conclusion.

The second in the series of popular lectures was given by Hutton in the University Hall on 19 September. The Hall was filled and a large number of ladies were present.⁸ Hutton spoke extempore on 'The Inductive Method as Applied to the Theory of Descent'. The facts of anatomy and palaeontology, he began, suggested the following empirical law: 'Animals have come into existence upon a gradually ascending scale'. Two hypotheses had been advanced to explain this law: special creation upon a plan, and descent with modification. The former hypothesis Hutton sensitively but firmly rejected: 'It is very distasteful to me to show that the acceptance of such a hypothesis brings about an absurd idea of the Creator But it is necessary to insist upon it as long as men, like the Bishop of Dunedin and Professor Salmond ... say that they see no reason why special creation should not be true'.

He then subjected special creation to Lord Bacon's 'crucial instances' test. Bacon was considered the doyen of natural philosophers. In the young calf, Hutton argued, canine teeth were present which afterwards disappear. The New Zealand kakapo had large wings which were quite useless since its pectoral muscles were too weak to utilise them. The woodpecker of the La Plata pampas never saw a tree. All these examples showed that if the special creation hypothesis were true, and the Creator created by direct act in situ, He did not always put the right thing in the right place, He was a bad

workman who wasted materials, He was often subject to absent-mindedness, and He was fond of practical jokes. Darwin had used similar arguments and illustrations to demolish special creation in the Origin.

Hutton proceeded to compare the special creation and evolution hypotheses using Bacon's 'method of difference'. Europe had a large number of terrestrial mammals, while New Zealand had none, though its environment was certainly capable of supporting some. The only relevant difference was that Europe had fossil mammals, but New Zealand did not. This difference was explicable according to the descent theory, on the assumption that the fossil mammals were the progenitors of the presently existing species. But the difference was not explicable at all on special creation, except in terms of divine caprice, which was not a scientific explanation at all. Furthermore, he continued, small oceanic islands contained large numbers of distinct species which were closely allied to mainland species. This again was explicable on the Darwinian theory, but on special creation the inference was that the creative power was far more active on islands than on vast continents. Descent, Hutton concluded, complied with all the relevant tests and its proof was as complete as any other physical theory. He was warmly applauded.

Not all, however, were convinced. Rev. Dr D.M. Stuart, minister at Knox Presbyterian church, got to his feet and suggested that Hutton had not conclusively shown that all vegetables and animals were derived from one common stock, though he allowed that if that were admitted then certainly everything else must follow. This was polite non-commitment rather than rabid denunciation.

Local land agent, surveyor, and president of the YMCA John Aitken Connell admitted Darwin's considerable researches but felt that they required not only a profound observer, which Darwin undoubtedly was, but also a profound reasoner, which he was not. He went on to show that evolution could be subjected to reduction ad absurdum arguments as readily as could special creation. If all animals had derived from a common stock, Connell argued, then they had varied so much that now they included amongst their progeny the 'respected president of the Institute' and the limpet as well.

Professor of Anatomy and Physiology in the University of Otago Millen Coughtrey pointed out, in reply to Stuart, that animals and plants were indistinguishable in terms of their chemical constituents. Rev. R.L. Stanford, liberal-minded minister at All Saints Anglican church, announced that in his opinion the descent theory answered all the formulae laid down by the lecturer and was therefore 'unanswerable and irrefragably true'. Hutton briefly replied to Stuart and then Robert Gillies as chairman brought the evening to a close. The evening's discussion had forcibly reminded him of St. Augustine's reaction when the theory of a circular earth was first put forward: 'I do not see anything in Scripture against the world being round; but if it is round, then the people on the other side will be sticking like flies upon it. They therefore cannot belong to the same race as we, and cannot come under the scheme of redemption. Therefore the theory cannot be true'. This, Gillies declared, was typical of the arguments brought forward against evolution. This evangelical Presbyterian had become a very warm evolutionist, and was becoming more than a little impatient with intransigent traditionalists.

The final lecture in the series was given by Bishop Nevill on 17 October to a crowded University Hall on 'Inductions in support of the Argument for the Direct Creation of the Primordial Types'.⁹ Robert Gillies was again in the chair and opened the meeting by observing that though 'many' might not hold the same views on evolution as the Bishop, only good could result from discussion carried on in the same irenical spirit as hitherto. Most in the meeting, if Gillies was right, were already convinced evolutionists.

The Bishop began by observing that conservatism was appropriate for a clergyman in matters affecting the faith. He evidently felt that it was only responsible to defend the traditional biology. This would force the evolutionists to make good their case. No new organic forms had evolved during the period of human history, he asserted, and the fossil evidence of the intermediate forms required by the descent theory was inadequate. It was a question, not of evolutionists discovering a single missing link, but of finding any link anywhere.

This was too strong. In an 1868 lecture T.H. Huxley had announced the discovery of the extinct Archaeopteryx as an evolutionary link between the reptiles and the birds. The fossil record was admittedly not perfect but new evidence was being discovered all the time. American palaeontologist O.C. Marsh had announced in 1874 the discovery of a complete series of fossils of the horse family all the way from an unspecialised Eocene Orohippus to the highly specialised living Equus, together with every important intermediate form.¹⁰ Objections like Nevill's based on the absence of intermediate forms were beginning to look like special pleading.

How could the progenitors of the beaver, Nevill went on, foresee

the utility of highly developed teeth to their descendents and make efforts to get their incipient dentition arranged upon the appropriate plan? (This was of course Lamarckianism pure and simple, and a complete misunderstanding of the operation of natural selection.) Given the absurdity of this conception, it was obvious that evolution assigned effects to completely inadequate causes, Nevill argued. Such modifications could only be the work of an intelligent author. Thus on scientific grounds, he concluded, evolution could not claim to supplant the older view of the direct creation of primordial types. He was warmly applauded.

Few were convinced. But perhaps that was not Nevill's primary intention. His arguments were ruthlessly dispatched by Hutton, and the Otago Daily Times observed that the only conclusion which most people arrived at was that Evolution was proven, and Special Creation was not.¹¹ Henceforth the biology of the Otago Institute would be evolutionary.

Indeed William Salmond, who had initially been the most outspoken anti-evolutionist, announced his conversion after the lecture to the Dunedin press. He was now 'an Evolutionist of the Hutton kind'. The violent language he had initially used toward evolutionists, he explained, was 'only intended for certain extreme men of that way of thinking, chiefly of the German school'.¹² Once he saw that what he really objected to was a reputable scientific theory pressed into the service of atheistic materialism, and that the theory itself was compatible with Christianity, he was a ready, and penitent, convert.

Nevill, too, was soon converted. By 1884 he publicly proclaimed that 'far from having banished God ... the doctrine of evolution,

affords a very strong ground of belief in His existence'.¹³ For the rest of his life he was a convinced and outspoken concordist.

Gordon Parsonson blows this debate up out of all proportion, along the lines of the polarization/conflict paradigm, in his paper 'The Darwinian Debate in Otago 1876'. Such a debate could hardly be avoided, he asserts, given the fact that Dunedin was 'a fundamentalist stronghold'.¹⁴ In this context the term 'fundamentalist' is a complete anachronism, serving only to reinforce the stereotype that any opposition to the Darwinian theory was ipso facto blind bigoted biblicism. The word 'Fundamentalist' was actually coined by American Curtis Lee Laws of the Baptist Watchman Examiner on 1 July 1920.¹⁵ To read the militant American fundamentalism of the 1920's back into the Darwinian debates of the 1870's in New Zealand is illogical. Not a single person blithely appealed to the letter of Scripture as the last word on the matter during the entire course of the debates.

Parsonson also falls prey to the allure of positivism. The outcome of the debate, he argues, was that 'one was either for Darwin or against him, or as his critics preferred to put it, for or against God, and for most the choice was not difficult to make'.¹⁶ This kind of interpretation makes for exciting reading but it is unacceptable as history. Almost all remained for Darwin and for God as well: devout Anglican Hutton, Robert Gillies, leading scientist and evangelical Presbyterian G.M. Thomson, Rev. R.L. Stanford. It was not long, as we have seen, before Nevill and Salmond were converted to evolution, and it was only a matter of weeks before D.M. Stuart followed. Stuart's conversion will be analysed in more detail in the following chapter.

Robert Gillies' retiring presidential address reinforces the

point that to represent the 1876 debates as a bloody battle between science and religion distorts the real picture. Reviewing the previous year's popular lecture series early in 1877 he was glad to report that the 'most kindly feeling' and 'courteous consideration' for each other's opinions was shown by everyone.¹⁷ For this 'happy result' the Institute was indebted to Captain Hutton for his 'wise and lucid lecture', and especially to Bishop Nevill for the 'high tone and gentlemanly feeling' which characterised the discussions.

The single exception, according to Gillies, was Salmond, who had affected contempt for the subject as being 'beneath the notice of theologians'. Salmond's view, that evolution and Christianity were absolutely contradictory, was in Gillies opinion 'not the position taken by many of our best and wisest theologians at home', and offered an impossible choice for all those like himself who both accepted the Christian revelation as true and who had had evolution 'forced on our convictions by the stern logic of facts'.¹⁸ In support of this contention Gillies cited Professor Bruce in the British and Foreign Evangelical Review, who argued that evolution was not atheistic, and warned theologians that God must not be erected into a barrier against science's pursuit of natural causes.

Theological circles, Gillies continued, had made far too much of conservative Princeton theologian Charles Hodge's What is Darwinism (1874). Hodge was an Old School Presbyterian and it was his opinion that biblical supernaturalism and evolutionary naturalism were utterly irreconcilable. In Gillies' opinion this was mistaken. Evolution as a scientific doctrine was accepted by nearly all scientific men, he asserted, and was recognized by leading theologians as well as by

hosts of pious, intelligent laymen as entirely compatible with Christianity. The theological doctrine of evolution, Gillies averred, was a quite different matter. It was simply another form of atheism or materialism which scientific men did not even trouble themselves about and which no-one but avowed Materialists or Pantheists held.¹⁹

The only conflict here was intra-religious, between fellow Presbyterians Gillies and Salmond, not between religion and science. And in the Otago Institute, and in colonial science in general, it was Gillies' irenic reconciliation of evolution and Christianity, not Salmond's over-hasty polarizing rhetoric, which triumphed.

The Institute was not divided over the debate. It was most significant that Bishop Nevill was elected president the following year. He suggested in his inaugural address that his selection indicated that members generally wanted it known that, whatever their opinions about questions of detail and modes of operation, as students of science they acknowledged one great and beneficent First Cause, and even more that 'at least in its broad outlines and all-hallowing principles, the Christian Religion is held to be entirely consistent with all that nature has unfolded'.²⁰ Not a single member of the Institute protested at this assertion.

Contrary to Parsonson's idea that the Otago Institute banished God in 1876 by accepting Darwin, there is clear evidence that the tone of the Institute remained warmly Christian. In 1879, for instance, Rev. William Salmond read a paper entitled 'A Criticism of Herbert Spencer's First Principles'. He argued that Spencer's concept of God as the 'Unknowable' was absurd and contradictory. He concluded by quoting the initial verse of the gospel of John:

I have no sufficient reason, no reason at all for doubting or refusing to confess, "In the beginning was the Word, and the Word was God"; or, in modern language, "In the beginning was a living, self-conscious Intelligence, and that Intelligence was God". I have found no reason for substituting, "In the beginning was the Unknowable"; and still less for saying, "In the beginning were thinking atoms"; and still less for writing, "In the beginning was carbon"; and that is the last improvement of which we have heard tell.

Members were evidently delighted. They greeted this emphatic rejection of Spencerian agnosticism with loud and continued applause.²¹

Residual tensions within the Institute over Darwinism persisted into the next decade. On 22 October 1880 the Council of the Institute decided to send a congratulatory resolution to Darwin on the 'coming of age' of the Origin.²² At a meeting held on 8 December a letter was read from W. Arthur dissenting from the action of the Council in sending the address.²³ But one swallow does not make a summer, and a lone intransigent anti-Darwinian does not make a war between science and religion. The Council was dominated by practising Christians who accepted evolution: men like ardent Presbyterian G.M. Thomson, and devout Anglican T.M. Hocken.

The Concordist Consensus within the Institutes

Concordism - the harmony of science and religion - was the dominant theme throughout the Institutes in the 1870's. Geology, Julius Haast declared in his characteristically florid style in 1872, occupied the highest rank of human knowledge: 'Do you not think that it must be a beautiful science which teaches you to decipher the sublime language written by the finger of God all round?' This language was too excessive for mere formalism. 'Those who could not decipher that book', he argued, 'walk as it were blindfolded over this

beautiful earth, where everywhere - from the highest alpine summit down to the smallest grain of sand on the seashore - all things give evidence of an ever-kind, all-loving Providence'.²⁴ Darwin had not destroyed Haast's belief in a thoroughly orthodox doctrine of Providence and, despite the apparent wastage and cruelty of natural selection, he continued to believe that God was good.

Robert Gillies was a convinced evolutionist, and his science, like Haast's, remained animated by the worshipful spirit of natural theology. He read a paper to the Otago Institute in 1875 entitled 'On the Habits of the Trap-door Spider' which simply overflowed with delight at the wonders of God in creation. His careful description of a series of trap-doors was typical:

No. 14 is also a little gem. The herbage is thick and close on the surface of the sod; but there is not the faintest trace of the soil and clay that must have been excavated from the hole to be seen near it. The ingeniously artistic, and yet natural way in which the grasses, ferns, mosses, seeds etc. are arranged on the lid, and are made to correspond with those around, challenges detection, and excites our admiration.(25)

Even when evolution was not specifically mentioned, it was always insisted that science buttressed the traditional moral and religious order. Mr. Justice Gresson, Chancellor of the Anglican diocese of Christchurch, believed that natural science was not only a morally improving but also a spiritually delightful pursuit. The earnest naturalist, he told the Canterbury Institute, was not

tempted to sit at home dreaming over impossible scenes of pleasure, or to go for amusement to haunts of coarse excitement, if he have in every hedge, bank, and woodland, and running stream, in every bird among the boughs, and every cloud above his head, stores of interest, which will enable him to forget awhile himself and man, and all the cares, even all the hopes of human life, and to be alone with the inexhaustible beauty and glory of nature, and of God who made her.(26)

In similar vein, J.S. Webb exhorted the Otago Institute that there was nothing better than natural history for the formation and maintenance of healthful habits. Nature, in his opinion, had an ultimately spiritual point of reference: 'No avenues lead more directly up to what is Highest, both in Earth and in Heaven, than hers'.²⁷ New Zealand beetles, Captain Brown told the Auckland Institute in 1875, would always prove 'a source of interest to the studious, and ... of pleasure, even to those who display but little inclination to study the works of the Creator, as exhibited by this beautiful order of insects'.²⁸

Yet there was little which was explicitly Christian about most of this language. Religion within the Institutes was valued mostly as a solvent of sectarian distinctions and as social cement. Natural religion fulfilled this role more adequately than Christianity, since its doctrinal imprecision did not raise the spectre of sectarianism. For, after all, these were Philosophical Institutes, and not churches. They were devoted to the advancement of science and the arts, not to the advancement of religion as such. Thus religion found a place largely insofar as it conferred 'respectability' upon the scientific enterprise.

Nonetheless the fundamental premise of natural theology, that the Book of Nature and the Book of Revelation were written by the same Author and must therefore agree, continued basically intact throughout the decade. Leading Anglican Mr. Justice Gresson made this point when he observed in 1872 that 'this fallacy is well-nigh exploded ... that anything in nature could be at variance with the revelation which proceeded from the God of nature.'²⁹ Similarly, Bishop Nevill declared

that his selection as president of the Otago Institute in 1877 indicated that members generally wanted it understood that 'the Christian religion is held to be entirely consistent with all that nature has unfolded.'³⁰

Some members attempted more detailed reconciliations of evolution and Genesis. T.H. Cockburn Hood's was typical of the period. Ernst Haeckel in The History of Creation had shown that Australia's rat-like marsupials were the certain progenitors of the human race seventeen stages back. As Cockburn Hood put it, this merely put flesh on the bones of the Genesis account: 'We have always known that man was made of the dust of the earth, but through what forms that dust had previously passed, we had not been precisely informed until now.'³¹

In 1871 lay Anglican Mr. Justice Chapman, who was a competent self-taught botanist and geographer, read a paper to the Otago Institute 'On Sir William Thomson's Hypothesis that the Germ of Life is derived from Meteors'. Thomson's theory, and the famous physicist was himself a practising Christian, was that organic life on earth originated from 'seeds' borne by meteorites produced by an exploding planet. The problem with this solution, said Chapman, was that it begged the question:

If the Creator created by direct act, why should not that act have been done on this planet, as well as on others? If, on the other hand, the Creator created by establishing laws, by the operation of which life was gradually evolved from matter, ... why should such beneficial laws not come into operation on this planet, as well as on others?(32)

The one thing Chapman was certain about, even if the second and evolutionary alternative proved true, was the sovereignty of the Creator. Direct creation or creation by natural law were equally

acceptable alternatives.

Rev. Dr. A. G. Purchas prepared the way for Darwin in the Auckland Institute in 1879. An ordained Anglican minister, he had been resident surgeon at Auckland hospital for a considerable period. He helped found the Auckland Institute in 1867 and was its president for three terms. His scientific interests were eclectic.³³ Like the other presidents, he saw evolution as God's method of creation: 'the theory of Evolution, if it could be absolutely proved to be true, would give us ... a general view of the progressive work of creation'.³⁴ Anglican clergy and laity like Chapman and Purchas adopted the role of mediators within the Institutes in the 1870's, cautiously smoothing the way for the acceptance of evolutionary theory, politely insisting that it be interpreted theistically.

By the mid-1870's, then, with the Otago Institute the tardiest convert, evolution had become normative within the Institutes. As Theophilus Heale put it to the Auckland Institute: 'The leading principles of Darwinism have well nigh passed out of the pale of discussion, and have become almost universally received as an "established scientific truth".' But, as the preceding discussion has shown, the Institutes did not become positivistic and irreligious. Few believed that Darwin had undermined human uniqueness, or traditional religious beliefs. Heale spoke for many when he suggested that the origin of the intellectual conceptions was the greatest difficulty for an evolutionist, the capacity for abstract ideas being an almost 'infinite step' in the process of development.³⁵

Typical were the views of J.T. Thomson, an Anglican who had been chief Otago Surveyor and was now a leading light of the Otago

Institute. He found the Darwinian theory quite convincing as far as man's physical structure went. Every bone in the human body had its counterpart in the ape, and chemically they were identical: 'both are a mere handful of ash and a bucket of liquid'.³⁶ However he could not help feeling that Darwin had been 'too much among apes, monkeys, and parrots to give a verdict in harmony with the facts and teachings of other sciences besides those of natural history, and without which no opinions can be held to be generally allowable, or even acceptable.'³⁷ In Thomson's opinion man was separated from the lower animals by 'a gulf unfathomable', set apart by virtue of possessing the 'divine gift of reason', free-will, and an immortal soul.³⁸

Professional scientist and ardent Darwinian Captain Hutton echoed these views. Convinced that man had physically descended from the beasts, he was just as convinced that life and mind had been introduced on earth from without. Only the bolder Materialist or Pantheist believed that life had evolved from purely physical forces, he asserted. But in fact only theism was truly scientific: 'He is the theist who stops with science and refuses to follow faith into the dreamy and dreary regions of Materialism and Pantheism.' In Hutton's opinion E.B. Tylor had shown that articulate language and religion separated man from the lower animals.³⁹

Walter Buller took a similar position. A convinced Darwinian beginning to establish an international reputation as an ornithologist, he believed with A.R. Wallace that human intellect and morality were spiritual additions to the evolutionary process.⁴⁰ The consensus of opinion within the Institutes, then, was that although biological evolution was undoubtedly true, Darwin had explained away

neither God nor man's moral and metaphysical uniqueness, the cornerstones of religion. There were no aggressive agnostics like Huxley within the New Zealand scientific community. Darwin had revolutionized biology, but the Institutes had hardly become citadels of scientific positivism.

Religion and the Politics of Science

Why was this the case? There were militant secularists like Robert Stout outside it, waging unceasing war on the churches. Yet his Spencerian agnosticism, which might have been an effective weapon against religion had scientists been inclined to use it, was not taken up. Most scientists remained at least nominally religious, and the relations between scientists and churchmen within the Institutes could hardly have been better. The religion of the Institutes was a lukewarm admixture of Christianity and natural religion rather than a militant scientific positivism.

The answer to this question lies largely in the social and cultural context of colonial science. As Adrian Desmond and F.M. Turner (among others) have shown, only in the most superficial and partisan sense can the battle between science and religion over evolution in Britain be interpreted as a battle between scientific truth and religious ignorance. It was fundamentally a power struggle between two competing groups over who was to control British science.⁴¹

On the one hand was the entrenched old guard who had always dominated British science: Oxbridge-educated, conservative, aristocratic, financially independent, and clerical. Opposing them was the rising breed of younger scientists led by T.H. Huxley. Dependent

on obtaining professional scientific positions for their livelihood, and determined to put science at the service of the mercantile classes which they represented, they were determined to break the power of the entrenched elite.

Thus they professionalized science in order to get rid of the amateur, the dabbler, the aristocratic dilettante, and to consolidate their own empire. Thus they attacked 'theology and parsondom' (in Huxley's phrase) and secularized science. Evolution was a most convenient club with which to bludgeon the Establishment out of science. Scientific agnosticism, despite Huxley's propaganda, was less the product of a cool concern for truth unfettered by religious dogma, than an ideological weapon designed to break the power of the dominant, clerical, scientific establishment, and to reinforce the power of the young, rising, middle-class professional scientists.

The contrast with New Zealand could not have been more marked. The power structure within colonial science was fluid, open, almost a vacuum. Incoming professional scientists like Hutton, Haast, and Hector had no entrenched elite backed by an established church to elbow aside in order to secure their own position. They could dominate the Institutes, establish their professional autonomy, and gain prestige and recognition, pretty much as they liked. They had no need for a radical ideology like positivism, agnosticism, or materialism as a political weapon. Thus the tensions within colonial science over religion were considerably milder than they were in Britain.

In addition there was no established church in New Zealand. Anglican clergymen in particular adopted a lower profile within science than their British counterparts. Bishop Nevill's defence of

direct creation in the Otago Institute debate was reasoned, gentlemanly, and, in the face of Hutton's arguments, ineffectual. Anglican presidents – Mr Justice Gresson in the Canterbury Institute, Mr Justice Chapman at Otago, and Rev. A. G. Purchas at Auckland – were decidedly liberal and open-minded about evolution, and bent over backwards to avoid generating any kind of anti-establishment backlash. Presbyterian theologian William Salmond's opposition seemed for a time portentous. Yet with liberal co-religionist Robert Gillies at the helm, berating Salmond, placating Hutton, and harmonizing evolution and Christianity, schism along religious lines within the Otago Institute was avoided. Indeed Salmond himself soon backed down.

Clergymen could hardly become a dominating and obstructive presence within science for the additional and very simple reason that they did not have the time. There were fewer easy livings than there were in Britain. Establishing churches and ministering to widely-dispersed congregations took up most of their energy. As Bishop Nevill, apologizing for declining to comment on the latest results of scientific research as the retiring president normally did, observed in 1877:

One who is debarred by the ceaseless pressure of other duties from conducting a course of independent enquiry, and who can do little more than skim the pages of a scientific journal amid the inconveniences of a coach journey or the difficulties of a lively railway carriage ... can hardly on that account venture on so ambitious a flight.(42)

Economic and Professional Tensions within Colonial Science

Religious tensions within colonial science were minimal for all these reasons. Hence economic and professional tensions assumed a correspondingly larger significance. Members concentrated on selling

science to the politicians controlling the purse-strings, as well as to the general public, and they fought amongst themselves to establish reputations. I will look first at the tensions which arose over the question of the appropriate relationship between science and the colonial economy, and then at professional tensions within the scientific community.

William Travers reminded the Wellington Society in 1871 that the great object of scientific work was 'to arrive at a sound knowledge of matters affecting the material welfare of the country'.⁴³ Mr Justice Chapman argued that economic progress depended on the extension of scientific knowledge to all.⁴⁴ This pragmatic and calculated subordination of science to the demands of a needy colonial economy evinced little protest, and was probably accepted even by high-minded scientists as a necessary evil. Science, the message was clear, was money.

Even the purest of transactions, like the exchange of zoological specimens, could be turned to the national account. Exchanging specimens with the Smithsonian Institute and the Museum of Comparative Zoology at Harvard, J.S. Webb assured the Otago Institute, would establish a permanent advertisement of colonial resources and thus become an inexpensive and useful emigration agent.⁴⁵

The pursuit of science was justified not only in terms of its contribution to the country's coffers, but also in terms of its contribution to national prestige and security. For science was not only money, it was power. New Zealand must possess models and scientific apparatus, R.C. Barstow told the Auckland Institute in 1875, otherwise she would 'drop behind in the march of human

advancement'.⁴⁶ Julius Haast made the connection between science and national efficiency even more explicit when he declared to the Canterbury Institute that the German victory in the Franco-Prussian war was due in large part to the fact that German education, with a scientific and technical component, reached all classes better than the French.⁴⁷

This explicit connection between science and the power of the state is significant. Moves toward extending scientific and technical education in the Liberal period, then, were probably motivated as much by considerations of social efficiency as by egalitarian convictions. W.H. Oliver, for instance, has suggested that the motivation behind Liberal legislation has been seen too much in terms of social justice and humanitarianism, and not enough in terms of social efficiency. Given the fact that the ideas I have been discussing were widely held by politicians, scientists, and educators in this antecedent period, Oliver's view is probably justified.⁴⁸

Although most were prepared to justify science in terms of its extrinsic economic value, significant tensions did arise between scientists and penny-pinching pragmatists. The Canterbury Provincial Council had been very reluctant to pay the salary of Julius Haast when in his capacity as Provincial Geologist he stubbornly refused to declare that gold would be found in Canterbury. J.S. Webb complained to the Otago Institute that the feeling was even stronger in the colonies than at home that the study of any department of natural history which did not directly serve industrial purposes was 'a frivolous occupation for adults'.⁴⁹ Plainly science was considered something of a fringe activity by the determined utilitarians who

dominated colonial politics.

The Canterbury Institute felt the full blast of Professor Bickerton's wrath at such meanness. He was determined to make a way in the Antipodean wilderness for the coming kingdom of Science, and savaged prevailing attitudes in a review of the history of astronomy. Tycho Brahe, Kepler, and Galileo, led on by Copernicus, he declared

with the insane folly of visionaries, neglected their business, and again went star-gazing. Many others followed the pernicious example of these unpractical dreamers, until the long succession of such lunatics, and the wonderful method of their madness, impelled even the most stolid to look for themselves, and then the astonishing discovery was made that men were not entirely composed of pocket and stomach. In fact, that unless development were to proceed backwards, and the tail again manifest itself, intellectual food was as essential as corporeal.(50)

Some scientists, it was plain, were angered and antagonised by the money-minded men who refused to subsidize science for science's sake much more than they were by religious traditionalists who refused to accept evolution.

Professional disputes over purely scientific issues undoubtedly cleft the colonial scientific community more deeply than debate over the religious implications of evolution. Great rivalry existed between Hutton and Hector, for instance. Following a professional dispute in 1872 Hector let it be known in Nelson that Hutton was ungrateful and insubordinate and, but for the fact that he had no desire to see Mrs Hutton and the children starve, he would sack him. Hutton felt that Hector was simply jealous. He wrote in a letter to Haast that if he left the Geological Survey, and Haast also refused to work for Hector, the Survey would fold, as Hector was incapable of writing proper reports.⁵¹

This was not the only controversy, for the scientists had their

own reputations to establish, if necessary at others' expense. Hutton attacked Haast's theories on the formation of the Canterbury Plains. Travers rejected Haast's glaciation theories. Haast, Colenso and Stack lined up against Hector, Hutton, Travers and Mantell on the date of extinction of the moa.⁵² The debate on the moa was fierce, even damaging to youthful colonial science.⁵³ In 1875 a heated controversy blew up when Alexander Mackay, employed by Haast to excavate the 'Moa Bone Point Cave' which Haast had discovered, published his discoveries without notifying his employer.⁵⁴ Disputes about religion were regarded as unproductive and infra dig. Disputes about scientific issues were another matter, and flared up quite often.

Haeckel and Evolutionary Materialism

Thus there was more conflict within science over economic and professional issues than between religion and science over evolution. That consensus and not conflict prevailed over religious issues may be illustrated and reinforced by considering the blanket opposition which arose within the Institutes and within society at large to the radical philosophical views of the German biologist Ernst Haeckel. He had abandoned Christianity out of disappointment at the failure of the liberal revolutions of 1848. He thereafter became a political radical, an aggressive propagandist for scientific materialism, and Darwin's foremost continental disciple. His The History of Creation (1868) was an attempt to enlist the scientific authority of evolution to discredit religion and to popularize materialistic monism. Though they admired his evolutionary biology, colonial scientists found his anti-religious philosophy an entirely different matter. It was unanimously rejected by scientists and churchmen alike.

Those Anglicans who commented condemned Haeckel's views politely. Rev. Dr Arthur Purchas told the Auckland Institute in his presidential address in 1879 that the materialistic philosophy which Haeckel and his friends were attempting to force upon the world was quite out of place. No-one had the right to make such evolutionism 'a sort of new religion, or, rather, a substitute for all religion'.⁵⁵ In Archdeacon Harper's opinion Haeckel was an example of 'the eager prejudice of the untheological mind'.⁵⁶

Nonconformists treated Haeckel with more vigour. Undenominational minister Samuel Edger accepted Darwin but denounced Haeckel to the Auckland Institute as a 'scientific Pope'.⁵⁷ Liberal Wesleyan Rev. A.R. Fitchett also accepted evolution but dismissed the philosophies of atheistic German evolutionists Haeckel, Buchner and Schmidt, and warned that 'we should remember that there may be an anti-religious as well as a religious fanaticism, and that the former sometimes finds it convenient to assume a scientific dress'. Such men were in his opinion 'guilty of a flagrant departure from the true scientific spirit'.⁵⁸ Unitarian C.W. Richmond found materialism simply outrageous:

Can we indeed believe that saint and sage, philosopher and poet; the play of fancy, the method of reason, the struggles of the Will, the warnings of the Conscience ...; all the drama of history; all the passion of life; are, as this pseudo-science intends to teach us, the mere outcome and expression of molecular change, all products alike of the fortuitous concourse of atoms? Rather let us confess an ineffable mystery than thus darken counsel by words without knowledge.(59)

But if it might be expected that churchmen would reject anti-religious science, it was significant that scientists were hardly less vociferous. President of the Otago Institute Robert Gillies declared that in its materialistic portions Haeckel's book 'fully deserves

every word that has been laid to the door of Evolution as Atheistic'.⁶⁰ Typically a strong distinction was drawn between Darwin, who was depicted as a cautious, undogmatic scientist and reverent believer, and Haeckel, whose science went way beyond the facts, and whose philosophy was absurd. F.W. Hutton adopted this position in a review of The History of Creation appearing in The New Zealand Magazine in 1876. In a later article he dismissed Materialism as completely unscientific.⁶¹

What disturbed colonists in the 1870's and 1880's was the way in which materialistic views were being widely disseminated in Britain. Major Richardson warned in his inaugural address at the opening of the University of Otago in 1871 that 'materialism penetrates by thousands and tens of thousands in the form of a cheap literature every corner of our native land, and in the darkest and dreariest nooks, where even the advanced guard of the Christian ministry and educators have scarcely reached.'⁶² The problem in Richardson's opinion was that the 'missionaries of science' at Home refused to stoop to expound the 'wondrous book of nature' to the uneducated and so it remained inaccessible to ordinary people. The implication was, of course, that both Christian ministers and the 'missionaries of science' in New Zealand ought to get busy.

In 1875, therefore, evangelical Anglican Rev. George Cotterill sought to have Dr Ludwig Buchner's book Force and Matter removed from the library of the Christchurch Mechanics Institute by vote of the library committee. The book attempted to popularize atheistic materialism, to convince its readers that there was neither God nor mind nor purpose in the universe, which was a blind, unalterable

necessity of the laws of matter. Cotterill failed to have it removed and resigned from the committee.⁶³ This decision did not mean that the committee supported the book's philosophy, indeed probably quite the reverse. Most likely it was felt that banning the book would only increase interest in it.

Materialism was considered odious not just for moral and religious reasons, but also for political reasons. Conservative Presbyterian Rev. James Copland warned his readers in The Evangelist that the materialistic philosophy of J.S. Mill was dangerous. It was a philosophy 'in close alliance with all the most radical and revolutionary elements in the country'.⁶⁴ Here religious orthodoxy and political conservatism were in the strongest possible agreement.

Indeed it might well be argued that the prevailing opposition to naturalistic or materialistic interpretations of evolution, and the overwhelming preference for providential interpretations, reflected political conservatism as much as religious orthodoxy. Undoubtedly many felt that the whole framework both of nature and of the civil order would be swept away unless held together by the hand of Providence. Thus they were led to oppose scientific materialism, not just by religious conviction, but also by conservative political instinct.

Despite conservative fears, materialism evidently found the colonial climate rather inclement. Exhaustive survey of the Transactions reveals that only two men ever explicitly advocated philosophical materialism like Haeckel's within the Institutes. They both proved the truth of Hutton's charge that it was unscientific. They found themselves beyond the pale, not only of religious

orthodoxy, but also of mainstream science.

Professed materialist Dr A.K. Newman, for instance, was 'as shocked as the most orthodox of believers' at F.W. Frankland's assertion of a pansychist philosophy in the Wellington Society in 1879.⁶⁵ He thought Frankland had 'exalted mind far too much instead of relegating it to its really insignificant position in the universe', and went on to suggest that he 'could just as easily prove that matter was electricity-stuff as Mr Frankland had proved that it was mind-stuff.'⁶⁶

Newman's philosophical materialism was ostensibly derived from a rigorously 'positive' and scientific epistemology. Yet it produced some rather startling science. His metaphysics were in evidence in a paper he read to the Wellington Society in 1876 entitled 'Speculations on the Physiological Changes obtaining in the English Races when Transplanted'. Since drunkenness was a form of vice particularly suited to cold climates, he argued, the greater warmth of the New Zealand climate would tend to check it. Any physiologist could see that young New Zealanders as a class must be sober. Their spareness of frame and general lack of vigour meant that they were generally 'unfit for drunkenness'.⁴¹ The magistrates at the meeting undoubtedly found Newman's arguments utterly unconvincing, for drunkenness was a tiresomely common offence in the colony.

Following Cooper's argument to the British Association in 1875, Newman went on to assert that a nation's political, social and religious life was affected by the inorganic impurities in its drinking water. Clearly, he concluded, Sir J. Mackintosh was right that 'the difference between one man's mind and another depended

solely on the amount of coffee drunk by each'.⁶⁸

This extraordinary deterministic materialism was overwhelmingly rejected. William Travers dismissed Newman's views out of hand, arguing that he 'should have produced facts in support of such sweeping statements'. James Hector and three others concurred in this assessment that Newman's philosophy had carried him beyond the pale of sober science.⁶⁹

A.W. Bickerton, first professor of chemistry at Canterbury College in 1874, was another scientific materialist. He thought that science had disproved the 'myths' of Genesis. As R.M. Burdon puts it: 'In his eyes the Christian religion was a purely human concept, and as such liable to become steeped in fallacies which it was the duty of men of science to expose'.⁷⁰ Bickerton quickly elaborated some myths of his own to replace them: his 'Partial Impact' theory, for instance, enunciated in his paper 'On the Genesis of Worlds and Systems' read to the Philosophical Institute of Canterbury in 1879. In it he argued that new stars were formed by two stars colliding at a tangent, and in this way whole new solar systems might be formed. After outlining the theory he concluded with a fantastic scenario in which his evolutionary materialism was evident:

Is it possible that in some white hot body he would see viscous silicon building itself into complex protoplasmic molecular skeletons, developing organ after organ, and breathing forth its halogen breath? Perchance he might watch a silicon monster tenderly waiting on a sickly friend, and feeding it with delicately flavoured molten flint broth.⁽⁷¹⁾

Positive science this materialistic creation epic most assuredly was not. He was hailed in English and New Zealand papers as a neglected genius when a new star which seemed to confirm his theory was

discovered in 1892. Myths propagated by scientists went down surprisingly well with the public. Reputable scientific journals continued to ignore him.⁷² Materialistic views, though sufficiently scandalous to be considered amusing, would not seem to have been taken very seriously by most people. Certainly, as we have seen, there were no compelling socio-political reasons for scientists to take them up.

Social Darwinism and Religion

Yet despite the general antagonism to materialism, and the prevalence of the view that God's Works and His Word agreed, some prominent colonists looked to Nature, rather than to Scripture, as the arbiter of ethical decisions. In Germany at this time the Monist League, led by Ernst Haeckel, was pressing evolution into the service of both philosophical materialism and social Darwinism. Daniel Gasman has shown that the League's ideas provided the chief intellectual basis for Hitler's National Socialism.⁷³ A similar significant trend away from Christianity and toward philosophical materialism, social Darwinism, and proto-Fascism emerged particularly amongst a small group of the colony's most 'progressive' thinkers during the debates over the social implications of Darwinism in the 1870's and 1880's. Placing this section in a chapter on the 1870's is inevitably somewhat arbitrary, since I include examples from the 1890's. However since most of the debate took place in 1876-1877 it is appropriate to include it here.

Colonial social Darwinists believed that, as Duncan MacGregor put it, 'the central fact of all life ... is a struggle of each against all'.⁶¹ Around this central fact they erected a proto-Fascist philosophy. The State, rather than nature, was to select the 'fit' and

reject the 'unfit'. Beneath the impressive scientific jargon and careful euphemism, Social Darwinism was less a science than a moral and social philosophy, and its advocates' claim to speak in the name of science was essentially propaganda. They were politicians and intellectuals and at this stage included no first-rank evolutionary biologist amongst their number. Their opposition came from Christians, prominent among whom were conservative evangelicals. On the basis of the Genesis doctrine of creation, which insisted on the unity of the human race, they rejected the racist and elitist views of the social Darwinists.

Of course science had been used to support racist ideas before Darwin. After 1800 the Aristotelian concept of a 'great chain of being' in nature was used to support polygenism, the idea that the various human races had discrete origins.⁷⁶ Physiological determinism - the idea of a direct correlation between the size and configuration of the cranium, and mental capacity - was also in vogue. Thus by weighing the quantity of millet seed which skulls could hold, and by measurements with tapes and compasses, Dr A.S. Thomson decided in the early 1850's that Maori heads 'are smaller than the heads of Englishmen, consequently the New Zealanders are inferior to the English in mental capacity It is only natural that generations of mental indolence should lessen the size of brains!'.⁷⁷

In implying the descent of all men from a common ancestor Darwin might seem to have restored monogenism, the belief derived originally from Genesis and propagated by Augustine, that the human race had a single origin.⁷⁸ In fact he simply strengthened the prevailing polygenist racial ideas and provided them with a new scientific

underpinning and vocabulary. The gap between 'civilized', technological European man and the ape was filled by social Darwinists with the 'lower races'.⁷⁹ Even the 'lower races' were graded according to a hierarchy. The Maori was generally considered to be markedly 'higher' (i.e. closer to the European at the summit of evolutionary development) than the Australian aborigine for instance.

It was a widely held opinion in the 1870's that the Maori was dying out. Colonists differed in their attitudes to this process. Some felt that it was a good thing. In the opinion of philosophical materialist and social Darwinist Dr A.K. Newman 'the disappearance of the race is scarcely subject for much regret. They are dying out in a quick, easy way, and are being supplanted by a superior race.'⁸⁰ This view was received without comment in the Wellington Society. It was so plainly in accord with the great 'law' of evolutionary progress that nobody dared to disagree.

William Travers had explicitly rejected dogmatic religion in the 1860's in favour of the nobler 'search for truth'. In social Darwinism he found the noble, severe truth he was looking for. It was a 'fact' to be viewed with 'resignation' that a white race must inevitably supplant a dark race, he declared to the Wellington Society in 1869.⁸¹

If Newman and Travers felt that the extinction of the Maori race was necessary for the sake of evolutionary progress, freethinkers Robert Stout, Duncan MacGregor, and Edward Tregear were convinced that the same applied to certain classes of Europeans. There was a distinct sense of caste about Stout's evolutionary faith, for instance. In an 1870 speech entitled 'State Education', he condoned poverty and suffering amongst the working classes on the ground that this was an

inevitable part of the 'struggle for existence.' The 'unfit', he argued, ought to be weeded out, and the race thereby 'purified'.⁸² This idea that some were inevitably doomed to evolutionary oblivion was not unlike the hyper-Calvinist preterition doctrine which Stout and fellow free-thinkers professed to find so odious in Calvinistic Protestantism.

Stout was greatly influenced by his two years under Duncan MacGregor studying Political Economy at Otago University. MacGregor was a closet freethinker, viewed with suspicion and distrust by staunch Dunedin Presbyterians. He expressed his evolutionary views in a three part article 'The Problem of Poverty' in the New Zealand Magazine. Beyond a certain undefined point, he declared, the drunkard, the criminal, and the pauper were not fit for liberty. They should be made to work for their own support and deprived of liberty until death in order to prevent both injury to society and the possibility of bearing children to inherit their 'curse'.⁸³

Toward the end of the century social Darwinist Edward Tregear, who like the others was sceptical of orthodox Christianity, warned about the dangers of allowing people released from asylums to 'marry and propagate children of infected and tainted blood'. The crucial question facing society in his opinion was 'whether we are taking sufficient precautions to prevent the ruin of mankind in the near future by our worship of the liberty of the individual?' He concluded the lecture with the kind of lurid moralism usually associated with hell-fire preachers, all couched in compelling evolutionary terminology: 'The serpent's hate, the peacock's vanity, the baboon's lust, these are reversions if found in man, and yielding to them as

mental emotions will actually induce bodily reversions towards those lower types of being from which we have escaped upwards.'⁸⁴

Yet not all were happy to go along with the social Darwinists and consign the Maori race and 'unfit' Europeans to evolutionary oblivion. This may be illustrated by an illuminating incident which occurred in the Wellington Society in 1891. Edward Tregear informed members that the colonisation of Africa had brought certain problems to light. The enormous fecundity of the 'dark races', if relieved of the checks caused by bloodshed and war, would squeeze out the incoming colonists, 'and prevent men of high organization from existing in force sufficient to control the lower and more persistent racial types'. The future of the world was not so entirely in the hands of the 'intellectual nations' as he had once thought. However if the advance of mankind was threatened by the overflow of 'barbaric peoples', Tregear trusted that the time of submersion would be short, and that the world would soon resume the path of progress, refreshed and invigorated with new and stronger life.⁸⁵

William Maskell was the only member of the Society to protest at the way Tregear used evolution to justify racism. Maskell was a staunch Roman Catholic and an intransigent opponent of anti-religious science. He probably appeared somewhat mediaeval to more 'progressive' minds, like Tregear. He argued, in reply to Tregear's paper, that 'in spite of the presently prevailing theory', by which he meant evolution, there was no necessary difference between the brain and intellect of the savage and that of the cultivated Englishman.⁸⁶ Maskell was the only man in the self-consciously 'scientific' Wellington Philosophical Society ever to openly denounce evolutionary

racism and to insist on monogenism and racial equality. Probably everyone else was too scared of being labelled a religious fanatic.

Thus it was the self-appointed intellectual elite of colonial society – men like Tregear, Stout, MacGregor, Travers and Newman – who treated evolution as a new revelation, and who had no time for the hoary old dogmas of orthodox Christianity, who used the idea of evolution to justify racial and eugenic ideas which can only be described as proto-Fascist.⁸⁷ Their only opposition came from men like Maskell, whose anti-social-Darwinism and religious conservatism more 'enlightened' minds found rather benighted. Comprehensive survey of the debates over social Darwinism reveals that it was professing Christians, without exception, who spoke out against the racist and elitist ethics of the social Darwinists, on the basis of the Genesis doctrine of creation. There was a strong correlation between a high view of Genesis, Christian ethics, and racial egalitarianism, and, conversely, between religious heterodoxy, evolutionary ethics, and racist and proto-Fascist views.

Anglican Archdeacon Robert Maunsell, for instance, believed in the special creation of man 'ready made and full-grown ... from the hands of his Creator', just as Genesis plainly declared. He pointedly rejected the social Darwinist attempt to fill the gap between civilized European man and the monkey with the 'inferior races' on the grounds that it had no physiological basis: 'The wild man, the Australian, the native of Labrador, the Maori, even in their wildest stages are born with thin skins unlike those of the ape or monkey'.⁸⁸ In similar vein, Anglican missionary James West Stack denounced 'that spirit of race-pride which leads the European to look with feelings

akin to contempt on all coloured men, as if they were all alike infinitely beneath him.⁸⁹ Fellow missionary Richard Taylor echoed Stack's views. 'Civilized man', he asserted, 'is too apt to look down on the more unenlightened portion of his race as belonging to an inferior order of beings; ignorance or interest have given rise to many calumnies against the aboriginal inhabitants of remote lands, especially against those who differ from us in colour.'⁹⁰

These anti-social-Darwinists did not necessarily reject biological evolution. They had no quarrel with science as such. What they did oppose, and vociferously, was that 'so-called science' which stepped beyond its rightful bounds, and sanctioned a cruel naturalistic ethics. Churchmen were also undoubtedly opposed to the social Darwinists as a threat to the Church as authoritative arbiter of social morality. There was real tension over these issues. Yet the conflict was not between science and religion. Social Darwinism was not a legitimate deduction from Darwinian biology. In a fundamental sense, as I shall go on to show, these debates signified a clash between rival religions.

Presbyterian professor of Divinity Rev. William Salmond illustrates the first three of these points well. Though he accepted Darwinian biology, he unequivocally rejected social Darwinism and the tendency to treat races according to their supposed 'stage of development'. In his opinion the Bible had a clear opinion on some scientific points. One of these, which the Genesis doctrine of the creation of mankind taught, was the unity of the human race.⁹¹

Fellow Presbyterian Rev. D.M. Stuart also accepted biological evolution but denounced evolutionary ethics as morally repugnant. He

reviewed Duncan MacGregor's 'The Problem of Poverty in New Zealand' series in The Evangelist. Like Salmond he had initially opposed but was soon converted to biological evolution. He strongly rejected MacGregor's assertion that the law 'Kill or be killed - eat or be eaten' ought to be rigorously applied in order to prevent the 'viciously weak' and 'lazy', as MacGregor described them, from injuring society.⁹²

Dr Joseph Giles, resident magistrate at the Nelson south-west goldfields, echoed this view that there was a fundamental contradiction between evolutionary and Christian ethics. The Christian doctrine of creation, he argued, meant that for the Christian not only the race but also the individual was of supreme importance, and this set Christian ethics apart from evolutionary ethics: 'Far from wishing to hasten the destruction of the degraded and the vicious he will think it desirable to delay the doom ... which to the mere evolutionist must needs seem childish and frivolous.'⁹³

J.C. Firth's ethics were typical of the Christian anti-social-Darwinist group. Unlike the others he could see in evolution nothing but dangerous materialism, and tended to throw out the biological baby with the metaphysical bathwater. In his presidential address to the Auckland Institute in 1875 he argued that Darwin's theory was 'full of the strange, curious and ... grotesque assumptions which characterise the materialistic school of Philosophy.'⁹⁴ Firth was a conservative Congregationalist layman, and in the New Zealand Herald's patronizing opinion this address showed that 'his religious convictions have developed the credulous side of his nature; and faith in revelation supersedes scientific analysis It is in part constitutional, and

in part also the result of early training.⁹⁵ Liberal newspaper columnists evidently found such views silly and unscientific.

But it was significant that Firth managed to throw out evolutionary ethics into the bargain. He had a considerably higher opinion of the Maori, for instance, than that which prevailed amongst the more 'enlightened' and 'scientific' social Darwinists. In the same address he asserted that it would be difficult to parallel the 'unaided, patriotic, and valiant struggle' of the Maori against the European. In succeeding generations 'a truer estimate will be formed of the many noble qualities of this heroic race'.⁹⁶

Believers in the Genesis doctrine of creation evidently had a theological basis for the just and equal treatment of races and individuals. Those social Darwinists who abandoned dogmatic religion for an evolutionary faith tended toward a Nietzschean outlook, and found Christian ethics dangerously weak if not actually immoral because they upheld the weak at the expense of the strong, thus holding back evolutionary progress. They found in evolutionary theory the 'objective' justification of elitist racial and social hierarchies, for which the description proto-fascist is not inappropriate. Though they insisted that their views were purely scientific, social Darwinism was extra-scientific, and their clash with churchmen cannot be interpreted as a clash between science and religion.

It must be said, in this connection, that New Zealand legislation relating to the Maori was closer to the Christian than the evolutionary philosophy. Certainly there was considerable injustice, but the Maori was undoubtedly treated with more respect and equality,

over the franchise for instance, than the Australian aborigine or the American negro. Official policy usually envisaged the amalgamation of the Maori as a 'brown-skinned European', rather than the rigid separation of the races leading to the extinction of the 'inferior' race.

Conclusion

Yet the views of the social Darwinists were those of a small minority of 'progressive' thinkers. They were not those of the scientific community as a whole. The social Darwinists counted no first-rate professional scientist amongst their ranks in the 1870's. The religious beliefs of most working scientists were evidently more conservative than those of these radical thinkers. Within the Institutes biological evolution had become paradigmatic without ever threatening schism along religious lines. This was partly thanks to the careful managing of discussion by devout Presidents from the major denominations. The relations between scientists and churchmen continued to be characterized by harmony and consensus rather than by conflict and bitterness. Evolution, most believed, was simply God's method of creation.

Chapter Four

The 1870's: Religious Responses to Evolution

To divide the 1870's into two chapters, the first devoted primarily to the scientific community and the second to religious responses to evolution, might in one sense seem to contradict my central thesis, namely that evolution did not polarize the colony into scientific and religious camps. This chapter division must not be seen to imply any such polarization, and it is introduced here solely for the sake of clarity and convenience. Consideration of colonial beliefs about miracles provides a neat bridging section between the two chapters, for on this issue, as on evolution, the beliefs of scientists and churchmen were far from diametrically opposed. Freethinkers claimed that 'Science' disproved miracles. Scientists would seem to have been as unconvinced by this claim as churchmen.

I shall go on to examine the responses of the churches to evolution in this decade. Far from outright rejection, a growing number of Protestant churchmen publicly accepted evolution, and were quite willing to accept that it applied to man. Admittedly Methodist minister Rev. A.R. Fitchett was refused admission to the Dunedin YMCA for his evolutionary views, and this incident will be examined in detail. Nevertheless, as we shall see, the issues in his case were essentially religious and theological rather than scientific.

To describe conservative religious responses to evolution in the 1870's as 'fundamentalist', as the traditional historiography does, is woefully anachronistic, and prevents sympathetic historical understanding. Those believers who objected to 'evolution' did so not because they rejected science per se but precisely because they

venerated the traditional science which Darwin displaced. Most of those who spoke out against 'evolution' had in mind, not the biological theory, but metaphysical materialism or naturalism which anti-religious scientists overseas like Haeckel and Tyndall were attempting to popularize in an evolutionary guise. As the decade wore on a growing number of those who initially rejected evolution in toto learned to distinguish between biological evolution as such, and the anti-religious philosophy with which it was sometimes wedded. Whilst the latter was still to be denounced, the former might be accepted as compatible with Christianity. Christians were not the intransigent wooden biblicists of orthodox accounts. However apposite it is to describe the ideas and beliefs of a few, as a blanket description of conservative religious responses to evolution in this decade, 'fundamentalism' must go.

Miracles

Evolution explained the origin of life by reference to natural processes and laws, rather than by the miraculous intervention of a supernatural Creator. One question which occupied colonial savants in this decade was, were miracles still possible? As the Rev. William Salmond put the question: 'In ages past, when the universal reign of law was unknown, as we now know it, the difficulty was lightly felt - it was easier to believe in Divine interpositions. But now when one and another and another supposed interference of God has been resolved into the natural, God seems to be receding further and further from our grasp'.¹ On this issue, as on most others, consensus and not conflict dominated discussions. Clergymen insisted that miracles were neither unscientific nor irrational. Scientists agreed, and their

beliefs about miracles were scarcely less orthodox and conservative than those of clergymen.

A brief controversy blew up in the New Zealand Times in 1875 between the local Anglican hierarchy and a couple of importunate free-thinkers over the question, was a miracle opposed to reason? The Anglicans accepted the idea that scientific law was ordinarily uniform, but insisted that miracles as traditionally defined presented no insuperable logical difficulties for their sovereign God. They showed an impressive capacity to present Christianity as an eminently reasonable and scientific faith.

The first free-thinker, who signed himself 'William', was determined to polarize science and Christianity. He felt duty-bound to present his views, he declared, because he could no longer remain a passive spectator of the 'mortal fray' now going on between 'doctrinal religion in its present phase and science in its now truly grand development'. Science, he argued, was only antagonistic to the 'errors and absurdities in every system of belief built up in gross ignorance of God's works'.² He denounced the Bible as 'a collection of professed wonders, and of broad guesses in cosmogony, all absurdly false', as well as being 'in some parts fearfully immoral, "dangerous to youth", in other parts blasphemous if the act of crediting the Holy One with our base passions is blasphemy'. The true God, in 'William's' religion, was hypostatized scientific law. He hoped, he concluded, to lead even one reader 'to that consistent, glorious, elevating, and true faith, which holds to a God who "changes not" and to the immutability of His laws'.³

Bishop Hadfield rejected this law-bound deity. Defining miracle

as 'a visible interruption or suspension of the order of nature for a providential purpose', he argued that it was a fallacy to assume that miracles were neither scientific nor rational. Though the course of nature was ordinarily quite regular and uniform, he insisted that God could and did intervene. To argue otherwise was an assumption incapable of proof, as Canon Mozley in his Bampton 'Lectures on Miracles' had shown. Hadfield would not brook such anti-religious scientism, which was akin to Popery in his evangelical opinion: 'The arrogant manner in which physicists and physiologists ... practically assert their own infallibility on psychological and metaphysical questions, although it might appear almost ludicrous to some persons, not infrequently staggers the young, and too often leads them to acquiesce in their dogmatical assertions'.⁴ Hadfield refused to tolerate the ex cathedra pronouncements of scientific popes that Law reigned, and not God. It was men like Haeckel, and British physicist John Tyndall, not pious colonial scientists, whom he had in mind.

The pseudonymous 'Zetales' reply to Hadfield reiterated 'William's' claims. Rejecting the idea of a personal God, he quoted the French positivist philosopher Auguste Comte with approval, and announced the reign of scientific law.⁵

This provoked a final rejoinder from Archdeacon Arthur Stock, who was a capable amateur astronomer and a prominent member of the Wellington Philosophical Society. He rejected the freethinkers' assertion that the order of nature was fixed and invariable. Science, Stock argued, taught the very opposite, palaeontology showing that organic forms had changed very considerably over the course of time.⁶ Quite contrary to what the positivist paradigm would lead us to

expect, here was a Christian apologist employing the Darwinian view of nature as fluid and dynamic to argue for the continued cogency of the traditional concept of miracle, and against the freethought insistence on fixed scientific law. What was ironic was the fact that just as freethinkers were ridiculing conservative Christians for their absurdly antiquated notions of immutable species, they were employing extra-scientific notions of immutable laws to discredit the personal and sovereign Christian God.

Taking the 1818 cholera epidemic as his example, Stock argued that nature was dynamic and not static. There was no special cause in 1818, he argued, 'to invite the cholera to desert its old haunts. Things were pretty much as they had been before, when all suddenly there is a dread, mysterious impulse given to Death'. The conclusion was utterly providential: 'To those who believe that God ruleth and ordereth the world there is no difficulty in these things. He can interfere when and how He wills'.⁷ Although the insistence of both Hadfield and Stock that God could 'intervene' or 'interfere' in nature smacked of deism, they effectively disposed of the static, law-bound view of nature of the freethinkers, and showed that science proved no such thing.

Presbyterian theologian William Salmond agreed with Stock and Hadfield that the reign of law was not fixed and invariable. Nature, rather, was yielding and pliable. Man's ability to mould natural materials to construct homes, temples, railways, and ships, he declared, 'all show to what an amazing extent nature is soft and plastic'.⁸

But Salmond had reservations about defining a miracle as an

inversion or a suspension of a law of nature, as Hadfield had done. Such a view appeared to entail 'uphevings in nature and commotions in human affairs.' He felt that popular attention was too exclusively fixed on the idea of a miracle as a tremendous prodigy. Common events could be quite as miraculous as the most extraordinary. He cited a scriptural example: Jesus' miraculous healing of the son of the nobleman of Capernaum. To a physician at the bedside unable to save the dying boy his sudden recovery was the kind of spontaneous remission that sometimes occurred in the ordinary course of nature. However to the boy's father, who had witnessed Jesus' command, it was a miracle, for he alone saw and understood the causal connection. Salmond's conclusion: 'We are now, relating to what transpires in Providence, exactly in the position of that physician'.⁹ There was no dichotomy, he insisted, between natural law and miracle as traditionally conceived; ordinary events were as much the work of the Creator as extraordinary, supernatural ones. This was a plausible reconciliation of science's insistence on the regularity and uniformity of natural law, and Christianity's insistence on the personal and immediate action of God not only in miracles but in all events.

The way some liberal clergymen defined miracles, however, alarmed conservative brethren who felt that God and the supernatural were being explained away. At St. James Wesleyan Church in Christchurch, for instance, liberal Methodist Rev. A.R. Fitchett delivered a course of lectures over three weeks entitled 'Egypt and the Books of Moses'.¹⁰ In the third lecture he dealt with the plagues. They were defined as 'in the main miraculous aggravations of physical phenomena,

which recur in Egypt every year'. Changing the waters of the Nile into blood was simply the well-known colour of the Nile prior to its annual rise, and the next five miracles were connected with its annual rise and overflow in a similar way. The ninth plague, the darkness, Fitchett argued, seemed at first glance to be a pure miracle having no relation to Egyptian physical phenomena. Such a view was mistaken. It was occasioned by a 'violent and miraculously prolonged sandstorm from the Sahara'.¹¹

Such apparent concessions to modern science, it might be thought, must have provoked a savage attack from Methodists clinging desperately to supernaturalism. Such was not the case. As the Christian Observer noted, 'the attendance on each occasion was large, and the interest and approval of the audience were frequently expressed by loud applause'.¹²

Not all Methodists, however, were as happy with Fitchett's ideas as were his audience. One minister, who preferred to remain anonymous, felt compelled to ask him in the columns of the leading Methodist organ to clarify his views on 'this most important subject'. It seemed to him that Fitchett's description was overly naturalistic and leached the phenomena of their miraculous character and religious significance. Were the plagues, he asked, 'merely the result of natural causes intensified for the occasion?'¹³ Fitchett, in reply, repeated the assertion that they were miraculous aggravations of natural phenomena. His concluding remark, however, revealed that his tact and kindly consideration were wearing a bit thin: 'Trusting that your correspondent's hunger for miracles will thus be appeased. A.R. Fitchett.'¹⁴ If they refused to follow him into the Promised Land of

enlightened Christianity, Fitchett would leave them to grumble in the desert.

In this discussion we apparently witness the reactionary response of a hidebound traditionalist to the ideas of a progressive, intelligent Christian thinker. Yet it must be said that though there was nothing obviously unorthodox about Fitchett's descriptions of the Mosaic miracles, the suspicions of the conservative were in this case well-founded. As we shall see later in this chapter, Fitchett eventually came to virtually abandon the essence of Christian belief.

Against a positivist picture of the scientific community, scientists seem to have been as convinced as orthodox clergymen that miracles were, at least in principle, neither unreasonable nor unscientific. Liberal Anglican F.W. Hutton made the significant assertion in the New Zealand Magazine in 1876 that the theory of evolution did not deny the possibility of miracles.¹⁵ In 1902 he declared to the Australasian Association for the Advancement of Science that he believed in life after death.¹⁶ Walter Buller echoed this belief in the Wellington Society in 1894.¹⁷

Presumably James Black, J.C. Crawford, Julius Haast, G.M. Thomson, Thomas Kirk, and A.P.W. Thomas held much the same beliefs for they were all practising Christians during their working lives, and Thomson and Kirk were strongly evangelical. Prominent lay Anglican S. Percy Smith, who was to become a leading ethnologist and founder of the Polynesian Society in the 1890's, was quite happy to accept the miracles of the New Testament.¹⁸ William Steadman Aldis, who was professor of mathematics at the University of Auckland and a staunch Baptist, declared to the Auckland public in 1884 that the miracles of

Jesus Christ were no more incredible than the theories of Huxley or Darwin.¹⁹ Probably he accepted both.

Dr T.M. Hocken, FLS, FRGS, and leading lay Anglican gave an interesting account of a fire-walking ceremony he had witnessed in Fiji to the Otago Institute. He carefully examined the feet and legs of the participants prior to and immediately after their egress from the oven. No application was made to the soles of their feet, and he observed no unusual mental condition. Many so-called fire miracles could be readily explained. This one, he concluded, could not.²⁰

Most colonial scientists, it would seem, were quite open minded about the possibility of miracles. Certainly no eminent scientist ever unequivocally declared that on scientific grounds they did not and could not happen, and this was in marked contrast to men like Tyndall and Huxley in Britain. The idea that nineteenth century science put paid forever to the traditional idea of miracle needs to be seriously questioned.

The Progress of Evolution within the Churches

Quite contrary to the positivist paradigm, not only did scientists fail to reject the idea of miracle, but clergymen equally unaccountably failed to reject biological evolution. Typical of the traditional historiography is the assertion by H.F. May that 'through the seventies most Protestants (other than advanced religious liberals) held to the eventually damaging position that Darwin's theories could never be reconciled with religion'.²¹ Far from a unilateral declaration of war to the death against Darwinism, as the traditional historiography has presupposed, a growing number of

churchmen in the 1870's absorbed evolution into Christian belief with entire equanimity. By the end of the decade those who rejected all forms of evolution were an isolated minority.

Anglicans and Evolution

Anglicans continued to follow British developments closely. The Church Gazette, for instance, reported eminent British scientist Dr Carpenter's 1873 assertion that evolution presented 'a far grander notion of Creative Design, than the idea of special interpositions required to remedy the irregular working of a machine irregularly constructed in the first instance'.²² High Churchman Canon H.P. Liddon was reported in the same year as asserting that evolution 'from a Theistic point of view, is merely our way of describing what we can observe of God's continuous action upon the physical world'.²³ By the end of the decade Canon Curteis articulated the British trend which colonial Anglicans undoubtedly followed: 'To a large and increasing number of Churchmen the evolution hypothesis appears, not only profoundly interesting, but probably true. They find there nothing in it to shake their faith and a good deal to confirm it'.²⁴

In a diocese with a liberal tradition like Auckland the idea that evolution was compatible with Genesis was quietly slipped into Sunday School curricula. In 1875 a committee was formed by the Auckland Diocesan Synod to prepare a uniform course of instruction for Sunday Schools throughout the Diocese. Liberal-minded Bishop Cowie was in the chair. The committee drew up a series of notes for teachers on the subject of 'The Creation'. Against the materialists who insisted on the eternity of matter the committee declared that Genesis 1:1 taught that 'both the origin and all the various subsequent developments of

matter' were due to to one Almighty, Eternal, Self-Existent Mind. The subject matter of Genesis 1 was revealed to Moses in the form of a vision, it was argued: 'In this view difficulties raised by scientific men as to details of the narrative disappear'.²⁵ The committee had plainly abandoned the view that Genesis taught science, and insisted that its religious lessons be absorbed by children without being attached to outmoded scientific ideas.

Undoubtedly by the late 1870's biological evolution became acceptable to most educated Anglicans, particularly to those in touch with the trend of British opinion. That still left the vexed question of human evolution. How far did evolution apply to man? If it did, how could this fact be reconciled with Genesis? As we have seen, increasing fossil evidence had come to light that man had existed long before the date traditionally ascribed to Adam.

Some who accepted evolution were unwilling to abandon the view that Adam was an historic individual. Auckland minister Rev. Henry Handley Brown adopted an ingenious hermeneutical solution to the problem of reconciling the biblical and evolutionary accounts of human origins. There were races of apelike men on earth before Adam, he asserted, but they were not made in the image of God. In his view Genesis 1:26 should be translated 'Let us make a man in our image', since the Hebrew had no indefinite article corresponding to the English 'a' or 'an'. Thus Adam was the first true man, that is, the first man to be made in the image of God.²⁶ This view, Brown believed, harmonized with the well-established findings of evolutionists on the antiquity of man.

Some concordist Anglicans, in their efforts to harmonize

evolution and Christianity, made much the worst of both worlds. Dr A.C. Barker was a prominent lay Anglican, a skilled amateur photographer, and a trained doctor, who corresponded throughout his life with British scientists including Darwin, Richard Owen and Thomas Huxley. He read a turgid and lengthy paper to successive meetings of the Canterbury Institute entitled 'Continuous Creation versus Darwinian Evolution'. Denied permission by members to publish it in the Transactions, he published it in The Press instead.²⁷

He began, almost inevitably, on a concordist note, asserting that even Darwin had held that the Deity had originally created matter and 'endowed it with certain generative and progressive powers ... called the laws of nature, [which] cause it constantly to progress into fresh forms of living existence'.²⁸ But the apparent cruelty and wastefulness of natural selection raised the problem of God's goodness. Barker's solution was bizarre. God operated in the evolutionary process, he suggested, through 'intelligent though finite and fallible' spiritual beings who modified and improved within permitted limits the organisms entrusted to them.²⁹

An animated discussion within the Institute followed Barker's paper in which Haast, Rev. James Wilson, Rev. Charles Fraser, Dr Turnbull and Dr Powell took part, all being more or less opposed to Barker's principles, the Transactions records.³⁰ No other trace of this discussion has survived, but it is not difficult to imagine the objections raised. On the one hand Barker's finite spiritual beings as the agents of evolution were hardly subject to empirical investigation. On the other hand, to exonerate God of the charge of cruelty by positing a set of fallible spiritual agencies between Him

and His world not only begged the question, but smacked of polytheism, and challenged God's direct omnipotence. Neither scientists nor clergy could take Barker's speculations seriously. As a correspondent to the local press put it:

I cannot believe in Darwinism, as an acceptance of his theories would be a shaking of my belief that by God we live and move and have our being; neither on the other hand, and for the same reason, can I accept Dr. Barker's proposition that creation is the result of the operations of a set of agents who, for want of a better name, have been styled "a Spiritual Board of Works".(31)

This was no battle between science and religion. It was rather a petty controversy between an amateur in both science and theology on the one hand, and trained theologians and scientists on the other, some of whom, like Rev. Charles Fraser, were both. Barker was the only one who took his ideas seriously. He was miffed at one 'reverend unbeliever', as he put it, who in discussion following another paper of Barker's in which he enunciated the same principles, wanted to know how many angels could dance on the point of a needle.³²

The Evangelical Churches and Evolution

Clergymen from the evangelical churches were more outspoken over evolution than their Anglican or Catholic counterparts. Theirs was above all a religion of the Book. 'Sola Scriptura' was the great Reformation doctrine. Where science apparently said one thing and the Bible apparently said another evangelical clergy had to show either that the two were compatible, or that evolution was false. With the laity already unsettled by the passage over it was essential that they be reassured that Darwin had not, despite Freethought claims, 'disproved the Bible'. And in order to evangelise, in order for Christianity to be presented as credible to thinking people,

evangelical ministers who were determined to remain in touch with the wider world had to show that an increasingly well-established scientific theory was compatible with Christianity. For all these reasons evolution became a significant issue.

From the beginning of the decade, therefore, a number of clergymen and prominent laymen from the evangelical Protestant denominations publicly espoused the Darwinian theory. In July 1870, for instance, barrister H. Smythies accepted Darwinism in a lecture sensitively entitled 'Modern Theories of Creation'. The lecture was delivered to Dunedin Methodists in Trinity Wesleyan Church at a meeting chaired by Rev. A.R. Fitchett. Smythies regarded the creation and fall of man as allegorical. Contrary to what the traditional historiography would lead us to expect, such progressive views did not cause a fundamentalist-inspired riot. The audience, though not numerous, was very attentive, and the vote of thanks proposed by Rev. Mr McNicol was carried by acclamation.³³

Rev. W.J. Habens delivered a lecture to the Manchester St Congregational Church in Christchurch in 1872 on 'Modern Scepticism'. He was listened to with 'deep attention' by a moderate but appreciative audience. In Habens' opinion the Darwinian theory of natural selection 'so far from leading to infidelity, was even a more wonderful thing than the creation itself'. A vote of thanks again carried by acclamation terminated what in the opinion of The Press was a 'very enjoyable and instructive lecture'.³⁴

Rev. Dr Thomas Roseby, minister of Moray Place Congregational Church Dunedin, accepted Darwinism in a review of The Unseen Universe by British scientists professors Tait and Thomson. It was a book which

combined 'the most advanced scientific investigation', including evolution by natural selection, with 'the most conservative orthodoxy', including the doctrines of the Trinity, miracles, providence, prayer, angels, and even the Devil. Its main object was to prove 'on purely physical grounds' the possibility of immortality.³⁵

The Unseen Universe aroused considerable interest amongst colonists eager to reconcile science and Christianity. Anglican Rev. James Wilson, who was a member of the Canterbury Institute, reviewed its conclusions in the New Zealand Magazine and argued that it proved that the vast majority of scientific men were not averse to religious truth.³⁶ J.S. Webb delivered a lecture along similar lines on the book to the Otago Institute in 1879.³⁷

The Presbyterian insistence on the Bible as the sole authority in matters of faith and practice did not inevitably produce an arid and simplistic literalism that clung obstinately to Genesis and rejected Darwin out of hand. Rev. Charles Fraser led the Presbyterian attempt to reconcile evolution and Christianity. He had strong links on both sides. He was a Fellow of the Geological Society, leading light of the Philosophical Institute of Canterbury, and a close friend of professional scientists like Julius Haast. He was also an active and prominent Presbyterian: minister of St. Andrews Church and founder and headmaster of the Presbyterian Boys College, predecessor of Christchurch Boys High School.

Fraser attempted to harmonize evolution and Christianity in a three part article which appeared in the New Zealand Magazine.³⁸ Far from science always being obstructed by religion, as the freethinkers alleged, Fraser agreed with Congregationalist Habens that it was

Christendom's chief weapon against infidelity:

Voltaire's plea that the monks and pilgrim's had scattered their scallop shells over the Alps, by way of forging evidence for the Deluge, and that the shells embedded in the rocks were mere sports or tricks of nature, was not the first, nor by any means the last, prejudice and fancy set up against religion to be demolished by scientific fact.(39)

Nevertheless he accepted that there were tensions within Christendom over the evolution question. The opinion of those traditionalists who favour revelation, he admitted, was that it made the origin of man 'irreligious and degrading'. Fraser gave such opinions short shift indeed. They were 'sentimental ideas' and as such their proponents could 'not expect the slightest weight to be attached to their opinions'. In any case, he went on, development from a highly organised being like an ape was quite as respectable as development from the inert lump of clay depicted in Genesis.⁴⁰

Fraser denounced this attitude with vehemence not because he was a maverick liberal but because he remained substantially orthodox. He retained a high view of Scripture, for instance. He encouraged Christians troubled by evolution to hold fast to the Word of God: 'Surely a firm believer in God's Word ought to possess his soul in patience, assured that it can never be contradicted by God's Works?'⁴¹ The Bible was a self-authenticating witness to its truth and Divine origin, evolutionist Rev. W.J. Habens declared to Manchester St Congregationalists in Christchurch.⁴²

These evolutionist clergy had not suddenly abandoned all notions of scriptural authority. They expressed their views on evolution forcefully precisely because of the common ground they shared with more traditional co-religionists: reverence for the Bible, evangelical fervour, and the desire to maintain a sound, intelligent faith. To

describe them as liberal simply because they accepted evolution is somewhat vacuous, for evolution alone did not precipitate vast and unbridgeable theological gulfs. On the other hand their orthodox shibboleths ought not to be taken entirely at face value. They undoubtedly found it politic to appease traditionalists and allay suspicions about their own orthodoxy by conspicuously reverencing the Bible, though for them this was not hypocrisy. Their central motivation was that they saw clearly that the only way for biblical Christianity to remain credible to thinking people was to accept what was daily becoming an increasingly well-established scientific theory.

We must beware here of reading the Honest to God theological liberalism of the 1960's back into the 1870's, and inventing the kind of theological polarization which did not actually exist. Those churchmen who first accepted evolution were not ipso facto reckless liberals, playing fast and loose with everything sacred to traditionalists. Leading Dunedin Congregationalist Rev. Thomas Roseby illustrates the point well. He accepted the Darwinian theory, and as we shall see led the protest against the Dunedin YMCA's decision to uphold the expulsion of evolutionist Rev. A.R. Fitchett. Yet he was no maverick liberal, capitulating willy nilly to scientific naturalism. He denounced anti-Christian science with as much zeal as the most 'fundamentalist' of conservatives.

In 1873, for example, he dealt with the question of science and prayer. Agnostic British physicist John Tyndall had made headlines in Britain by asserting that prayer had an influence on the moral nature of the suppliant but not on physical nature. Roseby denounced this view as 'the genius of unbelief'. Tyndall's idea that nature was

inviolable was a specious assumption, in his opinion, and he concluded by declaring that prayer operated as potently in the physical realm as it did in the moral and spiritual realms.⁴³ This view of prayer was echoed by fellow Congregationalist and evolutionist Rev. W.J. Habens.⁴⁴ On this question evolutionist and anti-evolutionist Christians were united in their opposition to the scientific idea that God could not alter physical nature in response to prayer.

A year later Roseby insisted that, though 'descent with modification' (the Darwinian theory) was undoubtedly true within the physical realm, far too much was being made of the theory. Evolutionists like Huxley were concerned with discovering links between man and the brute, which in Roseby's opinion was 'intensely repulsive'. Theologians, on the other hand, were concerned with the links between God and man. His conclusion would have delighted the most ardent anti-evolutionist: 'Professor Huxley must not wonder if the theologian retorts upon his Troglodytism the language which he recently used concerning spiritualism, "the phenomena do not interest me".'⁴⁵ Thus many of those clergymen who first publicly accepted evolution continued to intelligently venerate Scripture, and believed in miracles and the power of prayer as ardently as traditionalists. To accept evolution was not automatically to become an iconoclastic religious liberal. Evolution, by itself, had comparatively little impact in liberalising theological beliefs. Biblical criticism was more important.

Like Anglicans, the evangelical churches followed overseas debates with keen interest. Opinion was divided. At the conservative end of the spectrum was old school Presbyterian theologian Charles

Hodge of Princeton College in the United States. In 1874 he published What is Darwinism?, in which he argued that since Darwin denied the idea of design in nature his theory was necessarily atheistic. Some colonial nonconformists followed Hodge closely, like Presbyterian Rev. James Copland, who disseminated such views to the public in his periodical The Evangelist. Yet the same periodical, under the more broadminded editorship of Rev. D.M. Stuart, saw fit in 1877 to publish the views of the President of Princeton, Rev. James McCosh, who believed that Darwinism and the Bible were quite compatible. There was considerable truth in the evolution hypothesis, McCosh declared, and he warned that it would be folly for Christians to oppose it.⁴⁶ Most eventually followed McCosh rather than Hodge.

Rev. A.R. Fitchett and the Dunedin YMCA

Those progressive ministers who publicly accepted evolution did not do so with entire impunity however. The nearest Protestant churches came to a heresy trial was in Dunedin in 1876, following the series of public lectures on evolution in the Otago Institute. In that year Wesleyan minister Rev. A.R. Fitchett publicly accepted Darwinism both in sermons and in a lecture entitled 'The Ethics of Evolution' which he published in pamphlet form.

Showing considerable acquaintance with both Darwin's Origin and The Descent of Man, Fitchett accepted the idea that humans had evolved from lower forms. He dismissed the traditional view of creation which he called 'the popular craving for creation by fiat', as inconsistent, both with true theology and with reasonable science. Yet he also dismissed evolutionary naturalism, arguing that evolution required an

ongoing creative power as strictly as did fiat creation.⁴⁷

The first chapters of Genesis were written, Fitchett asserted, 'not in the terms of modern philosophy, but in those of a child's first lesson book.' Both the 'theologic spirit' who rejected evolution, and the 'scientific critic' who rejected Genesis were wrong. Both misunderstood the language of the Genesis account. It was an 'idealised history' yet 'in reality the very truest ... a thousand times more intelligible than if [the writer] assumed the style of a University Professor...'. Here Fitchett appealed to the classical Protestant doctrine of accomodation, formulated by John Calvin, that God graciously accomodated Himself to limited human capacities and forms of understanding in order to make himself known to man.⁴⁸ There was in fact a remarkable coincidence between the Mosaic story and modern science.

There was no contradiction between Christianity and science over the doctrine of the Fall either, he asserted. Evolution taught that at a certain point of development man attained moral awareness. The Bible also taught that 'the knowledge of good and evil' was not an original endowment, but, once it was attained, man sinned and fell from grace. Thus evolution could be reconciled with the Bible over the Fall. Evolution, he concluded, would help rather than hinder theology.⁴⁹

Publicly expressing such views landed Fitchett in trouble with the Board of Management of the Dunedin Young Mens Christian Association. When his name came up for admission to the YMCA five out of eleven members of the Board voted against it. Since just two blackballs were required to reject nominees, Fitchett was rejected.⁵⁰ The majority of the Board, it must be noted, were quite happy to

accept him.

According to the outraged Otago Daily Times, however, the 'staid, respectable married men' responsible for the blackballing were being led by Rev. William Salmond in believing that Christianity and evolution were irreconcilable. Yet if Fitchett went to hell for his views, it went on, he would be joined by Congregational minister Thomas Roseby, Anglican Canon Stanford, Rev. Charles Fraser of Christchurch, and even Bishop Nevill.⁵¹

The Board's action provoked an immediate outburst from Dunedin Christians. In letters to the editor it was denounced as 'narrow minded and tyrannical', 'unchristian', 'regarded ... with the strongest disapprobation.'⁵² 'W.B.' argued that the Board's action was contradictory, since a large number of members of the YMCA held views on evolution just like Fitchett's, and one (Thomas Roseby) had even published such views.

This assertion was undoubtedly true. Earlier in the year J. Aitken Connell, who was a local land agent and surveyor, a member of the Otago Institute, and President of the YMCA had delivered a lecture on evolution to that body. Though personally he preferred the theory of special creation, Connell declared that it was possible to be a Christian evolutionist, by believing with St George Mivart (who was an eminent British biologist and a Roman Catholic) that the evolutionary development of species was due to 'direct, active, present Divine agency'. Though he himself could not see how this was consistent with revelation and with Christianity, he had no doubt that 'many pious persons' could, and that it was 'a position of considerable strength and perfect consistency'.⁵³ The YMCA, then, was not unanimously anti-

evolution.

A special meeting of the Association was called to consider the Fitchett case after a petition against the blackballing was presented to the Board, signed by some 20 members, including Dunedin Baptist pastor J. Upton Davis and Congregationalist minister Thomas Roseby. The meeting convened on 23 October with some one hundred and twenty members present.⁵⁴

Dr Robert Borrows, a member of Fitchett's own Trinity Wesleyan congregation and a personal friend, was the first speaker. He moved that the YMCA express its disapproval of the Board's action. No one could deny that Fitchett was a Christian and believed in the inspiration of the Bible, he argued. It was foolish of the Board, he continued, to sit in judgement on a minister who was a trained theologian, a man who had the respect of a large Dunedin congregation, and who had been ordained by the Wesleyan Methodist Conference to preach the gospel. It was also foolish of the Board to insist that members hold a particular view of the first chapters of Genesis.

To this point Borrows was on firm ground and had the meeting with him. Perhaps he became overconfident, for his next suggestion undoubtedly sealed Fitchett's fate. The YMCA had adopted a broad evangelical platform, he asserted. Why then should it not enrol 'enlightened Roman Catholics ... even if they call the Virgin Mary Queen of Heaven and say their prayers before an image, so long as they acknowledge her Son as King of Glory?' In a decade in which anti-Catholic sentiment was periodically inflamed by itinerant lecturers, nothing could have polarized the meeting, and damned Fitchett by association, more effectively. It was greeted with 'cries of no, and

prolonged hisses'. Dr. Borrow's acid retort was utterly inflammatory: 'I do think some of you require a little more Evolution. My ancestors have given up that language ages ago.'

When order had been restored, Rev. Lorenzo Moore, an ultra-evangelical Anglican, after politely alluding to Fitchett's 'exemplary Christian character', argued that some of his published statements 'cut down to the root of the Scriptures ... [and] impugn God's word.' Moore felt that since Fitchett's emphasis on the constant evolutionary progress of the human race apparently explained away the Fall, he had therefore implicitly denied the need for a Saviour from the effects of the Fall.

J. Aitken Connell, though recognising Fitchett as a 'faithful minister of Christ', also charged him with denying the Fall. He put the 'unfortunate pamphlet' down to the fact that Fitchett was 'an intellectual man'. Rejecting Borrow's broad platform, he declared that the Association would never admit a Catholic.

Thomas Roseby attempted to defuse what had become a highly charged meeting by arguing that evolution was a purely scientific question. There were scores of divines, he said, who had reconciled evolution and Christianity, and that included his friend William Salmond.

However this did not dissuade Rev. Dr James Copland. He was a strong-minded conservative Presbyterian theologian, whom Thomas Bracken described as 'a Calvinist and Sabbatarian of the old school.'⁵⁵ He moved that the Board had acted in perfect conformity with its rules and that there were no grounds for interfering with its decision. Rejecting Roseby's view that evolution was a scientific

question, he argued that the issues in Fitchett's case were moral and religious rather than scientific. If, as the doctrine of evolution as interpreted by Fitchett implied, man was not morally responsible before the Fall, then the blame for sin lay with God. Such a view was a horrible blasphemy. Copland's conclusion, that Fitchett should not be admitted, was greeted with applause by those who accepted the general conservative judgement that, in denying the Fall, Fitchett had undercut the entire foundation of Christianity.

After Copland's motion had been seconded by Rev. Alexander Blake, who was the Presbyterian minister at Kaikorai, Baptist minister John Upton Davis rose to Fitchett's defence. Since neither the local Ministers Association nor the Wesleyan Conference had blackballed him, Davis argued, he should be accepted as a member of the YMCA.

It was to no avail. Copland's motion, upholding the Board's decision to reject Fitchett, was carried by fifty votes to thirty-one. At once Thomas Roseby stood and declared that the motion had so altered the character of the Association that there was no longer room for him. He was greeted with applause. A stormy meeting closed with prayer by Presbyterian Rev. John Gow at ten thirty p.m.

Although uncomprehending rejection of evolution and a certain amount of wooden scriptural literalism were undeniably evident, they were not paramount for the anti-Fitchett faction. J. Aitken Connell, for instance, took pains in the denouement of the debate to emphatically disclaim the intention of excluding anyone from the Association for accepting biological evolution. Such objections, he declared, formed no part of his attitude to Fitchett. Similarly arch-conservative James Copland was quite prepared to accept that Fitchett

believed in 'the authority and inspiration of the Holy Scriptures', even despite Fitchett's explicit rejection of the 'literal exactitude' approach to Genesis. It was the Fall, on which the whole Christian scheme of salvation was founded, which they regarded as the issue. Conservatives felt that Fitchett believed that man was morally innocent before the Fall. Sin, on such a view, was God's responsibility, and not man's.

It cannot be denied that there was conflict manifest during the debate, and this might appear to contradict my central thesis, that evolution was accepted with relative equanimity by colonial society. Yet without explaining away the conflict entirely, a number of factors complicated this particular case. There were quite crucial extraneous tensions, for instance. With friends like Borrowes to defend him, Fitchett scarcely needed enemies. Nothing polarized the meeting more violently, or more unnecessarily, than Borrowes' liberal attitude to Catholics, and his inflammatory retorts to his opponents.

Only in the most superficial sense can the debate be interpreted as a conflict between science and religion. It was not about the truth of biological evolution. It was essentially a theological debate over whether or not Fitchett had denied the Fall.

Why did the Fall become the cardinal issue for the anti-Fitchett faction? Theological factors were important. Fitchett seemed to his opponents to be minimizing or liberalizing the doctrine almost out of existence. He apparently regarded it as a mere minor slip in the otherwise constant, uninterrupted upward progress of the human race. His anthropology was liberal and optimistic. For Calvinists, on the other hand, the Fall was an event of primal significance, etched deep

into their view of God, man and the world. It had made man a moral and spiritual ruin in dire need of redemption. Without the Fall, they argued, there would be no need for the Atonement. The doctrine was crucial also to their conception of the love of God. To emphasize the extent of the Fall, and the resultant human depravity, was for Calvinists to correspondingly magnify the grace and the love of God to undeserving sinners. Thus the Fall, almost paradoxically, became requisite for their religious security. By paying scant attention to the Fall Fitchett seemed to his opponents to be calling into question the truth and the power of Calvinism as a theological system. It was perhaps no coincidence, either, that Fitchett was a Methodist. Probably Calvinists like Copland saw in his optimistic evolutionism the inevitable Pelagian product of Arminian theological error.

However the local press saw fit only to damn the victors, and in no uncertain terms: 'With the exception of the handful of bigots who have prostituted the sacred name, every earnest Christian man in the community will regret the injury done to religion by this unhappy, this miserable, outrage.' This was not a controversy between a committed Christian minority on the one hand and a religiously indifferent and essentially secularly-minded majority on the other. As the editorial went on to argue:

We do not for a moment think that [Fitchett] needs to be assured that the voice of the great Christian public here is altogether on his side, and that he numbers among those who would deprecate his teaching only the extreme bigots, and the atheists who rejoice at such an injury to Christianity as his black-balling must prove.(56)

Fitchett decided to clarify his views on the Fall in a letter to the Otago Daily Times on 25 October. He reprinted from the August issue of the New Zealand Wesleyan his review of Salmond's New Zealand

Magazine article, in which Salmond had articulated the view that evolution and the Fall were irreconcilable. Fitchett disagreed. The dawn of moral consciousness had occurred prior to the Fall, he asserted, and man was therefore culpable.⁵⁷ His doctrine of the Fall would seem to have been entirely orthodox. Why he waited until after the meeting to explain his position must remain something of a mystery. Perhaps he felt that it would be appropriate to remain silent before his accusers. Perhaps he deliberately courted martyrdom.

In any event the YMCA's decision had been made. On October 31, therefore, some forty-three members withdrew in protest at Fitchett's treatment. They were led by Methodists Robert Borrowes and Rev. L.M. Isitt, who was soon to gain fame as a temperance campaigner, Congregationalist minister Thomas Roseby, Baptist minister J.U. Davis, and leading lay Anglican A. Chetham Strode.⁵⁸ This protest was perhaps motivated as much by anti-sectarian feeling as by sympathy for Fitchett. As one correspondent put it, he was not about to be dictated to by 'one or two self-made popes' like Presbyterians Copland or Mackie.⁵⁹

The 'Presbyterian popes', on the other hand, undoubtedly saw the Fitchett affair as a test case, in which they attempted to exert their authority in Dunedin, at least over fundamental intellectual and theological issues. Clearly, as well as theological dimensions, the Fitchett affair had broader social and cultural ones. To soft-pedal the Fall, as Fitchett had done, was to challenge not only the truth of Calvinism, but also the Presbyterian vision of Dunedin which the Synod was still trying to enforce. Copland and his cronies wanted to sustain, if not a new Geneva, then at least something like a new

Edinburgh, and probably Copland saw himself in the role of an Antipodean John Knox. Although fractious Methodists like Fitchett could not be subjected to the discipline of the Kirk, they could at least be excluded from the YMCA.

At bottom, then, the whole debate was a religious power struggle between Calvinists (mostly Presbyterian but including ultra-evangelical Anglican Lorenzo Moore) and non-Presbyterian evangelicals, who refused to remain in a YMCA which had effectively constituted itself a Presbyterian heresy tribunal. Even Baptists like Davis, whose theological sympathies lay with the Calvinistic Presbyterians rather than with the Arminian Methodists, felt compelled to join the latter group. It was quite likely that he, and others of the seceding group, had private reservations about Fitchett's theology, but felt that to tamely accept the blackballing would be to establish a dangerous precedent. The anti-Fitchett faction were intent on a disciplined, cohesive Presbyterian Dunedin, with the Synod exerting a controlling influence over intellectual and cultural life. The liberal faction, on the other hand, were intent on a more open, tolerant, pluralistic, yet no less and indeed in their view more thoroughly Christian Dunedin. Only in the most superficial and misleading sense can the debate be interpreted as a battle between science and religion. Ultimately, however, though the Calvinists won a temporary victory in the YMCA, they failed to win much sympathy from the wider community.

The YMCA, too, had failed in its primary object which was to supply a common unsectarian basis on which Christians of all denominations could unite. And it had made Fitchett something of a martyr. As the Otago Daily Times put it, either the Association had no

right to the name Christian, or Fitchett had none: 'We have no doubt which of the alternatives the Christian world here will choose.'⁶⁰ Letters to the Dunedin press unanimously condemned the Board's action, and from an explicitly Christian, rather than from a liberal, secular standpoint. As 'W.M.B.' put it: 'Both Evolutionists and nonEvolutionists [sic] object to have the whole of the Scriptures strained through the brains of this so-called Christian Association.'⁶¹

To cap it all off, the bye-law by which Fitchett was blackballed was altered. Instead of just two blackballs, a majority of one within the Board of Management would henceforth be necessary to debar applicants.⁶² This was a tacit admission of error.

Yet despite their vilification by the liberal Dunedin press, the instincts of the conservative faction in the Fitchett case were unerring. Like his friend Thomas Roseby, Fitchett had 'more faith in an honest sceptic than in a worthless believer'.⁶³ So eager was he to make Christianity acceptable to the sceptical mind that it was clear, by his later ministry, that he had virtually abandoned, not merely the outward dogmatic husk, but also the substance of Christianity.

Having become an Anglican priest in 1879, Fitchett preached a sermon to his All Saints congregation in 1883 in reply to Judge George Higinbotham's 'Science and Religion' lecture delivered to the Rev. Charles Strong's Scots Presbyterian Church in Melbourne. The Churches' God was not only anthropomorphic, Higinbotham charged, but inconsistent with modern science. Fitchett answered that it was natural and inevitable in the early stages of Hebrew mental and spiritual development to attribute natural phenomena to the direct

action of the Deity.⁶⁴ But such naive anthropomorphism came to an end with Jesus' assertion that God is a Spirit. Christians must no longer attribute corporeal parts and human passions to God, he declared. The contribution of modern science to theology was to show that the creator Spirit 'works in methods absolutely fixed and unvarying'. To think otherwise was to regress to ideas appropriate only to the childhood of the race, he concluded.⁶⁵ This last assertion was a not-too-subtle appeal to intellectual snobbery. Fitchett's concept of God had become chillingly cerebral, more like Herbert Spencer's unimaginably lofty law-bound Unknowable than the personal, intimate, and loving Father of Jesus Christ.

Admittedly some of the conservatives during the YMCA debate had insisted too strongly on the Bible as only source of truth. When Lorenzo Moore, for example, declared that he had not actually studied Evolution, this was greeted with approving cries of 'hear, hear'. Once admit that man 'came from the oyster up to the human being', Moore continued, and 'I do not know where we are to stop. I take my stand upon God's Word,...'.⁶⁶ Such conservatives were guilty of obscurantism, of rejecting scientific truth which was compatible with biblical truth.

Yet Moore's concern was not without foundation for Fitchett did not in fact know where to stop. Despite his professed belief in biblical inspiration, it was clear from his 1883 sermon that it was science, not the Bible, which was his fundamental source of truth, not merely on scientific questions, but now also on religious ones. His God was the God of Spencer and Stout, not the God of the Bible. Fitchett had become liberal liberal rather than liberal orthodox. But

he was not necessarily representative of clergymen who accepted evolution in the 1870's, as we shall see.

Religious Conservatism or Fundamentalism?

Debate in the Otago Institute could hardly be avoided, Gordon Parsonson argues, given the fact that Dunedin was 'a fundamentalist stronghold'.⁶⁷ Historian and philosopher of science D.R. Oldroyd, writing on religious responses to Darwinism, asserts that 'the fundamentalism of so many men in the nineteenth century is something of an historical curiosity.'⁶⁸ It is the use of a term like fundamentalism in such a profoundly unhistorical and indiscriminate manner which is the curiosity.⁶⁹ The term 'fundamentalism' has functioned in most historical writing as a derisive epithet rather than as a helpful and illuminating concept. Anti-evolutionists have usually been depicted as figures of comic relief: ignorant, obscurantist, rabid, anti-science, and scriptural literalists, with scarcely a redeeming feature save misguided sincerity.

Scorn and Abuse?

Despite the assertion of The New Cambridge Modern History that the 'furious tide of criticism and scornful ridicule which greeted The Origin of Species are well known'⁷⁰, conservative Christians did not generally indulge in vicious diatribes against the proponents of evolutionary theory. Admittedly conservative Congregationalist Josiah Clifton Firth would mention the names of Darwin and Huxley at morning prayers, asking that their theories be confounded and brought to nought.⁷¹ Yet he told the Auckland YMCA that in his opinion Darwin's Descent of Man was 'remarkable for its minute and unwearied

investigations in natural history'.⁷² Anglican Archdeacon H.W. Harper paid glowing tribute to Darwin's ability as a naturalist.⁷³

None of those conservatives who opposed Fitchett in the Dunedin YMCA debate ever accused him of being anything but a sincere and conscientious (albeit wrongheaded) Christian. Lorenzo Moore epitomized the prevalent attitude on this point when before disagreeing with Fitchett he alluded to his 'exemplary Christian character' and declared that 'he is most probably a better Christian than myself'.⁷⁴ Of course taking a high moral line and displaying conspicuous humility was also good tactics as far as Moore was concerned. But although conservatives may have attacked the ideas of evolutionists, they generally remained charitable toward them personally.

Anti-Science? Baconian Induction

Far from despising science, as the fundamentalist caricature implies, conservatives venerated it. But they preferred the traditional inductive scientific method of Francis Bacon, who was generally considered to be the 'patron saint' of natural philosophy. In Baconian induction certain knowledge was obtained by careful and objective observation of facts. Whether the subject was theology or geology, the scientist need only classify these certainties, and avoid speculative hypotheses, in order to obtain assured truth.⁷⁵ In the opinion of conservatives the Darwinian theory deserted true principles of Baconian induction. Darwin's facts were fine; his theories were not.

J.C. Firth, for instance, was very impressed by Darwin's researches. But he found the theories constructed on the facts to be 'castles of the imagination'.⁷⁶ Rev. Richard Taylor dismissed Darwin's

ideas on similar grounds, as ingenious 'philosophic speculations'.⁷⁷ In 1875 Rev. James Hill, minister at St. James Presbyterian church in Auckland, demanded that science be true to itself and not employ 'conjecture' for reality. Anti-religious science was false because it was based on 'theories and inferences', rather than 'facts and results'.⁷⁸ Plainly conservatives were so attached to the old inductive Baconian logic that they had great difficulty understanding, let alone accepting, the hypothetico-deductive logic of the Darwinian theory. It simply did not have the inductive certainty which was characteristic of 'true science', as they saw it.

Cuvierian Fixity

Nevertheless conservatives felt that they had not only Lord Bacon but also the brilliant French biologist Cuvier and his American disciple Louis Agassiz on their side. Cuvier's fixist biology had been paradigmatic in the first half of the nineteenth century. To assert that one species might change into another was neither conceivable, nor supported by the evidence, according to this biology, since organisms must remain stable in order to survive.

Thus Methodist Rev. Alexander Reid argued that the Darwinian theory was 'unable to produce one solitary specimen of ape, quadruped, reptile, fish, or zoophyte in process of transmutation from its own to another species.'⁷⁹ The conversion of one species into another was 'against all experience and experiment', charged conservative Presbyterian Rev. A.F. Douglas.⁸⁰

Indeed empirical evidence indicated that organic forms had remained remarkably stable within historic time. John Aitken Connell was one of a number who quoted the American anti-evolutionist Louis

Agassiz' observation that mummified Egyptian animals were no different at all in appearance or structure to their modern counterparts.⁸¹ If one species had not changed into another within historic time, then 'transmutation' was hardly more likely to occur even over millions of years. The absence of transitional forms in the fossil record was another stock conservative objection to evolution, though by the mid-1870's these were being found in increasing numbers.⁸² The sterility of hybrids was also trotted out.⁸³

Thus it was not just Scripture which counted against evolution; anti-evolutionists were convinced that science also was on their side. They were not anti-science, but rather anti-evolution, and this is a distinction which the traditional historiography has tended rather 'Whiggishly' to overlook. It was their veneration of Baconian induction, and of the traditional biology of Cuvier, which made it difficult for them to accept the Darwinian theory. They were so attached to the old science that they found it difficult to come to terms with the new.

Common Sense

But it was not just science and Scripture which were on their side, anti-evolutionists felt, but also plain common sense. There was a strong vein of the philosophy of Scottish Common Sense Realism running through conservative objections to evolution. J.C. Firth told the Auckland Institute that he desired to bring the great scientific questions of the day to the test of 'the philosophy of common sense'.⁸⁴ Ultra-conservative Presbyterian and anti-evolutionist James Copland made this even plainer when he defined philosophy as 'the cultivation of common sense'.⁸⁵

The fundamental premise of this philosophy was that the human

mind was constructed to be able to know the real world directly. Some philosophers, following John Locke, had made knowledge seem more complicated by interposing 'ideas' between the subject and the real world. These ideas were the immediate objects of thought; hence external things were only apprehended through ideas in the mind. David Hume raised the question of how we can know that these ideas correspond to what is actually there. The answer of Thomas Reid, the principal formulator of the Scottish Common Sense Philosophy, was akin to Samuel Johnson's kicking a rock to refute a similar theory proposed by Bishop Berkeley. Only a philosopher would take such a sceptical doctrine seriously, with its absurd implications. Everyone in his right mind believes such truths as the existence of the real world, cause and effect, and the continuity of the self. Such beliefs were as natural as breathing. The common sense of the ordinary man was the surest guide to truth.⁸⁶

For anti-evolutionists the Darwinian theory did not satisfy common sense. Bishop Abraham was not being merely ironic when he dismissed it on common sense grounds: 'Were it not for their supposed effect upon religion, no-one would waste his time in reading about the possibility of polar bears swimming about and catching flies so long that they at last get the fins they wish for.'⁸⁷ Naive common sense empiricism confirmed the traditional belief that species were fixed. Any farm-dwelling colonist could see that animals bred, as Genesis put it, 'each after its kind'. This was a stock conservative objection to Darwinism, which was repeated time and time again.⁸⁸ Anglican Robert Maunsell articulated the common sense reaction to The Descent of Man in an 1871 lecture entitled 'Man and the Monkey': 'An eminent

naturalist has ... announced that man is the child of an ape or monkey; that his mind, with all its power, is the development without a break of the dim sensations of a shellfish; and that his body betrays its origin.'⁸⁹ Such a self-evidently absurd theory hardly required further refutation.

Philosophical Objections: Materialism and Naturalism

Many of those who spoke out against 'evolution' had in mind, not the biological theory, but philosophical materialism, which they saw as its inevitable concomitant. As the Methodist Christian Advocate put it: 'As we understand the theory of Evolution, the very soul of it consists in the development of life, out of dead and inorganic matter, apart from an extraneous creative act The Evolution theory assumes the material origin of life.'⁹⁰ Since it did so, the theory was plainly pernicious and absurd. James Copland expressed this attitude with characteristic vehemence: 'The doctrine of Evolution, with its implied materialism ... will be relegated to the limbo infantum, to which scientific, as well as popular delusions, are destined to be consigned.'⁹¹

Philosophical naturalism, as well as materialism, was seen as a real threat. Immutable natural law, Christians warned, must not dethrone the sovereign Creator God of Christianity. J.C. Firth told the Auckland Institute that the problem with modern science was the idolatry of law. The practical ignoring of the Lawgiver was what deprived the 'admirable investigations' of the evolutionists of their crowning virtue, and effectively relegated man 'to the cheerless domains of a materialism as degrading to man as it is inimical to his true welfare'.⁹² Science tended to subject everything for millions of

years to nothing but laws, and in that sense was undoubtedly atheistic, Rev. James Hill told his Presbyterian congregation in 1875.⁹³

Given the fact that books by German materialists like Haeckel were circulating this threat to Christianity from evolution-as-materialism was real, if perhaps exaggerated. Faced with an anti-God philosophy which threatened both Christianity and the social order which religion underpinned, defenders of the faith and political conservatives could join forces. Given the fact that most colonists were doing pretty well in the 1870's, and had a decent standard of living, it was little wonder that radical philosophies were so vigorously denounced.

Sometimes in their zeal to defend the faith churchmen, at least initially, threw away the biological baby with the metaphysical bathwater, though this undoubtedly seemed a small price to pay for the defence of 'true religion'. Increasingly, however, as the 1870's wore on, they began to distinguish between biological evolution and metaphysical materialism. By the end of the decade those who rejected all forms of evolution were becoming an isolated minority.

As we have seen earlier in this chapter, as soon as men like Rev. William Salmond and Bishop Nevill could see that evolution could be distinguished from German materialism, and that it was compatible with Christianity, they publicly accepted it. Others soon followed. The conversion of Rev. D.M. Stuart to evolutionary views is a perfect illustration of this general trend. He was the well-liked minister of Knox Presbyterian Church Dunedin, and edited the periodical The Evangelist from 1875 to 1878. He was initially sceptical about

evolution on both scientific and religious grounds. In July 1876, prior to the Otago Institute lecture series, he declared like a good inductivist that 'we revere the revelation of facts, and Darwinists would merit our thanks if they stated clearly the successive steps by which the primordial germ has thrown off the sponge on the rock, the mollusc, the earthworm, the fish, the bird, the beast and man.' He commended conservative Princeton theologian Charles Hodge's book What is Darwinism? (1874) to his readers, in which Hodge argued that Darwin's exclusion of design in nature was tantamount to atheism.⁹⁴

The following month Stuart reviewed liberal Congregationalist Rev. Thomas Roseby's lecture on evolution. Roseby had argued that the Fall was 'a type of man's universal experience'. Stuart was unconvinced. For him the Fall was an unequivocal historical fact. To prove this he quoted 1 Timothy 2: 13-14, in which Paul 'distinctly intimates his belief that the facts there narrated were historically true'.⁹⁵

Yet despite this proof-text approach to the Bible Stuart was no intransigent literalist. He was willing to admit, by October and after Hutton's Otago Institute lecture, that it was all a question of the interpretation of evolution. 'If allowed to qualify the term by such words as "plan", "invention", "will-force", and so on', he declared, 'we would confess to a liking for the term.' The light had dawned and Stuart was now able to see that evolution could be interpreted theistically. Indeed he was even willing to allow it a part to play in the development of the human body: 'Remembering that the image and likeness of Adam was not a material but a moral and spiritual image

... it seems to us scarcely worth squabbling about how his material frame was produced.'⁹⁶

Scriptural Literalism?

Nevertheless there were some Christians, particularly from small revivalist sects, who rejected evolution on simple scriptural literalist grounds. In June 1876, for instance, Alfred Brunton, who was a leading member of the Plymouth Brethren in Dunedin, delivered a lecture in reply to Fitchett's 'The Ethics of Evolution'. The absurd theories promulgated by men straying from the faith, Brunton declaimed, ought to be a warning not to wander from the gospel.⁹⁷ Like the anti-Fitchett faction in the YMCA, he was primarily concerned about the Fall. He rejected Fitchett's argument that primitive man was incapable of moral distinctions. That would sweep away the Fall, and with it the authority of the Word of God, and make Jesus, who quoted Genesis, guilty of deceit. Fitchett, Brunton charged, looked upon the Bible as an allegory and not as the plain Word of God.

However typical of small sectarian Protestant denominations, Brunton's rigid literalism was not typical of the main denominations. Contrary to the traditional historiography which asserts that 'it was the light which was reflected by [Darwin's] ideas upon the literal interpretation of scripture ... which was most obnoxious'⁹⁸ many of those who opposed evolution revealed quite flexible views on the interpretation of Genesis.

Robert Gillies, for example, who was a devout evangelical Presbyterian and defender of Darwin in the Otago Institute, explicitly repudiated the 'strictly literal and plenary inspiration of every word in every chapter of the Bible', which James Copland championed and which would become the doctrine of inspiration of American

fundamentalism in the 1920's. 'Dogmatic literalists' in no sense represented the mind of the Christian church, he told the Institute. Professor Leebody in the British and Foreign Evangelical Review had declared that a strictly literal interpretation of Genesis was not the universal view of theologians, and Christians were not obliged to interpret Scripture as teaching 'special creation' rather than 'creation by development'.⁹⁹ As far as Gillies was concerned, that settled the matter.

Even James Copland, the leader of the anti-Fitchett faction in the Dunedin YMCA, made it quite clear that he accepted that Fitchett believed in the authority and inspiration of the Scriptures. In his opinion, there were 'many different views in which the authority and inspiration of the Scriptures were held'.¹⁰⁰ Copland was the most militant conservative clergyman in Dunedin, yet even he was hardly a fundamentalist.

Conservative Anglican believer Dr A.C. Barker, who opposed Darwinian evolution in papers presented to the Canterbury Institute in 1871 on the grounds that it left no room for the 'interference' of the Creator, was no wooden literalist either. In his opinion the 'poetical character' of Genesis was manifest in the use of 'figurative language'.¹⁰¹ Conservative Congregationalist J.C. Firth told the Auckland YMCA in 1875 that 'lurking like a subtile [sic] and tempting serpent amid the flowers and phantasies [sic] of Mr. Darwin's modern Garden of Eden' was the 'fatal doctrine ... of man's irresponsibility and consequent non-accountability to any higher power' which was the 'greatest and most deadly peril of the age'. This, not a literalistic reading of Genesis, was the basis of Firth's opposition to Darwin. 'It

ought to be remembered', he told the Association, 'that the Bible does not claim to be a record of general history of chronology, or a book of science, but a teacher of morals'.¹⁰² Firth, like many of those who spoke out against evolution in this period, was hardly a literalistic fundamentalist.

Conclusion

To conclude, then, a growing number of Protestants were coming to terms with evolution in the 1870's. Those who remained sceptical were generally polite, not rabid. They had difficulties with evolution not because they despised science per se but because they were so attached to the old science. By the middle of the decade more and more began to see that biological evolution could be distinguished from philosophical materialism and, whilst the latter was to be denounced, the former might be accepted as compatible with Christianity. Those who rejected all forms of evolution were becoming an isolated minority by the end of the decade. The fanatical fundamentalist of legend, it must be concluded, is essentially caricature, not history.

Chapter Five: The 1880's

Freethought, Evolution, and the Churches

The 1880's saw the climax of the Freethought attempt to employ evolution to polarize science and Christianity. It foundered. By the end of the decade organized Freethought was all but over. Within the Institutes, within the churches, and within society as a whole the view that there was no essential conflict between evolution and Christianity remained dominant. The 1870's had seen the conversion of the Institutes to evolution. By the 1880's it became acceptable to most educated Christians within the major denominations, with the exception perhaps of the Catholic church.

Nevertheless some radical thinkers remained convinced that evolution discredited Christianity. They believed that evolution was positive truth, whereas Christianity was largely mythological, if not patently false. Paradoxically, and despite their positivist posture, these radicals turned evolution itself into a surrogate religious faith. Thus their hostility toward Christianity was the hostility, not of science, but of science-as-religion. Though not numerous, their fashionable ideas were disproportionately influential. At the opposite end of the spectrum, militant opposition to evolution sporadically flared up.

Freethought

Freethinkers aggressively sought to polarize science and religion, and to use the Darwinian theory to discredit the teaching of the Christian churches. Robert Stout was without doubt the freethinker with the highest public profile. Lecturing for the Canterbury Freethought Association in 1881, he argued that evolution

and theism could not be reconciled. Since evolution was manifestly true, then the popular Christian idea of a transcendent deity interfering in the original creation and in present events must be given up. The Christian system was not only false but it was pernicious as it was built on degeneracy rather than progress, he charged. Its paradise was in the past, in contrast with that of the scientific man, whose paradise lay in the future. Evolution was invested by Stout with a quasi-messianic status. It promised to usher in the millennium. God, he concluded, was entirely unknowable, though he regarded this conclusion as neither irreligious nor irreverent: "What good can it do us to believe in something we cannot verify?"¹

In 1883 Thomas Cheyne Farnie reviewed Judge George Higinbotham's 'Science and Religion' lecture at a meeting of the Dunedin Freethought Association. The lecture itself was delivered by the Judge at Scots Presbyterian Church in Melbourne at the request of its controversial minister, the Rev. Charles Strong. Higinbotham drew a strong distinction between the 'sentimental', 'dogmatic' and even 'dangerous' teaching of the orthodox churches and the simple and sublime religion of Christ.² Strong knew that Higinbotham's milk-and-water God would be anathema to the orthodox Presbyterians in his congregation. When charges of promulgating heretical and unsound doctrine were mooted just as he expected, Strong resigned.³

Farnie, who was vice-president of the Dunedin Freethought Association, was considerably more militant in his review of the Judge's lecture than Higinbotham had been himself. The Church was never so pitiably weak, he fulminated, as when 'it sets up in battle array its ghastly skeletons, dead puppets, and withered dogmas, with

the faint hope of routing the well-drilled, well-disciplined, keen, cutting, arguments of the men of science.' Pauline Christianity, founded on the doctrine of original sin, dominated the churches, he argued, but since evolution had plainly refuted the fall there was no need for their existence.⁴

Yet though they fiercely assailed the churches in the name of Science, Freethought propaganda must be taken with more than a pinch of salt. It did not signify the long postponed crescendo furioso of the battle between science and religion, for at least three reasons. Firstly, the freethinkers' rejection of traditional Christianity was not shared by most working scientists, as we have already seen. So too, despite their positivist posture, 'Science' was for them less a disciplined approach to the investigation of nature than it was a religion-of-science designed to discredit and supplant Christianity. Thus although there was hostility here, mostly from the Freethought side, it was the hostility, not of science toward religion, but of a struggling conversionist sect toward an established religion. Finally, as we shall see, despite its militant rhetoric Freethought made few converts and, in institutionalized form at least, failed to have a lasting impact on the wider society.

Freethinkers staged public debates in their attempts to drive a wedge between science and Christianity. In Auckland, for instance, the Auckland Rationalistic Association arranged a debate between visiting Freethought lecturer Isaac Selby and local man John Buchanan. Buchanan was a member of both the Auckland Institute and the Auckland Christian Evidence Society led by Bishop Cowie. He met Selby on the fourth of August 1884 in the Theatre Royal.⁵ Attendance, according to the

Herald, was only moderate.

Selby launched into the attack by arguing that the two accounts of creation in Genesis chapters one and two were contradictory. Geological and astronomical evidence showed the world to be far older than the six or seven thousand years which Christians believed in, he declared. It was also quite impossible for birds and fish to have been created together, as Genesis stated they were.

Buchanan, in reply, asserted that the Bible was written in popular form and was not to be construed literally. Here the Christian apologist insisted that the Ussherite literalist which the freethinker set up and knocked down was a straw man. All the evidence we have examined so far suggests that Buchanan was right, that very few Christians who were acquainted with science felt bound to defend either the Ussherite chronology or a strictly literal interpretation of Genesis.

Disappointing as it must have been for the Auckland Association the audience was almost entirely composed of Rationalists. Christians were either not interested or else followed the lead of Bishop Cowie who politely refused Selby's invitation to debate the topic. Probably Cowie felt that attention would only encourage the nuisance.⁶ The Association eventually raised, after 20 pounds expenses had been deducted, the rather less than princely sum of three shillings and sixpence for the Auckland Hospital. The debate excited very little notice, and almost no correspondence, in the local press. As 'Calamo Currente' expressed it: 'People have heard enough about Moses' mistakes and the rest of the twaddle that goes to make up a Freethought debate, and they are beginning to grow tired of the

nonsense.⁷

The Freethought cause in Christchurch suffered from similar neglect and disinterest. When doughty Presbyterians Rev. R.R.M. Sutherland and Robert Wood arrived to do battle at a meeting of the Christchurch Freethought Association in 1883, they were disappointed to find that only twenty persons turned up. This clearly indicated to Wood that freethought was in a condition of 'intellectual bankruptcy' and was 'beneath contempt'.⁸

Similar debates took place around the country wherever a Freethought or Rationalistic Association had sprung up. The Christian apologist always insisted on the harmony of science and Scripture. In Woodville, for instance, local Methodist Mr Rendle affirmed the proposition 'Does the Mosaic Record of Creation and Modern Science Agree?' in a debate with the President of the local Freethought Association Mr E.A. Haggen.⁹ Haggen later became Mayor of the town and member of the Land and Education Boards.¹⁰ As at the national level, heterodox religious beliefs did not prove a bar to high office in local politics.¹¹ No details of this debate have survived but undoubtedly it followed closely the lines of the Selby-Buchanan debate.

The religious press also took part. In 1885 the Freethought Review rubbished the Methodist claim that it was a 'manifest absurdity' to think that science and religion were antagonistic.¹² The usual litany of Freethought charges was rehearsed: science proved the Bible to be false in both cosmogony and chronology; science discredited miracles; evolution revealed man to be a progressive rather than a fallen being; freethought bid man 'withdraw his gaze

from a savage and revengeful God' in order to lead him 'to a higher and nobler ideal'.¹³

In March of the same year the Review published an article by Dr Edward Aveling which originally appeared in The Agnostic Annual for 1885 on 'Messrs Facing-both-ways of Science'. Many English scientists, Aveling argued, were disinclined to openly declare hostility to the popular religious creed which they secretly despised. But for the silence of men like Huxley, Henry Drummond's Natural Law in the Spiritual World, which reconciled evolution and Christianity, would never have reached its sixteen thousandth copy. It sold largely among Dissenting ministers who, in Aveling's opinion, were 'always more exercised in their mind as to the threatenings of science than their brethren of the Established Church'. The book itself he dismissed as 'flabby gabble about science and religion'.¹⁴

This sustained, multi-media attempt by freethinkers to proselytize on the basis of the alleged incompatibility of evolution and Christianity did not meet with much success in New Zealand. In 1886 rationalists, freethinkers, and secularists numbered just over four thousand adherents, according to the census, or slightly under 0.9 per cent of the population.¹⁵ Apparently the New Zealand population was not compelled by Freethought claims to abandon adherence to Christianity.

After 1887 organized Freethought all but collapsed. Partly this was due to the diversion of leading figures like Robert Stout and John Ballance into national politics. W.W. Collins kept the cause alive in Christchurch in the early 1890's but by 1893 he too was elected to parliament and pursued Liberal causes in the House. Freethought was

inherently inchoate and unstable, over-dependent on the talents of its leaders for organization and propaganda. The problem was, as Joseph Braithwaite complained on leaving the Dunedin Association, freethought was a failure in the 'constructive religious sense' because it had no common core of beliefs around which members could unite.¹⁶ The Dunedin Freethought Association, for instance, finally collapsed through disputes over Spiritualism.¹⁷

What is particularly relevant, as far as this thesis is concerned, is that the Freethought attempt to polarize science and Christianity had unquestionably failed. The alleged incompatibility between science and religion was a weapon colonial freethinkers had been forced to rely on rather a lot since the bête noir of English freethought - the Anglican establishment - did not substantively exist in New Zealand.

This was important for a number of reasons. It was Anglican 'ecclesiasticism' for which Thomas Huxley had reserved his fiercest diatribes. His exchange with Bishop Wilberforce had not simply been about evolution. At a deeper level it represented a conflict between the older, often clerical scientists set free by their financial independence to cultivate natural history, and the rising breed of career-dependent scientists led by Huxley, who saw entrenched ecclesiastical power as a barrier to their own professional advancement.¹⁸

An obstructive Anglican establishment did not exist in New Zealand. Conflict within the colonial scientific community thus generally concentrated on purely economic and professional issues, as we saw in chapter three. Freethought propaganda had little appeal

precisely because the colony had no powerful religious establishment able to discriminate against outsiders and generate widespread disenchantment. The inclusivist policies pursued by the managers of the Institutes and the irenical approach of clergymen like Bishop Nevill successfully defused whatever religious tensions did arise within colonial science, on which Freethought might have fed. Colonial social and religious conditions, then, militated strongly against the Freethought attempt to polarize science and Christianity.

Of course most simply found freethought propaganda intellectually unconvincing. The overwhelming consensus of opinion, expressed repeatedly by both leading scientists and churchmen, was that the freethinkers were simply wrong, that there was no fundamental incompatibility between evolution and Christianity. Pious Anglican and Christchurch city engineer Edward Dobson spoke for the majority in an 1880 address to the Canterbury Institute. 'Science', he declared, 'is but another name for the knowledge of God's work and of His Will as expressed in what we term natural laws.'¹⁹

Freethought did leave its mark however. Any preacher who managed to combine religious language with fashionable progressive evolutionary concepts could still make a hit. A.B. Worthington was a noteworthy example. He was an American who had opened a Temple of Truth in Latimer Square, Christchurch, in the early 1890's. He kept 350 'students of Truth' and hundreds of other curious visitors engrossed with a version of Spencerian philosophy which stressed the immanence of God in natural evolutionary processes: 'Until man does realise that the ocean of orderly processes by which he is surrounded is the act of God, with which he must come into harmony, and through

which he is to demonstrate his divinity, until he understands this, he is working against the law, against God, against love, he is working in direct opposition to the great laws that are controlling the universe and mankind'. Once this great truth was realised of course, all things would be made new. Man would be lifted 'from conditions of ignorance and degradation, out to that plane of power where he is to demonstrate that he works with God'.²⁰ Unfortunately Worthington attempted to co-operate with the divine law of love a little too often. When it was revealed that 'Sister Magdala' was actually his eighth wife by bigamous marriage the Temple of Truth tumbled into dust.

The Progress of Evolution in the Churches

By the 1880's, and despite Freethought claims to the contrary, the compatibility of evolution and Christianity was rapidly becoming the dominant view within all the major Protestant denominations. Almost all the Anglicans who expressed an opinion on the matter by now fully accepted biological evolution. Bishop Nevill, who had cautiously opposed Hutton in the Otago Institute lecture series in 1876, quickly changed his tune. In a sermon to his St. Pauls congregation in 1884, he asserted that 'far from having banished God ... the doctrine of evolution, affords a very strong ground of belief in His existence.'²¹ Archdeacon H.W. Harper proclaimed himself 'a believer in evolution' in an 1882 address to the Timaru Debating Society.²² Rev. E. Whitehouse, a former lecturer for the Church Defence Society in England who had become curate of Patea, argued that evolution was a well-sustained theory, bringing conceptions of the Creator's working into closer harmony with existing fact.²³

During the course of a very successful mission tour in the North Island Rev. Charles Bodington, associate of King's College London, delivered lectures to the faithful in Thames and Auckland on 'Some Difficulties of Belief'. The Darwinian theory, he declared, was certainly not one of them: 'The scientific doctrine of evolution, if not absolutely proved, is, to say the least, highly probable'. Far from exploding natural theology, he believed with Bishop Nevill that evolution had reinforced it: 'The writings of Mr. Darwin and other naturalists have revealed to us design in nature on a large scale'.²⁴

Robert Maunsell had been an intransigent anti-Darwinian and special creationist in his 1871 lecture 'Man and the Monkey'. By the 1880's, however, following the trend exemplified by Nevill, Salmond, and D.M. Stuart which was discussed in chapter four, he was converted. He published his new views in an article in the Auckland Church Gazette which was entitled 'A Believer's Belief in Evolution'. 'The origin of species', he declared, 'has no doubt in many respects been conclusively proved by Darwin'.²⁵ To those who argued that evolution was opposed to the teachings of Genesis 1 and 2 Maunsell replied that it was only opposed to the old interpretations of those chapters. Moses' view of the creation was essentially a series of visions which were depicted 'without strict adherence to distances in time or to details in process'. This was a far cry from simplistic literalism; though strongly evangelical, Maunsell was no fundamentalist. Behind the process of evolution, he insisted, the Divine Mind was at work in exactly the same way as the Bible had always portrayed: 'He works, as it were, behind the scenes One nation rises, another sinks; famines, plagues, and destruction from the enemy sweep the land:

outward natural causes are patent; and yet God is represented as causing it all'.²⁶

The Venerable Archdeacon Stocker, vice-president of the Southland Institute, articulated similar concordist views to that body in 1886. Attendance at the meeting was unusually large, some fifty persons being present, including a number of ladies.²⁷ Stocker declared that even if it was proved true that man had been developed from a lower animal this would be quite in accord with theology and with the Scriptures. Theology, he asserted, recognized the Divine cause in every process of birth, development, and growth. The facts of Nature, including those revealed by Darwin, ought to be understood as the acts of God.

Members were evidently delighted with Stocker's paper. A most animated discussion followed the lecture in which ten members took part, most of whom lauded its value and excellence. The Southland Times had nothing but praise for Stocker's lecture: 'Is not a chimpanzee or a gorilla as much one of God's creatures as an archdeacon, or a mayor, or even an MHR? Nor can it be denied that there is a striking family likeness between the whole monkey tribe and the human species'.²⁸ By the 1880's not a single prominent Anglican churchman publicly rejected biological evolution.

Over evolution Presbyterianism was more theologically diverse and tumultuous than either Anglicanism or Methodism. Anglicans tended to wait patiently until the issues were settled at home before pronouncing on the question to their congregations. In Methodism the gap between an elite cadre of well-educated and progressive-minded ministers like Fitchett and Rev. C.H. Garland, and a traditionalist,

backward-looking laity was greater than in Presbyterianism, and this militated against theological ructions. Scottish Presbyterians, however, had always placed great value on learning and higher education, and were interested in science, particularly of the pious Hugh Miller variety. So too theological disputation was something of a favourite pastime. As we have seen in the 1870's, prominent Presbyterians like Rev. William Salmond, Rev. D.M. Stuart, Robert Gillies and G.M. Thomson were ready converts to evolution. In the 1880's this trend continued.

Some Presbyterians followed Archdeacon Stocker in drawing an analogy between the divine role in ontogeny (the birth and growth of an individual) and the divine role in phylogeny (the evolution of a species) to argue that there was no necessary contradiction between creation and evolution. Leading conservative theologian James MacGregor, ex-Professor of Systematic Theology in New College, Edinburgh and now minister of Columba Church, Oamaru, put this view in 1882. 'If science can show that one species has been the parent of another and higher species', he argued, 'the demonstration will not necessarily mean more for Christian theology than, that so far Creation has been, not immediate (as men of science have hitherto generally supposed), but mediate (in relation to species, as theology has affirmed in relation to individuals).'²⁹ With this concept of mediate creation, the creation of species by natural evolutionary processes, MacGregor effected a rapprochement between evolution and Christianity which he felt did justice to both. He had no time at all for fiat creationists who believed in what he called 'the supranaturalistic doctrine of creation'.³⁰

MacGregor was conservative in theology, strongly attached to the Westminster Confession of Faith. The Westminster Confession insisted that the six days of creation was an article of faith for Presbyterians. Yet MacGregor accepted evolution. He reconciled the two by arguing that although the six days was a fact for believers, the Confession made no statement about the meaning of the fact. In MacGregor's unequivocal opinion, it did not mean 'six times twenty four hours'. Although Genesis was a 'true history', he argued that it assumed chronological form merely for the sake of orderly presentation.³¹

L.H. Barber has asserted that in the 1880's and 1890's 'Biblical literalists and rigid confessionalists fought a rear-guard action against ... scientific explanations of human and natural phenomena.'³² This is plainly an exaggeration, if MacGregor is anything to go by. He was a strong confessionalist, but hardly a wooden biblical literalist, and he accepted biological evolution. Conservative Presbyterians were more receptive to advances in scientific knowledge than Barber suggests.

In their official statements, however, prominent Presbyterians still tended to shy away from using an ambiguous and loaded term like 'evolution', for it was like a red rag to a bull to some conservatives. Instead they employed safer, more general terminology. Rev. D.M. Ross, for example, announced to the Otago and Southland Synod that 'the tendency of ripened science' was 'to confirm and illustrate Scripture truth'.³³ Confident restatement of the fundamental premise of natural theology was another favoured tactic. 'We have no fault to find with scientific men, as such', Moderator

Rev. Alexander Greig declared to the same body in 1884, 'and we have no fear that anything which nature may reveal to them will ever overthrow Scripture. The Book of Nature and the Book of Revelation were both written by God, and they cannot therefore contradict each other'.³⁴

Occasionally in their efforts to harmonize a rigidly literalistic reading of Genesis with modern science extreme conservatives fell foul of men of science. Ultra-conservative Rev. James Copland wrote two articles for the New Zealand Presbyterian in 1888 entitled 'Where Should We Locate the Adamic Age?' It was a complex and detailed harmonization of Genesis, which Copland obviously regarded as an accurate scientific and historical account, with the findings of geology and anthropology. The Adamic race began in the Pliocene age, Copland insisted, and the Noahic race in the Pleistocene. Amongst other scientific information in the articles, Copland stated that no Maori had ever seen a live moa.³⁵

These assertions raised the ire of George Malcolm Thomson, who was a devout evangelical Presbyterian, a convinced Darwinian, and a leading light of the Otago Institute. On the question of the date of extinction of the moa Copland was simply wrong, and Thomson felt duty bound to point this out. Anybody who bothered to visit the Otago Museum would see part of a comparatively recent moa with skin and feathers attached, he announced. No good could come from Copland's straining of scientific facts elsewhere in the articles to serve his own literalistic reading of Scripture, Thomson declared: 'Religion certainly does not need it; science is not one whit profited by it; and in the interests of religion and science, I must lift up my voice

against such teaching'.³⁶

This was typical of the petty controversies that occurred within the evangelical denominations. It can hardly be construed as a clash between science and religion. It was Copland's silly science and wooden literalism which offended Thomson, who felt that to distort scientific facts to serve misguided religious preconceptions was no service to either science or Christianity.

Thomson personifies the utter inadequacy of a positivist model of the relations between science and religion in the nineteenth century. His status in colonial science grew as the century progressed. After 1908 and his election to the House of Representatives as Reform member for Dunedin North he became self appointed parliamentary spokesman for science, listened to with immense respect by politicians, the press and the public.

He was an ardent Darwinian, as a course of lectures on botanical evolution to the Otago Institute in September 1884 made plain. The immense light thrown by evolution on the facts of the geographical distribution of plant species merely illustrated, he argued

the chilling effect exercised on Science by the old dogmatic teaching regarding Creation. As long as men believed that every animal or plant belonged to some particular species which - at some conveniently far-back period - had been created once and for all, the problems of geographical distribution were simply unanswerable.

Thomson unhesitatingly preferred the Darwinian theory, which he declared was 'presently accepted as a doctrine of science by nearly all biologists'.³⁷

Such views did not attenuate Thomson's Christian faith in the least. He was no merely nominal Presbyterian. 'Everything George did', his biographer records, 'was rooted in his religious faith'.³⁸ He was

active as an elder at Knox Church and ran the Church Literary and Debating Society. Inexorable natural law had not replaced the sovereign, personal God of Christianity for him. He believed that Darwin had reinforced, rather than destroyed orthodox theism: Darwin's 'view of life and of the Creator of life was a far grander one than any which it subverted'.³⁹ He also believed strongly in the power of prayer, and consistently practised it. His 'personal missionary drive to spread Christian teaching beyond the Church' led him to found the Dunedin City Mission in 1896 not only to succour but also to regenerate the poor, and to reconstitute the Dunedin YMCA in 1901.⁴⁰

Evolution was rapidly accepted within Methodism, too, by the 1880's. A.R. Fitchett may have been somewhat isolated in the 1870's, but in the following decade this was no longer the case. Crucial to official acceptance of the theory within Methodism was the example of Rev. W.H. Dallinger, who was Governor of Wesley College, Sheffield, President of the Royal Microscopical Society and Fellow of the Royal Society. Dallinger believed that the Darwinian theory was quite compatible with Christian belief.

Ian Sellers notes that in Britain Dallinger was actually discouraged by his connexion from publishing his views until 1887 when his Fernley Lecture was given the connexional imprimatur.⁴¹ As early as January 1882, however, the New Zealand Wesleyan, citing Dallinger as its authority, argued that the Darwinian theory was not incompatible with Christian belief.⁴² Almost certainly Sellers is late with his date for the change in British attitudes for as early as 20 December 1884 the New Zealand Methodist reprinted one of Dallinger's sermons which originally appeared in the Wesleyan Methodist Magazine,

published in Britain.⁴³

Dallinger's sermon was concerned with the assumption made by 'some practical scientists' that the course of nature was completely uniform. In fact, Dallinger remonstrated, God had miraculously intervened at three specific points. Employing Clerk Maxwell's argument that atoms bore the impress of manufacture, he argued that the first miracle was the creation of matter. Life, however, could not simply evolve from atoms, so the second miracle involved the transition from inorganic matter to organic life. Finally, although God might produce man 'from the dust of the earth' by purely natural evolutionary processes, such processes could not account for the miracle of the soul. Granted that evolution was the means by which God created the earth, man, and the heavens, at these three points He had intervened in a 'direct and special operation of his power.'⁴⁴

Certainly there were theological problems involved in Dallinger's conception of providence. God seemed to be more directly involved in 'miraculous' events than in 'natural' ones, which was a distinction that the Bible did not recognise. To restrict God to the remaining gaps in scientific explanation was to raise problems for faith when these too were explained scientifically. But for all that, it was a concordist position which seemed to satisfy Methodists acquainted with the issue. No-one wrote to the Methodist protesting at Dallinger's acceptance of Darwinism, whereas some had objected in writing to Fitchett's views in 1876.

The New Zealand Methodist maintained in 1885, therefore, that it was a 'manifest absurdity' to regard science and religion as antagonistic.⁴⁵ The same article referred to 'certain peripatetic

vendors of infidelity', namely freethinkers, whose favourite text was 'Science versus Religion'. They deliberately assumed a fundamental and irreconcilable antagonism between the two in order to persuade themselves that the death-knell of religion had been sounded by science. In the Methodist's opinion this was a spurious piece of Freethought myth-mongering.

Many other nonconformist ministers publicly accepted evolution in the 1880's. Samuel Edger graduated Bachelor of Arts at London University and entered the Baptist ministry before emigrating to New Zealand. But convinced that sectarianism was a sin against New Testament teaching, he successfully applied for the post of minister for the Albertland Nonconformist Settlement. After holding unsectarian services at Port Albert for a number of years he shifted to Auckland and set up as an undenominational minister, preaching in a variety of halls and churches.⁴⁶

The Auckland Institute received the benefit of his wisdom in a lecture delivered on 5 September 1881 entitled 'Evolution -Looked at from its Religious Side'.⁴⁷ Edger was a strong-minded liberal, and had some plain words for both anti-religious evolutionists and literalistic Christians:

We decline allowing the evolutionist - the scientific Pope - to force upon us conclusions that cover more ground than the facts he can produce justify. We decline allowing the religious bigot to tie us down to his way of reading the Bible, when God, through scientific discoveries, would lift us a little higher.(48)

He saw no harm to Christianity in evolving a man out of a monkey 'looked at from the material point of view.' Even 'the conscience, the great spiritual conceptions, the religious consciousness ... may

appear to have taken their present shape by a quite gradual process.' Edger did not leave God out entirely. The evolution of the conscience, he told his audience, must have been exclusively God's work, for nine out of ten people were very anxious that it should not grow.⁴⁹ Edger's paper elicited no response at all from members of the Institute, either positive or negative. Most of the discussion at the meeting centred on a debate between Mr Pond and Mr Justice Gillies on the commercial feasibility of growing beetroot for sugar production.⁵⁰ Beetroot, it would seem, excited more interest than Edger's metaphysical speculations.

Catholic Responses to Evolution and Science

Like the Protestant churches, the Catholic church was not quite the reactionary monolith of traditional accounts. Typical of these accounts was J.W. Draper's History of the Conflict Between Science and Religion (1874). It depicted 'the conflict of two contending powers, the expansive force of the human intellect on one side, and the compression arising from traditionary faith and human interests on the other.'⁵¹ The former power, science, was identified throughout the book with reason, enlightenment and progress. The latter power, Draper declared, was Rome, which represented ignorance, reaction and superstition. Owen Chadwick has observed that the book made a powerful contribution to the intellectual atmosphere of the age.⁵² The New Zealand evidence suggests either that colonial Catholics were more liberal and progressive than overseas, or, and the options are not mutually exclusive, that Draper's views were propaganda rather than history.

Roman Catholics voiced many of the same fundamental philosophical

objections as Protestants to 'modern science' which stepped beyond what they considered its rightful bounds. They were concerned in this decade over evolution, particularly when it became part of the wider and perennial Catholic concern over education. William Miles Maskell warned the Catholic Literary Society in Christchurch in 1881 that 'modern principles of science' were accepted and taught in all public educational institutions in New Zealand from the universities down.⁵³ Maskell must have held considerable sway with Catholic audiences, for he was no mean scientist. He had become the world authority on the Coccidae (scale-insects), and was also a fellow of the prestigious Royal Microscopical Society, led by Methodist W.H. Dallinger.

Maskell was no blind reactionary. By 'modern science' he meant the teaching of Thomas Huxley, and he cited an example of the sort of principle he objected to from Huxley's Lay Sermons: 'The improver of natural knowledge absolutely refuses to acknowledge authority, as such. For him, scepticism is the highest of duties; blind faith the one unpardonable sin.'⁵⁴ However essential such scepticism might be to the empirical investigation of Nature, Maskell was concerned lest such principles be carried over into religious matters. For a Catholic, and in the light of the Papal Encyclical Pastor Aeternus (1870) which enunciated the dogma of papal infallibility, it was a perfectly understandable response. Maskell shared the fear of Protestant Christians that 'modern science' declared, in the words of ex-clergyman turned agnostic Leslie Stephen, that 'God is identified with the unknowable, and Theology is a collection of meaningless words about unintelligible chimeras.'⁵⁵ It was anti-religious scientism of this kind that Maskell rejected, not science per se.

Turning Huxley's argument on the necessity for scepticism on its head he asserted that '... in reality there is nothing which scientists adore so much as authority. "Huxley says this"; "Darwin states positively"; "Haeckel distinctly affirms"; and such like phrases, carry absolute weight, and are quite enough to frighten anybody from presuming to say the contrary.'⁵⁶ It was a clever point, and one which Samuel Butler was making about the 'church scientific' in Britain at this time.

Maskell went on to compare evolution and Christianity. Far from outright rejection, Maskell accepted in principle the evolution of plants and all other animals except man, which he declared had 'no importance whatsoever' from the Christian point of view. But to affirm that man had developed 'simply and solely' from the brute seemed to him utterly materialistic. It was philosophical materialism, not biological evolution, that Maskell was concerned about. He did not wish for an instant, he concluded, 'to discourage amongst you the pursuit of science, in itself.'⁵⁷

Maskell continued to take every available opportunity to denounce anti-religious science. In May 1882, for example, the Canterbury Institute, with liberal Anglican F.W. Hutton in the chair, passed the following motion: 'That this Society desires to place on record its high appreciation of the great services that have been rendered to science by the late Dr. Charles Darwin and its deep sense of the loss that science has sustained through his death.'⁵⁸ Among those who voted in its favour, it may be noted, there were no less than eleven clergymen, predominantly Anglicans led by Bishop Harper, but including Presbyterian Rev. Charles Fraser and Methodist Rev. James Buller. The

only dissentient to the resolution was Maskell. But, testimony to the low-key, inclusivist atmosphere of the Institutes, his conscientious stand did not result in alienation. He was re-elected Treasurer the following year.

He continued to press home the attack. Late in the same year the leading British science journal Nature, in reporting an address by Professor Haeckel to a meeting of German scientists, suppressed the following passage from a letter Darwin had written to a student at Jena:

Science and Christ having [sic] nothing to do with each other, except in so far as the habit of scientific investigation makes a man cautious of attempting proof. I do not believe that any revelation has ever been made. With regard to a future life, everyone must draw his own conclusions from vague and contradictory possibilities.

At a meeting of the Philosophical Institute of Canterbury early in 1883 Maskell called the attention of the Institute to the 'disingenuous omission by the Editor of Nature of this letter showing Darwin's want of religious beliefs.'⁵⁹

At once F.W. Hutton as President dismissed the meeting, declaring that the Institute was a scientific body, and that he would permit no discussion which might bring up religious controversy.⁶⁰ Convinced that Maskell was about to provoke an unnecessary breach between science and religion, Hutton was determined to avoid this at all costs, if necessary by excluding religion entirely. For an Institute which in the previous decade had regularly been borne aloft by Haast's romantic natural theology Hutton's response was most significant. To stifle dissent by ruling religion out of court was to effectively secularize scientific discussion.

The Christchurch Catholic Literary Society received another

lecture on religion and science in December 1884 from Dr R.H. Bakewell, who was a medical practitioner and a member of the Canterbury Philosophical Institute. Bakewell contributed a number of papers, mainly on topics concerned with health, to the Transactions of the New Zealand Institute. The lecture itself was published in The Tablet for all interested Catholics to read. Its title summarized the argument: 'On the Supposed Antagonism Between Revealed Religion and Natural Science.' Bakewell's stated object was to show that 'true science' was 'not in any respect' antagonistic to religion.⁶¹

His definition of revealed religion was, not surprisingly, the doctrines of the Catholic Church 'as defined by her infallible authority.' The Catholic had an immense advantage over the Protestant on controverted scientific questions, he asserted, in not being tied to the text of the Bible. The Church had made no authoritative interpretation of the first chapter of Genesis which thus might 'bear various interpretations', as also might the question of the universality of the Deluge.⁶² Evidently a Catholic scientist, even in the age of the papal encyclical Quanta Cura (1864) with its appended Syllabus of Errors, was not denied considerable latitude on scientific questions. This was open-minded liberalism rather than blind dogmatic reaction.

Bakewell then proceeded to turn an argument normally directed against Catholics on its head, and aimed a shot at the colonial church scientific: 'When ... you find men, like some in this colony, declaiming ex cathedra, as it were, on all sorts of scientific questions, and pronouncing their opinions decisively on very different subjects, you may safely treat their decisions and opinions on every

subject as valueless.⁶³

Bakewell was perhaps a bit disgruntled at the treatment of his scientific revelations by the leaders of colonial science. In July 1884 he had read a paper to the Canterbury Institute in which he argued, from 'many experiments', that 'life' was a distinct force or energy created ad hoc which, acting on protoplasm, and directed by a Supreme Intelligence, enabled growth, differentiation, and reproduction.⁶⁴ G.M. Thomson, hardheaded Presbyterian and botanist, declared in the New Zealand Journal of Science that for the sake both of author and readers the Canterbury Institute should have consigned it to 'oblivion' before it ever got near the Transactions.⁶⁵

Both Maskell and Bakewell received peremptory treatment at the hands of Hutton and Thomson respectively. Yet neither conflict can be interpreted in science versus religion terms. Both Hutton and Thomson were convinced evolutionists and committed Christians. They were simply getting tired of conservative Catholics constantly putting a spoke in the progress of evolutionary biology. Colonial science was not under the jurisdiction of the Curia, they implied, and Maskell and Bakewell had better understand that.

In the second part of his 1885 lecture Bakewell asserted that if practitioners of natural science objected to Christianity, they argued not as biologists or scientists but as unbelievers.⁶⁶ He proceeded to quote John Tyndall on the inadequacy of a materialist account of consciousness, arguing that this cut away the entire foundation of the materialist's objection to revelation. If some phenomena were not under the yoke of natural law, he went on, then the supernatural must be admitted 'on which the whole argument for the Catholic faith is

founded.' It was a racy piece of theological sleight-of-hand, probably effective enough on a sympathetic audience. He added a significant postscript. The Catholic could do no better service to his religion than to make himself master of some branch of physical science and obtain a reputation for good, sound work and thought. Thus he would become a standing refutation of one of the standard arguments against Christianity, that it was anti-science.⁶⁷ Like Maskell, far from crying war to the death against science, as the traditional historiography has assumed, Bakewell was enjoining his co-religionists to become actively involved in scientific work.

As Maskell and Bakewell illustrate, though they were not anti-science, Catholics were undoubtedly somewhat slower to come to terms with modern science than Protestants, for they were bound to wait upon the teaching office of the church to interpret the opening chapters of Genesis. Some were still coming to terms with geology. In 1880 Jesuit Rev. J. O'Malley delivered a lecture to a large audience in the Temperance Hall in Dunedin entitled 'Was there ever a Universal Deluge?' Catholic Bishop of Dunedin Patrick Moran was in the chair and kept a watchful eye on proceedings. O'Malley decisively rejected Bishop Colenso's idea that there never was a flood, but at the same time rejected the view that the flood was universal. He opted instead for Scottish geologist Hugh Miller's theory of a partial deluge caused by the land subsiding.⁶⁸ The Echo applauded the open-mindedness of both O'Malley and Moran, but could not resist concluding: 'It says very much indeed for these two clergymen, both as to their honesty and intelligence, that they are willing to receive instructions on a knotty point of Scripture even from a Scotchman and a heretic.'⁶⁹

Probably many Catholics were more conservative in their attitudes to science than Maskell, Bakewell and O'Malley. No doubt a good many of the faithful obediently followed the lead of itinerant apologists like Father Le Menant des Chesnais. Auckland Catholics in 1883 received the benefit of his lectures on liberty, authority, freethought, socialism, naturalism and atheism, in which, without ever condemning evolution specifically, he stuck faithfully to the arguments of the Syllabus of Errors (1864), and condemned all these errors of modern thought.⁷⁰

Protestant Arguments Against Anti-Religious Science

To argue as I have done that by the 1880's most educated Christians had come to accept biological evolution is not to deny that some Christians still found evolution to be absolute anathema. Small evangelical Protestant sects like the Brethren, who took a literal approach to the Scriptures, and who generally did not move in scientific circles, continued to denounce what they saw as infidelity in no uncertain terms, as they had done in the 1880's.

This may be illustrated by a typical amusing incident. Eminent British astronomer Richard A. Proctor conducted a lecture tour throughout the country in 1880. At Christchurch and Wellington he lectured every night to crowded audiences; at Wanganui a 'little newspaper war' swelled receipts; at Nelson he declared that in proportion to the population the audiences were the largest he had addressed in any part of the world - Nelson was 'the Boston of New Zealand'.⁷¹ In Dunedin he gave an astronomical lecture to a packed Garrison Hall on 'Other Worlds and Other Suns'. The audience was kept in 'rapt attention' throughout.⁷²

At a meeting of the Dunedin Benevolent Institute Committee the next evening, however, a proposal to invite Proctor to lecture was violently opposed by a conservative faction on the grounds that, being an evolutionist, his religious views were unsound. Gordon Forlong, an evangelist loosely associated with the Open Brethren, was reported to have warned the ungodly at the meeting against contributing to the offertory plate: 'God doesn't want your money and we don't want it.'⁷³ In a letter to the Otago Daily Times Proctor, plainly amused, retorted that this was akin to the negro preacher's request that the man who stole his turkey should not put anything in the plate, which of course filled the plate to overflowing.⁷⁴

A.R. Fitchett, by now a dean in the Anglican church and writing his 'Civis' column in the Otago Daily Times, satirised Forlong's stance: 'The spectacle of two thousand people flocking night after night to the Garrison Hall to hear this poisonous doctrine ought to be considered, I suppose, a very sad one.' He suggested that if the citizens of Dunedin could not leave science alone then they should go and hear it purveyed in 'safe and wholesome form' in Alfred Brunton's lectures on the Great Pyramid or in Gordon Forlong's calculations on the dimensions of Noah's Ark. Why not believe in six twenty-four hour days and the entire Usherite chronology, Fitchett asked sarcastically? Why not accept that the Devil put fossils in the rocks in order to encourage Freethought? Does Proctor know his Shorter Catechism?⁷⁵

Suspicious about modern science were not confined solely to revivalists like Forlong. However within the major denominations cogent philosophical objections to 'modern science' which stepped beyond Christian bounds predominated, as had been the case in the

1870's, and bald scriptural literalism continued to be conspicuous largely by its absence. There was antagonism within the churches, but it was to anti-religious or (as they put it) 'false' science, not to science nor to biological evolution per se.

By the 1880's Anglicans accepted evolution as an established biological theory. But they continued to denounce scientific materialism or naturalism, though always with good manners. Archdeacon Harper, for instance, rejected Haeckel's evolutionary materialism as prejudiced against Christianity.⁷⁶ Bishop Nevill, whilst accepting evolution, argued that Spencerian agnosticism, the fashionable assertion that God was unknowable, was simply an attempt to escape from human responsibility.⁷⁷ Rev. E. Whitehouse, who also accepted Darwin, declared that the attempt to substitute science for religion was as suicidal as to exclude science from religion. Dogmatic materialism was absurd, he argued, and he quoted T.H. Huxley in support of this contention.⁷⁸

Presbyterians made similar trenchant criticisms of anti-religious science. There was a fundamental point of disagreement between science and religion, orthodox Calvinist Rev. Michael Watt declared to the Presbyterian Synod of Otago and Southland in his Moderator's address of 1880.⁷⁹ Science, he argued, only believed in a rigid unvarying order of Nature', and even if it accepted an Author of nature it was inclined to look on Him as if He was superannuated and in retirement:

Science thus reduces God, even when she is so gracious as to acknowledge His existence, to a nonentity to whom it is hopeless to pray, because He has abandoned His creatures, after starting them in the race of existence, to a stern bowelless order of Nature, which its author can no more control, with which he will no longer interfere, and which moves forward like the car of Juggernaut, heedless of whom it

crushes under its ponderous and pitiless wheels.(80)

Such anti-religious science was, in Watt's opinion, false science.

One intelligent philosophical objection to the Darwinian theory was articulated by Presbyterian Rev. James MacGregor in a paper read to the Otago Institute on evolution in 1885. Perhaps the leading conservative theologian in the colony, he was an able, if somewhat ponderous, philosopher. He accepted the idea of evolution as God's method of creation. But Darwin's term 'natural selection', he charged, was a 'loose poetical metaphor rather than an exact scientific definition'. Indeed since 'selection' was meaningless except as implying the operation of a directing intelligence, 'natural selection' was a logically nonsensical term. The use of the phrase produced two confused impressions and here MacGregor reached the heart of the matter. The first mistaken idea was that the mechanics of the evolutionary process was affected by the directing intelligence. Here he insisted that a theistic interpretation of evolution must not prevent the scientists from sitting down before the facts and constructing what was from a purely scientific point of view a naturalistic evolutionary science. But the second confusion produced by the use of the term 'natural selection' was the mistaken idea that it somehow proved the truth of philosophical naturalism. Here MacGregor insisted that accepting natural selection as an evolutionary mechanism did not explain God away.⁸¹ The facts of nature, he insisted, ought to be understood as the acts of God.

It was a masterly and perspicuous piece of philosophy which, perhaps inevitably, proved a trifle too lofty for some members of the Institute. It was suggested in discussion following the paper that his

opposition to evolution was impelled simply by the feeling that it was opposed to religion. MacGregor, feeling frustrated, repeated his assertion that evolution and creation were compatible. Yet he scarcely faced debate, as he himself admitted. This was a far cry from the pitched battles of the orthodox historiography.

Rev. Dr James Copland and the Origins of Fundamentalism

Although capable conservative theologians like James MacGregor accepted evolution whilst remaining a confessionalist, there was at least one prominent Presbyterian minister who can only be described as a militant anti-modernist. Rev. Dr James Copland had received his Ph.D. from the University of Heidelberg in 1858, and an M.D. from Aberdeen University in 1864.⁸² Though trained in Germany and acquainted with modern science and scholarship, he clung to the 'plenary inspiration' of the Scriptures as faith's anchor. In his view the Bible was 'the expression of God's mind unmingled with anything of merely human authority'.⁸³ In 1874 he published The Testimony Attested: A Popular Manual of the Evidences in Support of the Authority and Inspiration of the Scriptures, designed to reassure the faithful of the authority and inspiration of the Bible.⁸⁴

Throughout the 1870's Copland had carried on a running battle against evolution in the pages of the periodical which he founded and initially edited entitled The Evangelist. At this stage he was not as isolated from mainstream theological opinion as he was later to become. For example, he shared considerable common ground with those Christians who had already accepted evolution, but who strongly denounced anti-religious science. In 1878, for instance, he dealt with British physicist and militant agnostic John Tyndall's address on

'Moral Responsibility' to the Birmingham and Midland Institute. By showing how all human actions could be explained in evolutionary terms Tyndall had argued that free-will and responsibility were illusory. According to Copland this merely showed that Evolution was 'utterly subversive of true morality'.⁸⁵ Christian evolutionists would have applauded.

He had a host of scientific objections to biological evolution: hybrids were always sterile; natural selection could not account for organs of extreme perfection like the eye; there were no transitional forms linking distinct species; the fossil record was imperfect; there was insufficient time for evolution to have occurred.⁸⁶ Unlike other leading Presbyterians, Copland failed to distinguish biological evolution from philosophical materialism, and threw out the biological baby with the metaphysical bathwater. He allowed evolution not the least part to play in the formation of the human body. Genesis taught that it was formed from the dust of the earth by the creative act of God and that, for Copland, was that. The Genesis account of creation could not be impugned to even the slightest degree without entirely destroying the divine authority of the Bible. There is no doubt that in Copland's case it was his view of biblical inspiration which determined his opposition to any form of evolution.

Yet even Copland had come to some measure of accommodation with science. He had abandoned the Ussherite chronology in favour of Hugh Miller's view that in Hebrew the Genesis 'day' might actually mean an immensely long epoch. He was willing to allow, therefore, that Adam, whom he continued to regard as an historic individual, lived as long ago as the Pliocene age.⁸⁷ In this respect his views were less narrow

and dogmatic than those of militant American fundamentalism in the 1920's.

Unquestionably Copland's was becoming an increasingly isolated position. Rev. James MacGregor, Rev. William Salmond, Rev. D.M. Stuart, Rev. Charles Fraser, Robert Gillies and G.M. Thomson were prominent and influential Presbyterians who had all publicly accepted biological evolution by the early 1880's. However much popular support he may have gained, Copland's views were those of a minority amongst the Presbyterian theological leadership by the mid-1880's. No other leading figure totally rejected evolution in the way that he did.

Science, the Synod, and the University

Although Copland was an extremist, he was not without influence in the Presbyterian Synod of Otago and Southland. Tensions arose in the late 1870's and early 1880's between the Synod and the University over evolutionary science. But the series of incidents cannot be characterized in terms of a running battle between religious ignorance and scientific enlightenment. Purely scientific issues were minor. It was essentially a power struggle between the Synod, which was still trying to establish a Presbyterian hegemony in Dunedin, and the University Council, over who was to control appointments to new chairs, and hence to set the tone for the intellectual life of the city.

The Synod had endowed the chair of Mental and Moral Philosophy at the University. The incumbent professor, Duncan MacGregor, had aroused its displeasure with his 1876 New Zealand Magazine series on 'The Problem of Poverty in New Zealand', in which he had been critical of the Christian churches and frankly advocated advanced social Darwinist

views. When the Synod considered establishing a chair of Natural Science in 1877 some conservatives feared that F.W. Hutton, then lecturer in Geology and Zoology, would secure the appointment. The Otago Daily Times wryly commented: 'Were Huxley himself to offer his services for the post we believe that his offer would be refused unless he could satisfy the Synod that he was "sound".⁸⁸ The Synod vacillated so long that the University Council eventually endowed the chair out of its own resources, and in February 1878 appointed Hutton inaugural professor.⁸⁹

In the meantime a protracted debate had been taking place in the Synod over the subject or subjects of the proposed new chair. Copland advocated limiting MacGregor's influence by dividing up the subjects he already taught (Mental and Moral Philosophy and Political Economy), creating a new chair of Mental and Moral Philosophy, and assigning only Political Economy and 'Social Science' to the existing professor.⁹⁰ The four presbyteries came to as many different conclusions, though they were by no means opposed in principle to endowing a chair in science. The Southland Presbytery argued for a chair in Natural Science, with especial reference to Geology. After a prolonged debate in Synod early in 1878 it was decided, on Copland's motion, that a new chair of Moral Philosophy and Political Economy be endowed, with MacGregor's chair restyled Logic and Mental Philosophy. This was in order 'to combat many scientific theories and speculations which may best be dealt with by a University Chair.'⁹¹

The University Council, however, had declared its intention not to accept the proposed new chair, nor any division of the existing chair. Robert Stout, then Attorney-General and Minister of Lands in

the Grey government, accordingly introduced 'The University of Otago Amendment Act' into Parliament, which proposed giving the Council the sole right to appoint and dismiss Professors. This was in order to relieve the university of 'the intolerable incubus of ecclesiastical censorship', as Stout put it.⁹²

The Dunedin Presbytery petitioned parliament against the Bill and it was thrown out. The Synod reaffirmed its earlier position in January 1879 but the University Council would not budge. In January 1880 the whole matter was thrashed out for the fourth and last time, and the Synod decided to endow a chair of English Language and Literature, Political Economy, and Constitutional History, to which John Mainwaring Brown was appointed.⁹³

It would be tempting to follow Stout and to depict the Presbyterian Synod as tyrannical fundamentalist bigots to a man, attempting to emulate Calvin's iron grip over Geneva. Certainly the Synod wanted to control University appointments, and the University Council was equally determined to reject such control. But the fundamental issue in this controversy was academic freedom and the autonomy of the University, not the theory of evolution. It was MacGregor's religious scepticism and his radical social Darwinism which concerned the Synod more than his biological evolutionism, though probably some ultra-conservatives held that the former were inevitably consequent upon the latter. Yet they were not out to burn heretics at the stake. Rev. Dr D.M. Stuart, for instance, had nothing but praise for MacGregor who in 1886 was appointed Inspector-General of Lunatic Asylums and hospitals:

I cannot help saying how sincerely I regret his withdrawal

from the staff of our University Outsiders here and there have often spoken of him as a philosophical revolutionist; but you ... and I, who have often spoken to him as a citizen, scholar, teacher, and Christian, know that his soul is in touch with the good, the beautiful, and true - in short, with truth and righteousness.(94)

MacGregor was not the last University professor to cause anxiety to conservative Presbyterians. Early in 1881 Thomas Jeffery Parker arrived in Dunedin to take up his appointment as Professor of Biology at the University of Otago. He had trained under T.H. Huxley at South Kensington.⁹⁵

He delivered his inaugural lecture in the University Library on May 2 1881. Early in the address he stated that Darwin's Origin with its 'immense array of well-arranged facts and sound generalisations' had made 'belief in the theory of special creations once for all impossible to the student of Nature'. As if to dispel religious apprehensions, however, he went on to add that the 'real mystery of things' had not diminished, quoting Herbert Spencer on the limits of 'positive knowledge' and the inevitability of a 'surrounding nescience'. It was a position sufficiently vague to be able to satisfy conventionally religious opinion. Intelligent opposition to evolution was dead, Parker considered. Even among the non-scientific public there had been a wonderful and rapid change of opinion. The evolutionist was no longer considered a dangerous visionary, and it was 'no longer thought necessary that that power which could form worlds out of a nebula was unable to evolve a horse from an hipparion or even a speck of living protoplasm from the elements of the primeval sea.'⁹⁶

The language Parker used here was most significant. It would appear that he still considered theism to be a logically tenable

position. He was, it may be noted, the son of the eminent comparative osteologist William Kitchen Parker who was a devout Christian and had actually been converted to Methodism in his youth. T.J. Parker remained a parishioner and seatholder at St Matthews Anglican Church in Dunedin until the end of his life.⁹⁷

Yet one voice protested, and stridently. J.G.S. Grant, ex-rector of the Dunedin Academy and now full-time lecturer and publicist, declared: 'The origin of species, as promulgated by Darwin, and re-echoed by Parker, in his inaugural lecture ... gives the lie direct to the Bible and cuts the throat of Christianity.' Parker, of course, was not the first Otago professor to advocate evolutionary doctrines, and Duncan Macgregor was subjected to a similarly vitriolic diatribe: 'The very Professor established by the Presbyterian Synod for the inculcation of Moral Philosophy has been all-along inculcating to some half-dozen students the odious doctrine of materialism.' Parker's rejection of special creation in favour of evolution Grant felt was a ridiculous and arbitrary hypothesis: 'all really intelligent and devout minds have abandoned the antiquated jargon of evolution and laugh to scorn its insane upholders ... the whole brood of vampire bats that attempt to suck the blood of religion and culture out of the veins of the sinful sons of men.' Grant's conclusion: 'Although we are not disappointed at the absolute failure of our university [in choosing Parker] yet we are ... amazed at "the wretched gorilla damnification of humanity" exhibited in the inaugural address.'⁹⁸

Here at last was the rabid fundamentalism characteristic of the Christian response to Darwin. Grant, however, was no Christian. He loathed popular Christianity.⁹⁹ In one of his short-lived periodicals

he questioned whether Jesus really existed, asserted that Christianity was 'going down under the dashing waves of reason', and called for a 'return to the rational adoration of the Great God - "the unknown God" '100 Grant was a short-fused maverick. His ostensible orthodoxy on the evolution question was simply a posture adopted in order to make his argument carry authority. Not that anyone cared to listen. As Bagnall notes, the eccentricity of his views, combined with his cultivated talent for personal abuse, led to his increasing isolation from his fellow townsmen.¹⁰¹

Some Dunedin Presbyterians found Parker's tone arrogant. A correspondent to the New Zealand Presbyterian was irked, not by his biological ideas, he pointed out, but rather by the overblown confidence with which the new professor had advanced his views: 'This great man Parker is capable in his estimation to give the law to the whole thinking world.'¹⁰² Rev. William Salmond reacted similarly, and parodied the tone of Parker's speech in the New Zealand Presbyterian:

I beg you to understand that I am an out-and-out Evolutionist, and would be ashamed of myself if I were not. I have heard tell indeed that some of you do not like that doctrine. It is a disgrace to you, you out-of-the-world ignoramuses. I, fresh from the feet of Huxley the Great, tell you that all the enlightened of mankind are Evolutionists - none but clergy and old women left outside. Now then! Let us proceed to the business of the evening. The intellectual atmosphere is sprinkled.(103)

Salmond, it must be said, accepted the Darwinian theory, and he admitted that the new professor was 'thoroughly competent' as a biologist. It was Parker's haughtiness, his refusal to bow the knee to Christianity with the modesty befitting 'true science' which had him riled. For Parker to set himself up as a prophet of the new religion of science was, Salmond felt, to trench upon territory which he ought

to be warned off.

Concordism in Science: Natural Theology and Design

The inadequacy of a positivist model of the relations between science and religion is glaringly apparent when the 1880's discussions are examined in detail, for Presbyterians like Salmond, though they disliked Parker's arrogance, were quite happy with biological evolution. It breaks down hopelessly when the religious views of leading scientists in the last third of the century are examined. Most historians have assumed that Darwin destroyed natural theology. Neal Gillespie, for instance, argues that 'the virtual disappearance of natural theology from scientific discourse by the century's end indicated a change in the way scientists thought about nature and science positivism had banished both theological explanations and concerns from the minds of working scientists.'¹⁰⁴ The Origin, declares J.M. Burrow, 'destroyed at one blow the central tradition of recent English Protestant apologetics - Natural Theology.'¹⁰⁵ Evolutionary biologists worthy of their salt ought on these views to have irrevocably abandoned the language of natural theology, as well as the concepts of Divine providence, and design. The New Zealand evidence presents a quite contrary picture. Colonial scientists did not abandon these notions, but argued instead that Darwin had transformed and strengthened them.

F.W. Hutton, for instance, in his 1860 Geologist review of the Origin argued pace Paley that 'the beautiful perfection of our bodies - the wonderful adaptations in the forms of animals to render them efficient for their purposes of life seem so skilfully planned, that it is impossible to regard them as effects of chance, and not as

inapproachably perfect designs.'¹⁰⁶ Changes in species were due therefore not to chance but to the 'direct will of God.' Hutton was a theistic evolutionist for whom Darwin had reinforced the argument from design. He held the view that evolution had reinforced Christianity more strongly than ever in the twentieth century. In his The Lesson of Evolution (1907) he declared that in his opinion evolution was bound to become one of the foundations of the theology of the future.¹⁰⁷

Geology deserved the highest rank of human knowledge, Julius Haast told the Canterbury Institute in 1872, a full thirteen years after the publication of the Origin. 'Do you not think that it must be a beautiful science which teaches you to decipher the sublime language written by the finger of God all round?' Haast, like Hutton, accepted evolution but he remained an effervescent natural theologian. Those who were unable to understand geology, he told the Canterbury Institute in 1872, 'walk as it were blindfolded over this beautiful earth, where everywhere - from the highest alpine summit down to the smallest grain of sand on the seashore - all things give evidence of an ever-kind, ever-loving Providence.'¹⁰⁸

Presbyterian elder Robert Gillies was a convinced evolutionist, a leading light of the Otago Institute and a Fellow of the Linnaean Society. He too retained a strongly teleological and providential interpretation of nature. The flea had almost disappeared from Otago after the burning of the fern. But it survived and by the 1870's was once again, as Gillies put it, 'confined to its legitimate purpose in nature, that of a punishment for the want of cleanly household habits'.¹⁰⁹ Here Gillies' Calvinistic theology informed his biology. He regarded the flea as an agent of divine retribution for slovenly

housekeeping.

Walter Buller was no less convinced than Hutton and Haast that Darwin had strengthened the design argument. He told the Wellington Philosophical Society in 1894 that it was impossible to believe that humans 'in common with the rest of nature, are but products of the blind eternal forces of the universe'. The human body was developed from lower forms by natural selection but intellect and morality originated in 'the unseen universe of spirit'. For Buller, then, Divine design remained unmistakable: 'We, who accept the existence of a spiritual world, can look upon the universe as a grand, consistent whole, adapted in all its parts to the development of spiritual beings'.¹¹⁰

G.M Thomson was an ardent Darwinian as well as a Presbyterian elder, and had no time for the theory of special creation. Nevertheless he also believed that natural selection had reinforced natural theology.¹¹¹ Leading botanist Thomas Kirk, who was a fellow of the Linnaean Society and a devout Baptist, believed that evolution was merely God's method of creation. The strength and splendour of the Kauri tree, he told the Baptist Union in 1892, testified to the majesty of the Creator.¹¹² Admittedly this statement was made in a religious context. Kirk stuck carefully to positive, empirical science in the Wellington Philosophical Society, as did G.M. Thomson in the Otago Institute.

T.J. Parker was a thorough Darwinian and a self-proclaimed disciple of T.H. Huxley. Yet he was hardly an aggressive agnostic. Even he retained at least the vestiges of natural theology. In his inaugural speech as professor of biology at Otago in 1881, for

instance, he contended that 'it was no longer thought necessary that that power which could form worlds out of a nebula was unable to evolve a horse from an hipparion or even a speck of living protoplasm from the elements of the primeval sea.'¹¹³ It was a vague statement, probably more a formal genuflection to religious respectability than anything else, but significant enough for all that. Even Huxley, whom Parker habitually referred to as 'the Master', was too competent a philosopher not to realize that the Darwinian theory was open to be interpreted in terms of an enlarged teleology, though not that of Paley.¹¹⁴ It would seem that Parker, the son of an ardent Christian comparative anatomist, also realized that a theistic interpretation of evolution remained logically possible.

Even Edward Tregear, who was sceptical of orthodox Christianity, agreed with the professional scientists. No attempt had been made by Darwin to combat either the argument from design or the idea of the Creator, he contended in the Wellington Society in 1895.¹¹⁵ In a letter written to his friend A.G. Stephens in 1914 he said that, despite the First World War, he still believed in there being 'an Intelligence at the Heart of Things.'¹¹⁶

The only person within the Institutes ever to explicitly assert that Darwin had made the design argument untenable was Robert Pharazyn in the Wellington Society in 1894.¹¹⁷ He caused no outrage. Everybody knew that he was an advanced freethinker.

If colonial scientists were anything to go by, Darwin had reinforced rather than destroyed natural theology. As late as 1904 A.P.W. Thomas, who was inaugural professor of natural science at Auckland University College and a firm Darwinian, declared to a large

crowd gathered in the Auckland Museum Library that thoughtful persons could agree with Darwin that evolution gave men a grander idea of the work of the Creator than did special creation.¹¹⁸ I must insist with R.M. Young and against Gillespie and Burrow, that 'orthodox accounts which stress the growth of scientific naturalism as a development away from traditional theological and social doctrines, must be fundamentally reconsidered. In their place we require an interpretation which shows the deeper continuities.'¹¹⁹ Colonial scientists, whilst accepting evolution, did not abandon natural theology, providence, and design, though now it was the general inter-relatedness of the whole rather than the particular designfulness of the parts which testified to the Creator. Why then did religious language and interpretations gradually disappear out of scientific discourse, as they unmistakably did by the twentieth century? I shall take up this question in the next chapter.

Why, also, did liberal Christian apologists abandon design arguments? What is paradoxical is the fact that at the same time as devout scientists were proclaiming that Darwin had strengthened the argument from design, liberal Christian apologists were abandoning natural theology for internal, experiential proofs of the truth of Christianity. In 1875, for instance, Presbyterian Rev. James Hill declared to his Auckland congregation that the unwavering confidence of the advanced Christian was based on personal experience rather than on rational demonstration: 'He feels that the blessings of Christianity fully meet the wants of his nature of which he is deeply conscious For his guilty, burdened heart, he feels he has pardon, and he has peace.'¹²⁰ To surrender the argument from design was more

than a little premature, for only a year later F.W. Hutton declared in the New Zealand Magazine that Darwin had placed the doctrine of design in an 'impregnable position', and that evolution furnished 'the only possible scientific proof' of the existence of God.¹²¹ It would seem that some liberal Christians were capitulating to a positivistic conception of science which colonial scientists themselves did not hold.

The Religion of The Radical Evolutionists

Despite the general feeling that evolution and Christianity were compatible, there were some men who remained convinced freethinkers and who believed that science, and evolution in particular, had made Christian belief intellectually untenable. This radical group included prominent politicians, civil servants, and intellectuals like Robert Stout, Duncan MacGregor, Edward Tregear, John Macmillan Brown, and A.W. Bickerton. In spite of their professed rejection of religion they turned evolution itself into a religious faith, replete with magic, miracles, millennial beliefs, and even a caste system. Here again the positivist model cannot be sustained.

The radicals were moved by 'the latent and irresistible conviction ... that whatever Science deliberately pronounces untrue must and will be given up.'¹²² John Macmillan Brown, for instance, believed that science had introduced a considerable amount of rationalistic scepticism about Christianity among thinking men.¹²³ Science was seen to offer positive and demonstrable truth in contrast to the dubious and mythological character of 'religious truth', if indeed this phrase was not a contradiction in terms. Robert Stout articulated the radicals' essential positivism:

Till science asserted her sway the grand uniformity of Nature's actions was not recognised. Now-a-days, who believes that Deity directs every action of nature? That before a sparrow fall Deity decrees it? It is the law of gravitation that decrees it. Miracles have ceased just as the knowledge of Nature's laws has grown.

He reinforced this argument with an evolutionary analogy. We will soon look on beliefs, miracles, creeds, and religious systems as we now examine fossils, he asserted: 'Out of them something better has developed.'¹²⁴ Science, Stout preached, was the light of the world, opening mens' eyes too long darkened by Christianity and other forms of superstitious ignorance.

For John Macmillan Brown the progress of astronomy had shown the earth to be but a poor, tiny planet. Evolution had removed the barrier between man and animals. It all told against man being the centre of God's providential care. Christianity became, in his mind, an inspirational fiction: 'Imagination is the faculty concerned with religion. When reason is called in to deal with it, its work is rather destructive than constructive; it questions the basis of any system and generally finds flaws in its origins and history.'¹²⁵

A.W. Bickerton, professor of Chemistry at Canterbury, agreed with Stout and Macmillan Brown. In his opinion, Christianity was steeped in fallacies which it was the duty of men of science to expose. All that remained after it was stripped of its mythical accretions was the sublime ethics taught by Jesus. Exactly how Bickerton reconciled his professed admiration for the morality of the gospels with his emphatic denunciation of marriage as an institution must remain something of a mystery however.¹²⁶

For the radicals, Christianity was not only false, it was pernicious. Robert Stout had been repelled by his father's exploitive

landlordism while still a youth in the Shetland Islands, and as a result abandoned his parents' Presbyterianism for Darwinism.¹²⁷ In Duncan MacGregor's socialist eyes, the Churches were merely the paid servants of the State who took charge of the respectable, well-to-do citizens leaving the policeman to deal with the rest.¹²⁸

By contrast evolution was not only true, it was better. Dr Joseph Giles captured the radical attitude on this point well: 'Science holds a more benignant sceptre than Faith, and ... under her sway humanity will be raised to un conjectured heights of dignity and happiness.'¹²⁹ In Robert Stout's opinion, evolution 'teaches us to look to the future with hope, with a belief that progress is the law of existence, and that, though reforms come slowly, they come surely.'¹³⁰ Repelled by theological dogma, he found Spencerian evolution to provide the scientific rationale for a belief in inexorable progress. Stout concluded this lecture with the kind of hortatory millennial vista apposite for such evangelical evolutionism. We must 'aim to make the world better than we found it', he declared, 'and strive for a future time more glorious than the golden past. This I conceived I could do best by exalting evolution. It is this which gives the fullest play to a man's faculties. It is this which clothes as with divinity a man.'¹³¹ The audience must surely have expected an altar call. Here was a scientific surrogate for the Christian millennial hope.

A.W. Bickerton's Partial Impact theory was similar to Stout's philosophy in that it was essentially an elaborate attempt to construct a scientific surrogate for the Christian belief in eternal life, which he found scientifically incredible. Bickerton had been dismayed by the British physicist Lord Kelvin's assertion that energy

was constantly being dissipated, or, in other words, that the universe was dying. He proposed instead in his 'Partial Impact' theory that new stars and even whole new solar systems might be formed by stars colliding at the appropriate angle. Thus cosmic evolution ensured the immortality of the universe. John Macmillan Brown, a good friend of Bickerton's, borrowed the Partial Impact theory for his utopian science fantasy novel Limanora.¹³²

Sober science Partial Impact most certainly was not. For all their professed veneration of science and reason, which they held superseded the antiquated dogmas of Christianity, the radicals had some mysterious ideas themselves. Partial Impact became, to Bickerton for instance, a surrogate religion for which he proselytized until the end of his life, largely in vain. His theory was mostly ignored by reputable overseas scientific journals. Like the materialists within the Institutes, many of the scientific theories and ideas of the radicals were as distant from mainstream science as their religious beliefs were from Christian orthodoxy.

Edward Tregear's The Aryan Maori (1885) illustrates the point well. It was an attempt by the author to justify the politics of assimilation. He argued from flimsy linguistic evidence that the Maori had descended from the same common stock as the European. He was adamant that his ideas were truly scientific because they were evolutionary: 'If there be two nations all who's [sic] vital words come from the same stock, then there are two nations whose ancestors were brothers.'¹³³ This theory was demolished by A.S. Atkinson in a paper to the Nelson Philosophical Society in 1886 entitled 'The Aryo-Semitic Maori', in which by exploring the philological roots of the

Maori word 'kakapo', Atkinson implied that Tregear's theory was a cock-and-bull story.¹³⁴ This was hardly an exaggeration.

Macmillan Brown, as well as incorporating Bickerton's theory into his novels, devoted himself to Polynesian ethnology and anthropology after his retirement from Canterbury College in 1885. He joined the Polynesian Society, and became friendly with Tregear and S. Percy Smith. However both Macmillan Brown and Tregear, as Michael Belgrave puts it, 'allowed their views on race, on society and on politics to intrude into their attempts at scientific objectivity.' As a result 'their outlandish theories make more sense as propaganda vehicles for myths of social identity, rather than as scientific studies'.¹³⁵ Stout, too, despite his professed rationalism, saw himself as a prophet of the new age of science, able to initiate the unenlightened into the mysteries of evolutionary faith. He undoubtedly gained a certain priestly mystique by confounding his audiences with esoteric Spencerian metaphysics.

For the radicals, then, evolution was not merely a scientific theory about the process of change in organic forms. It was a new revelation, a faith destined, they believed, to replace Christianity. But their new deity, 'Evolutionary Progress', had more in common with Molech, the god of the Old Testament Amalekites which demanded human sacrifice, than with the merciful Father revealed by Jesus Christ. 'Evolutionary Progress' demanded the sacrifice of 'inferior' races and individuals.

Duncan MacGregor, one of the high priests of the cult, declared in 1876 that the 'hopelessly lazy, the diseased, and the vicious', who would once have been weeded out by natural selection, now survived to

eat 'like a cancer into the vitals of society'. His solution was to incarcerate these 'waste products' of society until death.¹³⁶ Edward Tregear warned the Wellington Philosophical Society that it was imperative that the elect, or as he put it, 'men of high organization', be encouraged to breed, in order to control the 'lower and more persistent racial types'.¹³⁷ In 1907, therefore, he became vice-president of the White Race League. In John Macmillan Brown's novel Limanora social progress was assured by eugenics. By 1914 he, along with Robert Stout, was bewailing the dangers of socialism and of granting state assistance to the 'unfit'.¹³⁸

Thus for the radicals 'evolution' was a religious faith, which combined a belief in the Spencerian 'law' of inevitable progress, and millennial hopes, with a distinct caste system, in which the elect - determined, talented Anglo-Saxon men like themselves - triumphed, and in which those without such qualities inevitably succumbed. All this, of course, was in accord with the 'purely scientific' law of natural selection. What is particularly ironic is the fact that at the same time as the radicals were expressing these 'scientific' social views they were attacking Calvinistic Protestantism for its vicious God, and for immoral doctrines like double predestination.

The Rise of Scientism

The radical evolutionists were the most extreme exemplars of the spirit of the age. Yet moderate forms of the same beliefs were held even by those who held to the harmony of science and religion. Thanks to the extraordinary success and prestige of science, scientism - the view that science was in principle capable of solving all the problems

of human life - was growing.

Pious concordist talk about the harmony of science and religion was in vogue in this period, and even those who rejected Christianity climbed on the bandwagon. A.W. Bickerton is a case in point. 'Science troubles not the sleep of the embryo clergyman', he told the Canterbury Institute in 1876, 'although a little accurate knowledge of the wondrous harmony of the universe would give power to his discourses, and would enable him to show the absurdity of many of the pseudo-scientific arguments of those who neglect the duties which true science and religion alike enforce in the most unmistakable [sic] language.'¹³⁹

Edward Tregear, similarly, was an openly avowed religious sceptic and an extreme social Darwinist. Yet he could make pious concordist noises with the best of them.¹⁴⁰ His religion amounted to little more than a belief in inexorable progress (which was dashed by the First World War) and a belief in an underlying 'Intelligence', which was hardly the Christian God.¹⁴¹

Even concordist scientists began to look to evolution rather than to Christianity to decide on fundamental ethical issues. Walter Buller declared as president of the Wellington Society in 1884 that it was 'one of the inscrutable laws of Nature' that an aboriginal race must give way before a 'more civilized' one. Even the 'most earnest Philo-Maori', he asserted, could scarcely deplore such a change. He cited with approval the observation of the late Dr Isaac Featherston that it was the duty of 'good, compassionate colonists' to 'smooth down their dying pillow', before resuming his seat amidst general applause.¹⁴²

Plainly Buller was convinced not only that the Maori race was

doomed to extinction but also that it was the moral obligation of the European race to encourage the process. This was evolutionary ethics with a vengeance. The entire Wellington Society was apparently convinced by Buller. Not a single voice protested at his conclusions, backed as they were by all the authority of evolutionary science. To protest would have been to invite the stigma of the odium theologicum, and to have been labelled anti-progressive. Yet this was an alarming statement from a man who always preached the harmony of religion and science. His Christianity, if this paper was anything to go by, was somewhat vestigial.

Buller remained an outspoken concordist well into the 1890's. But it was science, not Christianity, which was on the throne. He showed no mercy whatsoever toward religious conservatives who were disinclined to accept the Darwinian theory.¹⁴³

John Turnbull Thomson provides another illustration of the way concordism might conceal the development of social Darwinist views beneath a cloak of pious rhetoric. He was a practising Anglican who read papers on a wide variety of subjects to the Institutes of both Otago and Southland. The harmony of science and religion was one of his favourite themes. Yet his ethics on subjects like the fate of the Maori, like Buller's, were evolutionary. 'What has made the white man - or more conspicuously the Anglo-Saxon - of the Teutonic race so ubiquitously progressive and aggressive?', he asked the Otago Institute in 1874. His answer was simple: 'It is his humanity and science, combined with steam'. Races like the Maori, which would cook and eat its own members, were 'inhuman' and, since they had 'mere brute force and no science', would inevitably succumb in the struggle

for existence. Thomson concluded by exhorting members to cultivate science 'for science in this era more than ever supplies your necessities and protects your race.'¹⁴⁴

The development of scientism may be further illustrated by the evolution of Julius Haast's views. Throughout the 1860's and 1870's he had been an effusive concordist and natural theologian, confidently proclaiming the harmony of natural and revealed religion. By the 1880's however his practical religious faith was evolutionism. 'We can ... scarcely conceive', he told Canterbury College Students in 1883, 'the high degree of perfection, both physically and mentally, the human race may reach in future'.¹⁴⁵ It was to science that he looked for the evolutionary millennium: 'Science ... does not belong to any nationality; it belongs to all mankind, and in it we find the real source of true progress, and of international peace and goodwill'.¹⁴⁶ For Haast science had almost supplanted Christianity as an effective universal religion.

Science and Theological Liberalism

Even Christian apologetics demonstrated a portentous tendency to capitulate by degrees to the epistemological authority of science. English Anglican missionary Rev. Charles Bodington, for instance, enlisted the authority of the foremost philosopher of the age, Herbert Spencer, in support of Christianity in apologetic addresses to the faithful in Thames and Auckland. He declared 'if the agnostic philosopher uses the language of positive assertion in declaring that all the mysteries of nature proceed from an Infinite, Eternal, and Omnipotent Energy, it does not seem unreasonable in the Christian to attribute that Energy to "God the Father Almighty Maker of Heaven and

Earth".¹⁴⁷ The problem with this logic, which Bodington did not seem to realize, was that to justify Christianity in terms of Spencer's ideas apparently conceded epistemological paramountcy to Spencer and science.

Bishop Hadfield realized this. He warned Anglican clergy at the 1883 Synod to stop seizing on every new scientific discovery in order to justify Christianity. It appeared to indicate that they believed that science rested on a firmer basis than the word of God, he declared.¹⁴⁸ It was an entirely apposite caveat.

Yet by the beginning of the twentieth century some Anglican clergymen had capitulated to science almost entirely. Archdeacon Philip Walsh, for instance, read a paper to the Auckland Institute in 1907 entitled 'The Passing of the Maori' in which social Darwinist views were apparent. He quoted from Ferdinand von Hochstetter's New Zealand: 'Compared with the fresh and full vigour with which the Anglo-Saxon race is spreading and increasing, the Maori is the weaker party, and thus is he the loser in the endless "struggle for existence".' In Walsh's opinion the Maori race was 'sick unto death, and is already potentially dead'.¹⁴⁹ Hadfield would not have been amused.

This tendency for progressive ministers to bend the knee to Science was even more pronounced in the case of the Rev. A.R. Fitchett. Without ever unequivocally departing from orthodoxy, he had aroused considerable suspicion in the 1870's amongst conservatives and traditionalists in the evangelical churches for his eager acceptance of evolution and his desire to reformulate the concept of miracle in line with science's emphasis on the uniformity of natural law.

Fitchett felt that he was removing obstacles to intelligent faith. Traditionalists were certain that sooner or later along with the impediments would go the substance of Christianity.

As we saw in the previous chapter, such suspicions were not without foundation. By 1883 Fitchett's God was quite without human passions and, as he put it, 'works in methods absolutely fixed and unvarying.'¹⁵⁰ Such a concept was admirably scientific, but probably a trifle cerebral for most ordinary believers, and only distantly Christian. Science was clearly having a profound impact on the religious beliefs of some liberal Christian ministers.

Conclusion

Yet it would be easy to magnify this trend out of proportion. Few went as far as Fitchett. And few went to the extremes of the freethinkers and the radicals. The hostility of these latter groups to the churches, which some ministers returned, did not reflect a battle between science and religion. The scientific community remained reverently religious rather than aggressively agnostic. The militant scientism of the Freethinkers failed to make widespread conversions. This was due partly to the inherent weaknesses of the movement, but also to the fact that the churches had come to terms with modern science, and biological evolution, so well. That conflict which did arise may be interpreted either as mutual hostility between Christianity and Scientism (but not science), or as conflict between conservative Presbyterianism and religious liberalism, but not as a battle between science and religion.

Chapter Six: The 1890's

The Secularization of Science and the Emergence of Fundamentalism

The beginning of the 1890's witnessed the 'baptism' of evolution in Bishop Nevill's sermon, harmonising the Darwinian theory with the Genesis creation story, which was preached at a special service for the Australasian Association for the Advancement of Science in Christchurch in January 1891.¹ The assembled scientists were so delighted that they insisted that the sermon be published. Here was the closest possible harmony between science and religion.

Changes in the place of Christianity in colonial science were beginning to occur however. The Institutes were increasingly dominated by professional scientists trained along Darwinian lines. Meanwhile clergymen were drifting out, unable any longer to keep abreast of the advancing tide of scientific knowledge. Having established that there was nothing in science to threaten Christianity, leading concordists like Walter Buller and James Hector became more concerned to professionalise science than to interpret it christianly. Science had been growing in prestige for some time. Now it was beginning to make a tangible contribution to the economy. At the same time religion was increasingly regarded as a purely private, personal concern. The result of all these developments was that God and religious talk in science came to be regarded, not as untrue exactly, but as either inappropriate, biased or simply superfluous. Explicitly religious language gradually disappeared from science.

Evolution did influence the shape of Christian belief. Some liberal Protestant ministers constructed an amalgam of evolutionary optimism and Christianity that was closer to the Spencerian meliorism

of Robert Stout than to the Calvinist traditions they abandoned. Thanks to evolution progressive Christian apologetics was turning away from the evidence of design in nature as the ground for belief in God, an argument which had seemed self-evident and compelling only thirty years before. Gone too, thanks to biblical criticism, was the simple appeal to the Bible as an unquestionably authoritative revelation. Increasingly God's Works and God's Word were rejected in favour of internal, experiential evidences for the truth of the Christian religion: the inner witness of the Spirit, the experience of divine grace.

Yet some reacted strongly against these trends, feeling that the liberals were abandoning the substance of Christianity. They clung to the Bible as an all-sufficient and infallible authority, and defended it against the attacks of biblical critics and evolutionists. Fundamentalism, albeit of a fairly tame and embryonic variety, was emerging.

Evolution Baptised by Bishop Nevill

Bishop Nevill began his 1891 sermon to the AAAS by welcoming the scientists assembled in the pews as 'fellow-workers in the cause of truth'. The seer of God who read the page of Revelation rejoiced that other seers of God could read the Book of Nature. Both scientists and theologians were bound to interpret their different records, he asserted, and neither were omniscient nor infallible. There was, therefore, no ground for 'jealousy and distrust', still less for 'scorn and suspicion'.²

This needed to be said, Nevill went on, because natural scientists were tempted to assert that they dealt with 'actual and

objective fact', and that theologians were concerned only with 'fanciful and subjective emotion'. Against such pretentious scientism Nevill declared that it was impossible to overthrow one realm of eternal truth merely by the assertion of another. The physicist must accept the fact that man by searching cannot find out God, while the 'spiritual seer' ought to remember that he had been given no special gift to pronounce infallibly on God's method of working in the material sphere.³

The Bible did not profess to be framed on the principles of modern scientific enquiry, Nevill asserted. This was a view which was admitted with candour, particularly by Anglicans, but also by educated Christians within the other major Protestant denominations by the 1890's. Nevertheless, and here Nevill revealed his conservative temperament, Scripture did give an 'absolutely correct though epitomized account of the origin of all things'. Although abandoning a literalistic understanding of the Genesis creation account along with the untenable notion that the Bible was a scientific textbook, Nevill was not ready to abandon the view that it was still an authoritative revelation.

Man was essentially distinct from all the lower members of the animal kingdom, he asserted, 'notwithstanding the fact that in mere physical construction he can hardly be differentiated from some of them'. Here he accepted that evolution accounted for the structure of the human body. The lower animals were given the 'nephesh kaiah', Genesis recorded, which Nevill translated as the 'breath of life', meaning a soul, involving will and self-consciousness, as well as the lower mental powers. Clearly by this time Nevill had gone most of the

way with Darwin's arguments in The Descent of Man. But man was endowed with the 'nephesh kaiyim', the 'breath of lives', which in the Bishop's view made him a specially qualified and unique spiritual being.⁴ This was what Genesis meant by the creation of man in the image of God, and it was quite compatible with evolutionary origins.

Such rapprochement between Genesis and evolution by a scientifically-minded Bishop went down very well with the religiously-minded scientists. On behalf of the leading members of the Association, President James Hector made a formal request that the sermon be published, and it duly was. Undoubtedly men like F.W. Hutton, G.M. Thomson, Walter Buller and Thomas Kirk were motivated by Christian conviction in making such a request, and Hector might also be included in this category. In his presidential address to the AAAS two days before Nevill's sermon he asserted that the common object of all departments of science was 'the discovery of the great laws of order under which this universe has been evoked by the great Supreme Power'.⁵

Within the Institutes a reverent concordist approach to science continued to be expressed throughout the decade. E.A. McKechnie, for example, told the Auckland Institute that: 'The discoveries of science are frequently in advance and in apparent contradiction of the religious faith of the day; but time rectifies that, enlightens the mind, disperses the mists of superstition, purges away the idolatries of the world, and leaves us with a greater and juster idea of the Supreme Mind'.⁶ For William Colenso the question of creation versus evolution, far from causing a grave spiritual crisis, was a matter almost of indifference. In an 1891 paper on New Zealand botany he made

the revealing remark that 'it is all one to me ... whether those many and varied, yet regular and symmetrical forms, were produced by creation or by evolution'.⁷

Henry Thomas Hill, lay Anglican, leading educationalist, and president of the Hawkes Bay Philosophical Institute in 1891 saw the historical relations between science and religion in strongly concordist terms: 'Men will ... wonder that the theory of creation held the field so long unless indeed transmutation can be taken as a form of creation which was understood from the beginning'.⁸ If Hill was right most thinking persons had always understood evolution as God's method of creation.

William W. Carlile told the Wellington Philosophical Society that behind the apparently fortuitous operation of natural selection the Supreme Mind was at work.⁹ Evolutionary biology no longer caused controversy within the Institutes precisely because it was generally held to be compatible with religion. In Auckland Professor A.P.W. Thomas gave a popular lecture on Darwin in September 1894 which was well attended. He defended the theory of natural selection against all the arguments brought against it. This caused no controversy and no correspondence at all in the local press.¹⁰ Thomas was no colonial Huxley though. He had been educated in the muscular Christian atmosphere of Balliol College under Benjamin Jowett, and remained a keen practising Anglican in Auckland.¹¹

Evolution had made more headway by the end of the century in the four main centres and towns like Napier and Nelson which had a Philosophical Institute than it had in the smaller provincial towns and country districts. A University College or Institute provided

intellectual stimulus and ferment, and inevitably provoked discussion on important issues, particularly when they were of religious import. Probably many smaller towns were like Palmerston North which, if they were not visited by a Freethought lecturer in the 1880's, did not become significantly concerned with the issues raised by Darwin until the twentieth century. The issue was dealt with at a meeting of the newly established Manawatu Philosophical Society, for instance, meeting in Palmerston North on 15 December 1904. Mr M.A. Elliott's address entitled 'Evolution' traced evolutionary development from the beginning of matter with the 'protyle' up through the inorganic and organic realms up to man. A 'very animated discussion' followed, in which most members present took part.¹² This discussion was not reported in detail but probably it quietly echoed the Otago Institute debate of 1876. The happy result, the Manawatu Times recorded, was that 'the whole subject was thoroughly thrashed out and finally disposed of.'¹³

Probably the consensus of opinion amongst members of the Manawatu Society on the consequences of evolution for religion echoed Walter Buller's 1894 declaration that he was both 'a thorough disciple of Darwin' and 'a believer in the truths of revelation', by which he meant the Bible.¹⁴ Buller was not the only colonial savant who, notwithstanding the advance of science, continued to hold the Bible in high esteem. Anglican T.M. Hocken, whose scientific abilities were recognized by election to the prestigious Linnaean Society, found the Maori penchant for turning William Williams' translation of the New Testament into gun wads and cartridge-paper 'a sad application of the power of the Word'.¹⁵ These leading figures within the Institutes did

not reject the Bible as an irrelevant and antiquated anachronism.

F.W. Hutton told the AAAS as its president that the ultimate purpose of evolution was fulfilled, not on earth, but in a new existence beyond the grave.¹⁶ Apparently science did not cause S. Percy Smith, who was a leading ethnologist, anthropologist and a keen Anglican, to reject New Testament miracles either. He found an apposite New Testament analogy in describing to the Wellington Society the way Maori tohungas could shatter stone simply by the use of will power and the repetition of a karakia (incantation) called hoa: 'The action of our Lord in destroying the barren fig-tree would be, according to old Maori belief, an exact illustration of the word hoa'.¹⁷ Darwin did not cause a mass rejection of traditional Christian beliefs by most colonial scientists. They remained reverent believers rather than militant agnostics.

Metaphysical Responses to Natural Selection: Idealism and Vitalism

Within the Institutes professional and amateur scientist alike rejected the view that the seemingly blind, haphazard and aimless process of natural selection had banished God, mind and purpose from the universe. F.W. Hutton put this majority view in his presidential address to the AAAS in 1902:

Evolution is evidently due to the action of mind. There are some still who maintain an opposite view, but I think that their numbers are fast diminishing. It seems to me that no-one who has a competent knowledge of biology and palaeontology can possibly accept the doctrine that living organisms are the outcome of chance. Darwin distinctly repudiated the idea, and thought that variation in animals and plants could not be explained by a mechanical theory of the universe.(18)

Similar opinions were expressed time after time within the Institutes.¹⁹ But if professional scientists were convinced that a

consistently empirical evolutionary science did not overturn traditional concepts of man, mind, morality and religion there were others within the Institutes who were not happy with such a naturalistic mechanism as natural selection. Thus debate arose not over whether or not evolution had occurred, which all by now accepted, but over how it ought to be interpreted, and how adequate natural selection was as a mechanism.

Some found natural selection a trifle fortuitous and naturalistic for their liking. Though they accepted the fact that it did operate in nature, they interpreted its operation in terms of philosophical idealism. An idealist philosophy of nature had always appealed to those who found repellent Darwin's essentially materialistic explanations of the history of life. Thus Archdeacon H.W. Harper in 1882 interpreted evolution in idealist terms. The gradual series of created forms which Darwin had described, he argued, was 'not a mechanical order of progress inherent in the things themselves', or in other words evolution ought not to be interpreted as a purely mechanistic and materialistic process. It ought to be interpreted instead, Harper asserted, as 'the gradual fulfilment of what was in the mind of the Creator'.²⁰ The problem with idealist explanations, as far as working evolutionary biologists were concerned, was that they did not explain anything. They ignored or rejected precisely those material processes which working scientists were interested in.

William W. Carlile was the most outspoken advocate of idealist interpretations of natural selection in the 1890's. Evolution was one thing, he asserted, and could be accepted, but evolution by means of purely fortuitous variations was quite another.²¹ In a paper read to

the Wellington Society on 'Animal Intelligence' in 1891 he argued that in order to understand mind in man its operation in the lower animals must be considered. He cited an example from his own experience. A Hawkes Bay sheep farmer, Mr Fleming of Wanstead, suffered a prolonged drought on his property. Such was the scarcity of grass that two of his horses were driven to felling and eating the tops off cabbage trees by gnawing through the stem from each side. This, Carlile argued, was 'no inconsiderable approach to human intelligence'. If the drought was protracted it would have produced a breed of horses whose jaws and teeth were endowed with increased strength and sharpness, especially modified for tree felling.²²

Even the apparently random operation of natural selection in such a case, he believed, could be interpreted in purposive terms. Professor Bain had shown in On the Emotions and the Will that a sufficiently cold body temperature would cause spontaneous random movement in a baby, eventually bringing it into contact with the warmth of its nurse lying close by. This behaviour when repeated became learned. Thus what was essential for correct development was abundant spontaneous activity in all directions. Here, in the dawn of reason in an individual, Carlile asserted, was an analogy to the operation of reason in the living universe. A common objection to the theory of natural selection was that it meant firing innumerable shots to kill one bird. But these examples showed that 'Nature' indeed tried many variations before one useful variation was hit on and survived. His Hegelian conclusion: 'We may thus catch, behind the apparently fortuitous processes of nature, a glimpse of the operations of a mind analogous to our own'.²³

Carlile, then, could accept natural selection only when he interpreted it in terms of the unfolding of the purposes of the Supreme Mind. Others found natural selection distastefully deterministic. Robert Coupland Harding, for instance, in discussion following Carlile's paper, suggested that the terror of a horse at the odour of an unknown wild beast was not due to inherited memory produced by natural selection. In Harding's opinion such an explanation implied that the horse was a mere automaton, whose every action was pre-programmed by its evolutionary legacy. It was his view instead that the horse took fright because it perceived a 'maleficent quality'. Prodigies like the untrained negro boy with extraordinary proficiency at mathematics, or the musical genius of the infant Mozart, Harding continued, were unaccountable in terms of hereditary memory, and showed how immeasurably human instinct in its higher forms transcended the rest of the 'animal creation'.²⁴ Harding stood for liberal individualism in biology, rejecting deterministic naturalism.

William Maskell shared this view. In a paper read to the Wellington Society in 1891 G.V. Hudson had argued that instinct in insects was the product of continual selections of favourable behaviour patterns over countless generations. A moth which happened to imitate a falling dead leaf was unlikely to be eaten by birds. This favourable variation, once passed on, eventually became instinctive behaviour in succeeding generations, Hudson asserted.²⁵

Maskell, who was a Roman Catholic, rejected this theory. The behaviour of the first moth was simply a response to the environment, and so was the behaviour of all succeeding moths. Indeed, he went on, theories tending to sap and destroy the first principles of human

belief on such 'vague and unproved' assertions as Hudson's were 'mischievous in the extreme'.²⁶ The only way to explain this extraordinary leap from the behaviour of moths to religious outrage is to understand that in Maskell's mind, if natural selection meant that moths were merely creatures of evolutionary instinct, then the same insidious logic might well be applied to humans. Natural selection, he felt, implied philosophical naturalism. As such it could not be countenanced, for to consider humans as nothing but products of blind natural forces would mean the end of religion, and this would have horrific social consequences.

Others felt that the Darwinian theory relegated mind to the status of a mere epiphenomenon. They preferred to explain adaptation in Lamarckian terms. In a paper read to the Canterbury Institute entitled 'The Animal Mind as a Factor in Organic Evolution' C.W. Purnell argued that too little importance was attached by Darwin and British naturalists to the action of the animal mind on the development of the animal body. The blue-wattled crow of the North Island, and the orange-wattled crow of the South Island, for example, had not evolved independently, he asserted. Rather, impelled by a lack of food or other environmental circumstances, the intelligence of the ancestral crow species caused some to migrate from the North to the South Island, where the populations evolved independently, eventually forming two separate species. Similarly, what caused the divergence from the common stock of the different species of New Zealand spiders was their 'mental idiosyncrasies', rather than blind, impersonal natural selection. This was Lamarckianism pure and simple.²⁷

Still others disliked natural selection because, in offering a

consistently naturalistic account of organic change, Darwin apparently explained God away. Rather than banish God, they minimized natural selection, and interposed a mysterious 'vital force' not subject to scientific investigation, through which God somehow acted.

In a paper read to the Wellington Society in September 1895 entitled 'On the Construction of the Comb of the Hive-Bee', Coleman Phillips opted for just such a vitalistic interpretation of evolution. In the Origin Darwin had argued that those swarms making optimally shaped and constructed cells with the least labour, and wasting the least honey in the secretion of wax, had the best chance of succeeding in the struggle for existence. Phillips preferred a different explanation:

The sets of combs on the bees' hind feet for scraping up the pollen, and the little baskets or panniers on the tibia joints immediately above those combs for carrying it to the hive, are so wonderful in their construction that I can only marvel at this one display of Divine intelligence. My mind positively recoils from ascribing it to any blind principle of natural selection.

In his opinion the 'common vital force', a force, energy, or intelligence far superior to natural selection, accounted for the structure of the honeycomb.²⁸ Of course this concept of a mysterious vital force not subject to scientific investigation was hardly something which professional scientists could accept, as we shall see.

Major-General Schaw, like Phillips, accepted the fact that evolution had occurred. But he too felt that accepting the seemingly naturalistic account of organic change offered by Darwin left no room for the working of the Creator. In his opinion, the idea that the law of natural selection accounted for the endless varieties of living things past and present was quite incredible and 'entirely without

proof'. Perhaps in the future further insight into the hidden workings of the Creator might be attained, but for the present men were surrounded by mystery and must confess ignorance.²⁹ Thus Schaw felt bound to clothe the evolutionary process in inscrutable mystery in order to safeguard the Creator's role.

Schaw, it may be noted, was a conservative Christian, as was Maskell, and Phillips was a pious Jew. But the Wellington Society, in which most of this discussion took place, was not polarized along religious lines by these discussions. Consistently defending Darwin and a positive evolutionary science were religious believers like Walter Buller, James Hector and Thomas Kirk, who was an eminent botanist and devout Baptist. Walter Buller, for instance, felt in opposition to Maskell's view that it was impossible to resist the theory that instinct in moths was produced by natural selection.³⁰ These disputes must not be represented as a battle between science and religion, and it would be quite as misleading to depict them as a battle between religious science and irreligious science. The only illuminating organizing principle for the 1890 debates, as working scientists were institutionalizing their philosophy of biology, is professional and positive science versus amateur and anti-positive science. There were quite as many religious believers on the former side as on the latter. This may be illustrated by looking at the way science was professionalized in the 1890's.

The Professionalization of Science

By the 1890's colonial science was becoming professionalized. Clergymen drifted out of the Institutes as professional scientists marched in. The age of the autodidact amateur naturalist was over as

scientific knowledge became highly specialized and exploded in sheer volume. The dabbler and the dilettante found it difficult to keep up, and it was no longer easy to combine the roles of clergyman and scientist either, as Richard Taylor or Charles Fraser had done. A new generation trained along Darwinian lines was beginning to make its presence felt within the Institutes: men like A.P.W. Thomas, W.B. Benham, G.V. Hudson, Charles Chilton and Leonard Cockayne.

The leaders of colonial science showed a new concern in the 1890's to positivize scientific discussions, to purge them both of religious controversy and of the kind of metaphysical vacuities which obstructed the pursuit of positive evolutionary science. This had been occurring since the 1880's. In 1882, as we saw in the previous chapter, pious Anglican F.W. Hutton squashed Catholic William Maskell's attempt to mobilize the Canterbury Institute over the issue of Darwin's alleged irreligion. The Institute was a scientific body, he declared, and had no place for religious controversy.³¹

Three years later a similar incident occurred. Physician Dr R.H. Bakewell read a paper to the same body in which he argued that life was a distinct force directed by God which acted on protoplasm. Devout evangelical Presbyterian G.M. Thomson had no doubts about God's existence. But he could not let the progress of biology be held back by such unnecessary and vacuous hypotheses masquerading as science. He suggested that the Canterbury Institute for the sake both of author and readers should have consigned the paper to 'oblivion' before it ever got near the Transactions.³²

In the 1890's positivization and professionalization proceeded more rapidly. This may be illustrated by a key incident from the

period. It began with the inaugural presidential address to the Wellington Philosophical Society by Major-General Schaw in 1893. He took exception to a passage in G.V. Hudson's Manual of New Zealand Entomology in which Hudson made the eminently Darwinian suggestion that the swimming beetle was only what the ground-beetle might naturally become if forced to lead an aquatic existence. Schaw was a conservative Christian and his reaction to what seemed an excessively naturalistic explanation was rather ironic. In his view, a ground-beetle put into water would become not a swimming beetle but, if it could not get out, a dead beetle. This was not, he admitted, in accord with the 'ultra-evolutionist' theories presently prevailing, but evolution by natural selection was anyway 'an hypothesis which has not hitherto been confirmed by facts'. Something more convincing than Huxley's series of horse fossils was needed to establish the theory beyond doubt, he declared.³³

It is worth noting that Schaw was no rigid scriptural literalist, nor did he reject evolution. Genesis was in his opinion a divine revelation, but it was in the form of a series of visions intended to explain in a general way the evolution of the earth and its inhabitants. Science filled out the Genesis pictures with 'endless and wonderful details'. It was evolution by natural selection, or as Schaw put it by 'so-called chance', that he rejected as mathematically impossible.³⁴ James Hector thanked him for this address which he felt would cause a most interesting controversy.

It did. Walter Buller had been away in London in 1893, but returned to read a paper to the Wellington Society in 1894 entitled 'Illustrations of Darwinism; or, The Avifauna of New Zealand

considered in Relation to the Fundamental Law of Descent with Modification'. He began by referring to Schaw's address of the previous year, 'which in the light of modern science, I cannot but regard as unorthodox and, if I may use the term, pernicious'. Schaw's assertion that a ground-beetle put into water would become not a swimming-beetle but a dead beetle was, in Buller's opinion, 'a passage worthy of the Dark Ages of Science ... the author of it has utterly failed to appreciate the plan and method of Natural Selection, for his argument entirely ignores the necessary postulate of Time'.³⁵

Buller went on to refer to a paper by Coleman Phillips, 'On a Common Vital Force', which had been published in the most recent volume of the Transactions. He proceeded to echo Presbyterian G.M. Thomson's 1885 attack on Bakewell's vitalism. In Buller's opinion, Phillips' science was atrocious. At one point Phillips had lumped the domestic hen with the moa as members of the same species. He had also attempted to explain analogous structures in nature by reference, not to natural selection, but to the action of a common vital force. For instance, Phillips argued that the similarity of the diving bell to the action of the water spider Argyroneta aquatica, which carried globules of air down to its sub-aqueous chamber, was due to the guidance of this common vital force, rather than to the operation of natural selection.³⁶ In Buller's opinion Phillips' paper afforded 'pleasant and amusing reading' but it was 'impossible to take it seriously'. He regretted that such a paper was ever allowed to appear in the Transactions.³⁷

Buller went on to examine the birds of New Zealand in the light of evolutionary theory, revealing himself to be a consistent

Darwinian. The kiwi, for instance, he regarded as a 'diminutive and degenerate representative of the ancient colossal forms of wingless birds'.³⁸ His conclusion: 'I am a thorough disciple of Darwin in the higher sense of that term. I do not think it is possible to explain on any other hypothesis the wonderful variety and complexity of living forms that inhabit this wonderful world of ours'.

But if Buller was intent on a consistently positive evolutionary science, purged of vital forces and interfering deities, he was no philosophical materialist. 'I do not accept', he declared '... the purely materialistic theory because I am a believer in the truths of revelation and in the spiritual destiny of man'. Evidently he still believed in the Bible as a divine revelation and, like most other scientists, felt that the Darwinian theory lent 'decided support' to the idea that man had a spiritual nature. It showed how the body had developed from lower forms by natural selection. However the intellectual and moral faculties could only find an adequate cause 'in the unseen universe of Spirit'. This was a position like that of A.R. Wallace, co-discoverer of natural selection, and indeed Buller quoted Wallace that such an interpretation of evolution relieved men from the 'crushing mental burden' that 'we, in common with the rest of nature, are but products of the blind eternal forces of the universe'.³⁹ On this point, it may be noted, he, Schaw, Phillips and indeed almost the entire scientific community were at one.

Buller's attack on Schaw and Phillips excited considerable discussion. Conservative Catholic William Maskell argued not only that Buller had failed to contradict the fundamental arguments against the Darwinian theory, but also that it was a pity that he had referred to

Schaw and Phillips in such a manner. Personality should be avoided, he declared, and members not held up to ridicule. He recommended that Buller withdraw the personal remarks before submitting the paper for publication.⁴⁰

William W. Carlile declared that he would not have intervened in the discussion if not for the fact that Darwinism had taken possession of the whole field of the human sciences. Evolution was one thing, he asserted, but evolution by means of purely fortuitous variations quite another. Mr Tanner did not think Darwinism could be discussed without considerable feeling being displayed. Robert Pharaazyn found the paper most interesting and generally agreed with it, thinking that it was quite possible to convince people that the Darwinian theory was sound.⁴¹

Schaw took it all very calmly; he felt that Buller's views were 'merely a friendly attack'. He was himself a believer in evolution, he stated, but he felt that Darwin's mechanism of natural selection was inadequate and that there were still some great laws required to make the matter plain. Buller at once disclaimed any intention of reflecting offensively on the President or any member of the Society. Yet the gauntlet, he declared, had been thrown down by Schaw, and he felt it incumbent upon him 'to combat to the utmost' doctrines which he regarded as unorthodox in the light of modern science. This was no more than his duty to the Wellington Society, which had honoured him with the presidential chair that year, his duty to science and his duty to the memory of the 'great and good Darwin', who had been one of his proposers to the Royal Society.⁴²

Phillips took Buller's words much less amicably than had Schaw.

He wrote to Buller on 7 July expressing his disappointment: 'It may enable you to say in London that you have given General Schaw and myself a "crusher" but it will cost you our respect here, and that of many members of the Council'. Phillips was obviously hurt: 'I do not think my poor little paper called for such a harsh remark from a fellow member of the Institute - Sir I might pick out some similar slips on your part, and be just as uncourteous - which of course I should not like to be'. He concluded by requesting Buller to amend his introduction: 'Retain your respect for Darwin by all means, but allow your fellow members of the Institute the liberty of their opinions - I am making a list from Darwin's own work (Origin of Species) of his own candid admissions wherein his theory fails'.⁴³

Buller's reply, written on 23 July, was courteous but firm. He began by apologising for causing offence. But Phillips was wrong in supposing the paper was written for any particular audience, in London or elsewhere: 'My only object (and I suppose yours also) is to advance the interests of Science'. To the charge that his judgement on Phillips' own paper was too severe he replied: 'But what about your own still more severe strictures on the life-long work of the great and good Darwin? I did not say of your paper as you did of 'The Origin of Species' that every page "had filled me with pain". On the contrary, I admitted that it was "pleasant and amusing reading".' This last comment verged on patronizing arrogance. Buller refused to amend his own paper, though he freely granted Phillips the right to criticize it or any other paper he wrote. He concluded by cordially expressing the hope of seeing Phillips at the next meeting of the society.⁴⁴

Buller looked for all the world like the new breed of agnostic scientist: an orthodox Darwinian determined to professionalize and positivize evolutionary science. Phillips, on the other hand, appeared to typify the orthodox Christian of legend; his science was silly and his metaphysics unintelligible. Yet it was Buller, the son of a Wesleyan missionary and a believer in the Christian revelation, who was the Christian. It was precisely because he believed that evolution had been given a Christian baptism, for that was the import of Bishop Nevill's 1891 AAAS sermon, that he felt free to 'clean up' colonial science. Satisfied in his own mind, along with Hutton and Thomson, that Christianity was not threatened by natural selection as the mechanism of evolution, he proceeded to purge colonial science of misguided metaphysicians and sloppy scientists.

James Hector adopted a similar position to Buller. He had been a cautious concordist in the 1870's and 1880's and continued to follow this approach in the 1890's. There was nothing in evolutionary theory about first causes, he told the Wellington Society in 1891, the implication being that there was room for God.⁴⁵ It was Hector as President of the AAAS who had written to Nevill to get the latter's sermon harmonizing Genesis and evolution published. The rising school of naturalists, he declared to the AAAS in 1891, were in the happy position of being able to 'steer clear of the many complicated and purely ideal systems which were formerly in vogue for explaining the intentions of the Creator.'⁴⁶ Evolution by natural selection, he implied, explained the Creator's workings in the way that the old idealist biology simply did not.

Having established this Hector, like G.M. Thomson, Hutton and

Buller, set out to get on with the job of doing science within the Institutes. Typical was his response to William Carlile's assertion that behind all the varied phenomena of nature there lay an ultimate cause: the Supreme Mind. After expressing his admiration and approval of the paper, Hector suggested that modern science required a necessary sequence of cause and effect to disentangle, rather than discussion about an ultimate cause, which in terms of the aims of science qua science was simply fruitless.⁴⁷ He was plainly tiring of high-flown metaphysics.

A similarly pragmatic view was expressed by Mr Hawthorn. According to the rules of the Society Carlile's paper should not have been read, he asserted, as it touched on religious subjects. Members were thus lost in 'a maze of unprofitable speculation' when they should have been paying attention to natural history.⁴⁸ Scientific discussions, it would seem, were considered profitable. Religious and philosophical discussions were not.

Hutton, Thomson, Buller and Hector positivized science, then, basically for the sake of scientific progress. The Institutes had to be purged of the shoddy science and misguided metaphysics of amateurs like Bakewell, Schaw and Phillips. Pragmatic and empirically-minded scientists were getting sick of continual esoteric philosophizing about Supreme Minds, for they took such a concept for granted. They wanted to get on with what they were interested in: evolutionary biology.

Religiously, however, the positivization of science had negative consequences, for it effectively secularized science. The scientists responsible - Hutton, Thomson, Buller and to a lesser extent Hector -

did care about religion. Like the 1877 Education Act, positivization was thus a pis aller solution to the problem of trying to satisfy a host of irreconcilable religious and philosophical positions. It was forced upon science not triumphantly by militant agnostics, but reluctantly by religious-minded scientists who could no longer tolerate religious obscurantism. That an essentially empiricist and positivist philosophy of science replaced a formerly explicitly religious one was the price they were forced to pay. But they did not want this new philosophy of science to be misinterpreted as incompatible with Christianity. That was why they insisted that Bishop Nevill's sermon be published, and why Buller insisted so forcefully in the Wellington Society that Darwinism was compatible with religious belief.

The Prestige of Science

By the end of the century it was the prestige of science rather than the prestige of religion that was growing. J.T. Thomson articulated the emerging feeling as early as 1873 when he put it to the Otago Institute that 'science in this era more than ever supplies your necessities and protects your race'.⁴⁹ Julius Haast proclaimed to students of Canterbury College: 'Science ... does not belong to any nationality; it belongs to all mankind, and in it we find the real source of true progress, and of international peace and good-will.'⁵⁰ Science, in Haast's view, was a universal religion which promised assured mundane progress, peace on earth and harmony between nations. 'Science may scale Olympus after all', H.G. Seth Smith declared to the Auckland Institute in his 1884 presidential address.⁵¹ This view of science-as-saviour flowered in the 1890's, for there was now empirical

evidence in its favour.

James Adams, for instance, who was a leading Auckland educationalist, declared to the Auckland Institute that science had an almost magical capacity to transform New Zealand:

It is the knowledge of science, that increases more and more, which acts like an enchanter's wand, and has changed this country, gloomy and unattractive even to the eye of Darwin, into the lovely country that visitors and residents alike agree in calling it. It is to our knowledge of the laws of nature that we look for aid in all troubles, bodily or mental, or municipal or national.

Significantly it was scientists, not clergymen nor politicians who had saved the country in her latest crisis, and Adams made this point plainly:

We had depression, and depression disappeared, not through prayers in the churches, nor through the eloquence of our representatives, nor through the vigorous policy of the Government, but from the fact that scientific men have shown us how to produce great cold in a chamber, and in this way beef and mutton can be carried fresh and good to the European markets.

He concluded his address by recommending that after standard four all pupils should go to a central school where the education would be largely scientific.⁵²

There seemed to be no end to what science promised, including moral and even spiritual salvation. William Colenso, for instance, exhorted Hawkes Bay parents to encourage their children to perceive 'the great and lasting benefits and true pleasures arising from the following of Nature and her manifold teachings.'⁵³ He looked forward to the good time when

some loving teacher in a school will be led to begin this good and useful work - at first in a humble and unpretentious way, but ere long to be warmly adopted by a whole band of willing, loving, active, eagerly-inquiring young disciples, whose wholesome and pleasing pursuit after the attainment of

natural science will be amply rewarded to themselves, and followed after by others; for once begun in reality such is sure to spread, being a matter of truth and life.(54)

William Carlile echoed this quasi-millennial view of science: 'It seems on all grounds well within the bounds of possibility that the next century will see an enormous diminution of the physical miseries of the world, and it seems open to us ... to hail every achievement of science as something that is without fail hastening on that consummation.'⁵⁵ The feeling was growing that it was science which brought salvation, and in this world rather than the next.

The Privatization of Religion

At the same time there was a trend within the Institutes (and perhaps within colonial society at large) toward the privatization of religious belief. William Maskell, as we have seen, preached against anti-religious science to Catholic audiences, and took every opportunity within the Institutes to castigate Darwin for his irreligion. He had been adroitly managed by concordist presidents however. In 1882, for instance, he was firmly rapped over the knuckles by F.W. Hutton for imputing infidelity to Darwin.⁵⁶

Maskell learnt his lesson. This may be illustrated by an incident in the Wellington Society in 1890. Charles Hulke, Headmaster of Newtown Public School and an enthusiastic analytical chemist, told the Society that the fruit of scientific discoveries had too often been prevented from ripening by 'the chill blasts of ridicule and prejudice'. New theories like Darwin's should not be criticized too severely.⁵⁷ Maskell rose, thanked Hulke for his 'excellent address', and declared that he would not have gone as far in expressing admiration for evolutionary theory. However instead of going on the

offensive as he normally did, Maskell pulled in his horns. He contented himself with the mild observation that the issue was 'merely a matter of private opinion'.⁵⁸ This was a startling and significant statement. The managers succeeded in keeping the Institutes united by stifling dissent and effectively privatizing religious belief.

Comparative Religions and the Relativization of Religious Truth

At the same time religion was increasingly being treated as an object of dispassionate scientific scrutiny. Anglican Rev. Joseph Bates delivered a popular lecture to the Auckland Institute in 1894 on 'Comparative Religion', in which he treated religion purely as a science, 'to be discussed as freely as chemistry'.⁵⁹ The comparative study of religions may have been more corrosive of the Christian faith of scientists than evolution. F.D. Brown, professor of chemistry at Auckland, made a significant response to Bates' paper. Darwin and Tyndall had had their say and were gone, he stated, and the materialistic ideas of a few years ago then thought so complete were weakening. Evidently Brown fits the general pattern that colonial scientists rejected evolutionary materialism. But many thinking persons were dissatisfied with religion as it was now, he asserted. It was to the East that they were attracted in search of ideas that might revivify religion.⁶⁰

The contrast with the 1860's could not be more marked. During that decade scientists like Haast had insisted that science illustrated and reinforced revealed religion. Science had been treated in a religious spirit; it led 'through Nature up to Nature's God'. By the 1890's however, religion was being treated in a scientific spirit. Now even clergymen obligingly placed religion under the microscope for

dissection and analysis. Christianity had become just one religion among many, its claim to be true to be investigated with dispassionate neutrality just like all other religions.

William Maskell sensed and disliked the change. Edward Tregear had adopted a purely comparative and phenomenological approach to the study of religions in a paper read to the Wellington Society in 1897. This provoked the charge from Maskell that 'in veiled phrases Mr Tregear attacked the essentials of Christianity'. Tregear at once disclaimed the slightest desire to introduce religion but, ever the advocate of scientific objectivity, insisted that 'whether we believe in religions or not we are going to discuss the religions of savage peoples from an unbiassed point of view'. Maskell replied that he did not believe that was possible.⁶¹ Evidently he sensed the disappearance of the religious spirit which had formerly animated science, and felt that 'unbiassed' discussion of comparative religions was insidious, as it would inevitably make members only comparatively religious.

Colonial science followed the professional, positive and objective approach of Tregear, rather than that of Maskell. This approach, however, was not without cost. James Black, staunch Presbyterian and first professor of natural science at the University of Otago, had warned as early as 1872 that 'scientific investigation without reference to the governing will of the Divine Author of nature, is a lifeless and - so far as man's highest destiny is concerned - a worthless study.'⁶² Some felt by the end of the century that the life had indeed gone out of science. J.T. Meeson considered that it was the indifference of the Canterbury Institute to subjects of real and intense human interest that alienated it from public

sympathy. What was needed to revitalize the body was the departure 'of a little of that calm serenity which may be a mark of true philosophy, but is also a characteristic of death.'⁶³ Frequent complaints were made, Professor William Benham told the Otago Institute in 1904, that their meetings had become too dull: 'In the good old days when the Institute was young, it was vigorous too - its meetings were interesting, the papers more varied and less abstruse, and so forth'. Perhaps Black was right that secularized science was lifeless science. Benham's suggested solution was to ban professional scientists from ordinary meetings of the Institute, and to encourage the advancement of literature and philosophy.⁶⁴ But it was not taken up.

The Secularization of Science

To conclude then, the secularization of science must be understood as the gradual disappearance of explicitly religious language and interpretations from scientific discussion. This does not imply that scientists ceased to believe in God or in Christianity as a revealed religion. Indeed the evidence suggests that it was because men like Thomson, Buller, Hutton and Hector took God for granted that they felt free to dispense with Him in science. Science qua science, they all understood, had no need of Him. They had completed the de-divinisation of nature which Christianity had always insisted upon. They had freed science to be science. They had also freed God to be thoroughly transcendent, yet inscrutably immanent in all natural processes, including evolution. The secularization of science, in this limited sense, was a consequence of a variety of developments: the professionalization and positivization of science, the prestige of science, the privatization of religious belief, and the relativization

of the concept of religious truth. It was not the inexorable consequence of a fundamental intellectual incompatibility between Darwinism and Christianity, for the scientists did not perceive one.

In this secularized science God-language was replaced by Nature-language. Yet even the most dedicated evolutionists, ardent Darwinians who had little interest in religion, could not avoid writing as if nature was personal, providential and benevolent. Leonard Cockayne, for instance, was an outstanding example of the new breed of evolutionary biologist. A brilliant botanist, he was the first man in the Southern hemisphere to receive the Darwin medal of the Royal Society.⁶⁵ In New Zealand Plants and Their Story (1910) he concluded a survey of the three principal theories currently in vogue as mechanisms for evolution by observing: 'It is to countries like ours that science looks for such special studies as will bring about that advance in knowledge that will shed light upon the methods by which nature planted the great garden of the world.'⁶⁶

William Travers had been among the first to accept biological evolution, and he had little time for orthodox Christianity. Yet, like Cockayne, he personified Nature. In a presidential address to the Wellington Philosophical Society in 1902 he asserted:

insects are Nature's favourite productions, in which, in order to manifest her skill and power, she has combined all that is either beautiful and graceful, interesting and alluring, or curious and singular in every other class of her children. To these, her valued miniatures, she has given the most delicate touch and highest finish of her pencil To some she has given horns nearly the counterparts of those of various quadrupeds;...(67)

Replace 'Nature' by 'God' in the passage and it might almost have been plucked direct from William Paley's Natural Theology (1802). Travers'

'Nature' was as skilful, artistic, creative and personal as Paley's Divine Artificer.

The Progress of Evolution in the Churches

Bishop Nevill's sermon to the AAAS represented the culmination and triumph of the Anglican endeavour to mediate between science and religion. By the 1890's acceptance of the Darwinian theory had become commonplace within the Anglican church. Rev. R.A. Woodthorpe, chaplain of the Maori Mission, confidently declared to a conference of clergy at Christchurch in 1896: 'Evolution is our highest category of thought today, and is being used to explain phenomena in every department of knowledge'.⁶⁸

Bishop Cowie of Auckland was a liberal churchman who took a positive attitude to modern science and historical scholarship. He argued in 1893 that Copernicus' theory shocked Christians only because they 'did not recognize, as we do now, that the Bible was not a treatise in Natural Science, but a collection of writings of various dates and authorship, setting forth moral and spiritual truths in the vernacular language of their day'.⁶⁹ Like Bishop Nevill of Dunedin, Cowie gladly accepted the light which both evolutionary science and biblical criticism were throwing on the biblical revelation, and argued that rightly understood both were liberating and helpful for Christianity.

The Auckland Church Gazette continued to keep colonial Anglicans up to date with the progress of opinion at 'home'. In December 1893 it reported that at the Birmingham Church Congress a paper was read by Sir George Stokes, ex-President of the Royal Society, in which he argued that science and religion were not opposed, and that acceptance

of evolution did not justify rejecting the Genesis account of creation.⁷⁰

The Gazette also reprinted sections of Henry Drummond's very popular works Natural Law in the Spiritual World (1883) and The Ascent of Man (1894). Attempting to reconcile the brutality of natural selection with the spirit of Christianity, Drummond argued in the latter book that the motive force even behind evolution in the organic world was love:

Remember that nearly all the beauty of the world is Love-beauty - the corolla of the flower and the plume of the grass, the lamp of the firefly, the plumage of the bird, the horn of the stag, the face of a woman; that nearly all the music of the natural world is Love-music - the song of the nightingale, the call of the mammal, the chorus of the insect, the serenade of the lover.

Evolution and Christianity, he concluded, 'have the same Author, the same end, the same spirit'.⁷¹

Returning to home the same magazine delightedly reported in October 1894 the statement of 'a Professor of Auckland University College' (F.D. Brown) that 'Darwinian materialism has had its day'. In the Gazette's opinion there was 'nothing more significant in the closing days of the nineteenth century than the unmistakable turn of the tide of scientific thought back from the materialism of Darwinism'.⁷²

Leading Anglicans typically repudiated scriptural literalism as well as a mechanical theory of inspiration. For them the truth of Christianity could not be shackled to the letter of Scripture. They wanted to present an intelligent faith which would not offer insuperable obstacles to educated persons. In Bishop Nevill's opinion the Bible was not a scientific textbook, and should not be read as

one.⁷³ Bishop Cowie agreed. Much harm had been done by the enforcement of unauthorized theories of inspiration, he argued, and some devout men still felt bound by the 'mechanical theory' and a literal interpretation of Genesis. They were distressed when Adam and Eve and Noah's Ark were spoken of as allegories. But in fact an allegory was the ordinary garb of moral teaching in Palestine in primitive times.⁷⁴

Nevertheless the Bible remained an authoritative revelation for the Bishops. In Cowie's opinion the two allegories mentioned certainly contained 'revealed truth': the Fall in the third chapter of Genesis, for example, and the certain punishment of the disobedient and the safe keeping of God's servants in the Flood story.⁷⁵ Nevill was similarly unwilling to abandon the view that the Scriptures remained authoritative. Genesis, in his view, gave an 'absolutely correct though epitomized account of the origin of all things'.⁷⁶ Though they generally repudiated scriptural literalism and mechanical dictation theories of inspiration by the 1890's, leading Anglicans retained a high view of Scripture, and did not express extreme liberal views.

Evolution continued to be readily received within the Presbyterian church. Progressive ministers encouraged their young people to come to grips with it. Rutherford Waddell's St Andrew's Bible Class freely discussed the issue. George Troup, who was the founder of the Presbyterian Bible Class Movement, told them that Genesis and evolution were complementary rather than contradictory. He insisted that doing science involved as much faith as did Christianity: faith in the validity of the thought process, and faith in the coherence of the universe.⁷⁷

Rev. Michael Watt was professor of Hebrew and Church History at

Knox and an orthodox Calvinist in theology.⁷⁸ But if he was a theological conservative he was no rabid anti-evolutionist. It was now 'generally conceded', he argued in 1901, that the Bible did not teach science. Christians therefore ought to 'give full liberty to the scientist to prosecute his researches to their legitimate issues, any apparent contradiction of his conclusions to the Bible notwithstanding'.⁷⁹ This was liberalism of the finest orthodox Christian variety.

Many still rejected the Darwinian theory, Watt went on, because it seemed to conflict with the Scriptural account of the separate creation of individual genera and species. He attempted to resolve this problem for his readers by appealing to the classical Protestant theory of accommodation, first formulated by Calvin. The language of Genesis, Watt asserted, was an accommodation to the capacities of its original audience. Moses was certainly inspired but to present the creation of the world in terms of modern astronomy, geology and biology would have created an 'insuperable difficulty' for his hearers. They might well have rejected the 'great truth' that the world had its origin in the fiat of a great Spirit, who made man in his own image.⁸⁰ Undoubtedly Watt's ideas found educated Presbyterians receptive, and it must have been helpful that he was a thoroughly orthodox Calvinist.

William Salmond was by now an outspoken evolutionist. He attempted to enlighten an Invercargill audience on the subject in August 1901. The theory of special creation he rejected as 'crass supernaturalism' and 'out of accord with the large scheme of evolution proved by science'. Like Watt, he argued that Genesis was never

intended to teach science: 'The naive language of simple, pious men in a primitive age' was not to be taken as 'exact scientific language'.⁸¹

Some staunch Southland Presbyterians, however, were not convinced. 'A Believer in Scripture' found Salmond's assertion that evolution was proven 'very bold and objectionable'. Were not the first two chapters of Genesis part of a 'divinely inspired revelation, and therefore to be ascribed not to simple, pious men in a primitive age, but to the spirit of truth, revealing truth to his servant Moses?'⁸² Here was an intransigent biblical literalist unimpressed by what he regarded as Salmond's clever attempts to explain away the plain statements of the inspired Scriptures. Similar fundamentalist responses will be discussed in more detail later in this chapter.

Presbyterians continued to denounce anti-religious science as vigorously as ever. Rev. John Dunlop, Salmond's successor as Professor of Divinity at Knox, warned the Synod of Otago and Southland in 1893 that it was notorious that a large proportion of second or third rate scientists called themselves agnostics.⁸³ In his opinion an 'exaggerated estimate' of physical science had led to the adoption of a philosophy incompatible with Christianity: 'It must be confessed that the magnificent progress of physical science has incidentally led many to adopt a creed, practically, if not avowedly, Materialistic and Atheistic'. However materialism was not a manifest inference from the accepted findings of natural science, he argued, and this was 'abundantly proved by the fact that multitudes of theologians, and philosophers too who cherish religious beliefs, frankly accept the best established results of physical science as valid knowledge'. Dunlop felt bound to point this out 'in the interests of that large

class which is apt to be unduly impressed by numbers and clamour and rhetoric, rather than by real weight of scientific authority'.⁸⁴

Like Anglicans, Presbyterians followed overseas developments with keen interest. The Outlook in 1901 took pleasure in reporting the conversion of Professor G.J. Romanes to Christianity. Romanes was a brilliant evolutionary biologist who had been one of Darwin's most eminent disciples, and an agnostic as a result. Toward the end of his life, however, he found that he had made a radical mistake. Materialism did not offer an adequate account of the origin of mind. Relieved of a priori objections, the historical evidences of Christianity took on greater strength. He eventually found, The Outlook reported, 'the heart's-ease that is offered in the Gospel of the Cross'.⁸⁵

The Baptist church, small and evangelical, took less interest in science than the larger denominations. It was still concerned largely with establishing and extending its work in the colony. However the Baptist Union elected eminent botanist Thomas Kirk as President in 1892. Kirk's scientific credentials were impressive. He was a Fellow of the Linnaean Society, and a governor and leading member of the New Zealand Institute. He had come to the colony with the Albertland Nonconformists, been a founder member of the Wellington Baptist Church, and remained a regular church attender all his life. He was a convinced Darwinian and, as his presidential address to the Union revealed, a thoroughly orthodox Christian, who held a strong doctrine of the Holy Spirit.⁸⁶

His evocative description of the Kauri in the address was significant: 'The indefinite hazy sheen of its massive trunk, the

strength of its branches, the wonderful vigour and rich green of its leaves, seem to assert its claim to have come direct from the hand of the Creator'.⁸⁷ This was not special creationism however. For Kirk evolution was God's method of direct creation. Thus he attempted to reassure conservative Baptists that, despite Darwin, God remained the Creator and Sustainer of nature. Kirk exemplifies how inapplicable are both the positivist and polarization models of the relations between Christianity and science.

Though perhaps anti-evolutionism was prevalent in less educated circles, it had become commonplace for evolution to be accepted by Methodists. Dr W.H. Dallinger remained the model. His views on the relationship between revelation and Nature were of great importance to the majority of thinking people, the New Zealand Methodist argued. Dallinger unhesitatingly believed in the redemptive work and divinity of Jesus Christ, and just as firmly in the 'fearless acceptance' of scientific truth, and in Darwinism as the mode in which the Divine order was expressed.⁸⁸

In May 1893 the Methodist reprinted British Methodist Dr Beet's lectures on the creation and fall of man. His concordism was quite exquisite: 'Darwin does not say that man was made out of a monkey. He teaches that man and the monkey have a common ancestor. If God made men out of monkeys, they are so much superior to monkeys that no-one but God could have made them'.⁸⁹

By 1898, then, prominent New Zealand Methodist and eminent scientist Rev. J.T. Pinfold F.G.S., F.R.M.S, was able to reassure his congregation with a sermon entitled 'Heaven: A Scientific Fact'. What a delightful exercise it is, he declared, 'to trace the development of

life from the monad, through successive stages of fish, reptile, bird, and animal life until man is reached'. But the climax of evolution was in his view not man, but 'a new heaven and a new earth wherein dwelleth righteousness'. This last stage, Pinfold asserted, was entirely scientific.⁹⁰

The editor of the Methodist at this time was the Rev. W.J. Williams, and the assistant editor Rev. L.M. Isitt. Their ardent advocacy of moral causes like prohibition did not mean that they neglected contemporary intellectual issues. On May 9 1891 they inaugurated a column entitled 'Current Science Notes' by 'Phulax', and it became a regular feature.⁹¹ The following week the Methodist took pride in noting the graduation of J.T. Nott from the University of New Zealand with a Master of Arts degree with second-class honours in zoology. Nott's father was a prominent official in the local Wesleyan Church, and Nott himself had spent three years training at Wesley College in Auckland. He had been soundly converted as a lad and thus 'found a wholesome guard against the temptations incidental to an academical [sic] career'.⁹² In June of the same year the paper drew readers' attention to a letter from the Rev. E. Best of Napier to the Irish Christian Advocate describing recent studies of the tuatara by Professor Parker of Dunedin and Professor Thomas of Auckland. The Methodist was glad to find Best able to enlighten home readers on the wonders of this country, and concluded: 'There is no country in the world that offers a more inviting field to the student of natural science'.⁹³ Methodists actively encouraged the pursuit of science.

Evolution and Biblical Criticism

The issue which really disturbed Methodists, and indeed the

evangelical churches as a whole in the 1890's was not evolution but biblical criticism. Once conservative fears about the Bible were aroused, evolution, which until this decade looked as though it would peacefully be absorbed by the major denominations, became a target once again.

Conservative reaction was triggered by Rev. C.H. Garland's lecture, 'The Bearing of Higher Criticism on Leading Evangelical Doctrines', delivered to the Wesleyan Conference in Dunedin in March 1893. On the Genesis account of creation, Garland observed: 'Most of us, if not all, have been educated to read it as dictated verbatim to Moses by God or by an angel, strictly historical, and geologically accurate in detail'. It was in his view neither history nor science, but rather 'a magnificent epic, true not as a science primer is true but whose every stanza is radiant with the more comprehensive truth of poetry; not in detail historically true, but theologically, parabolically true beyond the possibility of dispute'. It was impossible to bring into harmony with the 'indisputable conclusions' of geology and biology every detail of the Mosaic cosmogony, he asserted. The talking serpent, the forbidden fruit tree, and the angels guarding the empty paradise were mainly symbolic. Nevertheless he agreed with the eminent British philologist Max Muller that the monotheism of the Genesis creation story was marvellously unique.⁹⁴

The mission of Darwinism, Garland asserted, was to bring home to the Christian conscience the immanence of God in creation. He had been reading the Anglo-Catholic theologian Aubrey Moore's brilliant essay 'The Christian Doctrine of God' in Lux Mundi (1889), for he plagiarized unashamedly. In the guise of a foe Darwinism had done the

work of a friend, Garland argued, for it had banished forever the deistic idea that God was an occasional visitor to the earth. Evolution had driven Christians to decide between the alternatives that either God is always and everywhere present or is not and never was.⁹⁵

By the 1890's such frank acceptance of evolution was not too much for many Methodists. But Garland's acceptance of higher criticism, abandonment of the Mosaic authorship of the Pentateuch, frank acknowledgement of 'human and fallible elements' in Scripture, and conclusion that the Bible 'contains' rather than 'is' the Word of God was an entirely different matter. After waiting in vain for two months for an official protest from the Methodist hierarchy, William Shepherd Allen felt it incumbent upon him to reply. Educated at Oxford, Allen had been a Liberal M.P. and a leading lay Methodist in Britain before emigrating to New Zealand.⁹⁶

Garland's 'very startling' lecture, he declared, would not have been surprising if it had been delivered by a man imbued with the sentiments of the 'German Rationalistic School'. But from a Wesleyan Minister it could only be 'deeply regretted', as it was 'diametrically opposed' to the official view of the Wesleyan church that the Bible was the Word of God. 'Destroy [the believer's] faith in the Bible and in Christ', Allen charged, 'and you leave him no certainty, no rock, no sure foundation'.⁹⁷ It was an impassioned and cogent protest against what Allen saw as dangerous liberalism. Not once, it may be noted, did he object to Garland's acceptance of evolution.

Garland's lecture, the Lyttelton Times noted, caused a sensation in religious circles.⁹⁸ Traditionally-minded believers like Allen felt

that the Bible, and therefore Christianity itself, was under attack. They rushed to defend it, not only from biblical critics, but also from evolutionists. It was surely no coincidence that General Schaw's attack on Darwin in the Wellington Philosophical Society came just three months after Garland's address. Fearing for the Bible, Schaw also published a pamphlet at this time entitled Bible Truth and Nineteenth Century Knowledge, in which he warned of the dangers of doubting God's word, and consistently defended biblical inerrancy.⁹⁹

Evolution and Theological Liberalism

One of Allen's charges against Garland was significant. A destructive evolutionary concept of Christianity was at work in Garland's mind, he fulminated. As one doctrine after another was swept away only the doctrine of the Fatherhood of God was left, Allen charged, and that doctrine might mean anything at all, including deism.¹⁰⁰ Liberal Christians like Garland were convinced that Christianity, by which they meant their avant garde version of it, was getting better and more enlightened, in accordance with the law of progressive evolution. Conservatives suspected that the evolutionary spirit with which liberals attempted to bring Christianity into line with modern thought was actually bound to undermine the historic faith.

Certainly the faith of some liberal Christian clergy who had early espoused evolution looked more like romantic evolutionary optimism than orthodox Christianity, and it was certainly a very long way from Calvinism. Presbyterian Rev. Charles Fraser, who had publicly accepted evolution in 1876, found that, lo and behold, it solved the

problem of the origin of evil. Evil was simply insufficient evolution. The happy consequence was the relegation of the Calvinist emphasis on human depravity to less enlightened times, but this was no loss, since it was an embarrassing doctrine in an increasingly self-confident age. Man seen in an evolutionary light 'will be seen to be no longer a degraded being', Fraser announced, but a being 'ever advancing towards good, and the truths of the Christian religion will become ... the crown of his being ... the prize of his upward course, and the instruments of that ceaseless progress through the ages of eternity.'¹⁰¹

Small denominations tended either to eschew 'the world' and remain insular, evangelical and fundamentalist, like the Brethren, or to wholeheartedly embrace modern science and scholarship and go liberal and progressive in order to attract members. The trend toward extreme liberalism is best illustrated in Congregationalism. A great deal of traditional theology and many established ecclesiastical systems were completely outmoded, Rev. H.J. Lewis told the Congregational union in 1890. Christianity must adapt to meet the needs of modern civilization.¹⁰²

George Hogben attempted to adapt Christianity to do just that. He was the son of a Congregational minister, and had accepted the Darwinian theory without abandoning Christianity, and as a young man even offered himself to the London Missionary Society for service in China. He came to New Zealand in 1881 as science master at Christchurch Boys High School and became Inspector-General of Schools from 1899 to 1915 and a leading proponent of scientific and technical education in that role. He also became a Fellow of the Geological

Society and contributed papers to the New Zealand Institute on seismology.

He always believed in the harmony of science and religion as a Timaru lecture on 'Modern Science and the Belief in God' revealed. Taking as a test case the evolution of Professor George Romanes from scientific agnosticism to Christian orthodoxy, he argued that: 'Theology has accepted evolution, and Science has come to believe in God'.¹⁰³ But his Christianity was decidedly liberal. Science caused him to reject miracles. He believed that the spiritual sense was latent in every human being and could be brought to the surface by suitable teaching. His 'natural method' for teaching religion was a matter of letting each pupil discover things for himself. Christian textbooks like Butler's Analogy and Paley's Evidences were useless in Hogben's opinion because they were not proofs but only arguments which could be easily refuted.¹⁰⁴ This was a markedly different attitude toward natural theology than that of the larger denominations. Anglicans continued to use both books in their theological training, and Presbyterian Professor John Dunlop argued that though such arguments did not offer demonstrative proof they remained reasonable and convincing nevertheless.

The only possible proof of Christianity in Hogben's view was the apprehension of truth by the spiritual sense of the individual. This argument rested on a rather optimistic view of human nature, divorced Christian truth from its historic foundations, and made it purely subjective. He concluded by appealing to the young men present to take such oaths of purity in word and deed, of bravery and faithfulness, as did the Knights at King Arthur's round table, and to pledge themselves

to brotherhood with Him who was the exemplar of all virtues.¹⁰⁵

Hogben's Christianity had become inspirational moralism.

The trend is equally clearly illustrated in the case of George Fowlds, a leading light in educational circles who became Minister of Education in the Ward cabinet in 1906. He was a consistent opponent of the Bible-in-Schools movement in order to avoid 'the bitterness of denominational rivalry and the constant friction of sectarian strife'.¹⁰⁶ His religious views revealed a distinct tendency to abandon orthodox Christianity in favour of a minimalist science-based civil religion. In his chairman's address to the Congregational Union in 1899, for instance, he was determined to make Congregationalism appear scientifically avant garde. Science, he believed, could bring the churches together in unity. He saw the Christian Science sect as the pioneer of ecumenism. Christian Science performed physical healings, so perhaps miracles were no more than natural law? Apart from some impressive sounding quasi-scientific speculation that high range sound waves transmitted thoughts from one person to another, Fowlds concluded the address by an appeal to the common fatherhood of God, and the common brotherhood of man.¹⁰⁷ This was the only explicitly religious content in the address, and there was nothing distinctively Christian about it. W.S. Allen's charge that an evolutionary concept of Christianity might lead anywhere at all would seem in the case of these leading Congregationalists to have been eminently justified.

Trends in Apologetics

By the 1890's a discernible trend away from external evidences for the truth of Christianity was evident in progressive Christian

apologetics. Going, thanks to evolution, was the appeal to design in nature as grounds for belief in God. Going, thanks to biblical criticism, was the simple appeal to a self-evidently authoritative Bible. Increasingly God's Works and God's Word were abandoned in favour of internal, experiential criteria for the truth of Christianity: the inner witness of the Spirit, the experience of divine grace.

'No sound Protestant', Presbyterian Rev. John Dunlop told the Synod of Otago and Southland, 'will dispute the truth that the ultimate and decisive ground of genuinely Christian belief is the personal knowledge and experience of saving truth wrought in the heart of the regenerate by the spirit of God'.¹⁰⁸

William Salmond echoed this opinion in 1902. The primary proof that the gospel was of God, he asserted, was never a chain of argumentative proof but always an immediate experience of the soul.¹⁰⁹ To treat Christianity as a body of dogmatic propositional truths was to come into bondage to scholasticism, he argued.¹¹⁰ Plainly Salmond found traditional Calvinist dogmatics somewhat dry and intellectualistic and he preferred a vital and experiential spirituality. However, as one intelligent conservative objected, it was all very well for Salmond to suggest that we must experience what God has done for us in Christ. 'But how can we know what God has said or done? Only from the Bible'. The authority of the biblical revelation as a faithful witness to the life and work of Christ was a point not surrendered by conservatives, who found in the liberalism of men like Salmond the seeds of errant and dangerous mysticism. 'Faith is necessary', concluded this 'Believer in Scripture', 'but it must be

faith in the truth revealed by God regarding Christ'.¹¹¹

Congregationalist George Hogben exemplified the liberal trend even more clearly. He had no time whatsoever for natural theology.¹¹² In his opinion the only possible proof of Christianity was the apprehension of its truth by the spiritual sense of the individual. Precisely what was true about Christianity Hogben left undefined. For a man with a precise, analytical mind on other matters, Hogben took a rather mystical approach to religion.

Even so ardent and aware an evangelical as Bishop Hadfield was influenced by liberal trends. German theologian Friedrich Schleiermacher insisted that Christianity was true because it answered man's fundamental religious awareness, the feeling of absolute dependence. Hadfield complained about the waning of faith in a letter to his son Henry: 'There is a wonderful tendency in the present day in people to lose sight of the great truths of the Gospel and to doubt the constant over-ruling preserve and power of a Heavenly Father'. Hadfield's solution to this problem was neither to appeal to a self-evident God-in-nature, nor to an infallible Bible. Instead he suggested that 'if we had nothing else, the very feeling of dependence on Him which we all have in the hour of need would be convincing proof of its reality'.¹¹³

Paradoxically the theological views expressed by a number of leading scientists at the end of the century were more conservative and old-fashioned than those of the more advanced liberal Christians. Just as progressive apologists were abandoning natural theology, leading scientists, as we have seen in the previous chapter, were proclaiming that evolution strengthened, rather than weakened, the

argument from design. Devout Anglican F.W. Hutton, for instance, believed that the design evident in evolution ought to be a fundamental theological belief. Walter Buller, G.M. Thomson and A.P.W. Thomas also insisted that evolution testified to a grander Creator than did special creation.¹¹⁴

Fundamentalism

It was biblical criticism, then, that catalyzed emergent fundamentalism. Up until the 1890's, apart from a brief flurry in Dunedin in 1876, there was every sign that evolution would be absorbed relatively quietly into the teaching of the Christian churches. Apart from Rev. Dr James Copland there were no prominent militant anti-modernists who were opposed to all forms of evolution. Towards the end of the century, however, as conservative fears were aroused by biblical criticism, evolution again became a target, this time from a standpoint that was more typically fundamentalist.

Since I have already accused G.S. Parsonson inter alia of using the term 'fundamentalism' anachronistically, I might seem to be contradicting myself by using it in the late 1890's instead of where it belongs, in America in the 1920's. I use the term in this context only because it is the most nearly appropriate one available, and with the proviso that what I discuss here would probably better be described as proto-fundamentalism. It was much more inchoate and temperate than the militant American fundamentalism proper of the 1920's. It was a set of similar responses rather than an aggressive, self-conscious movement.

Outspoken Presbyterian theologian William Salmond provided the spark. He was already suspect in conservative circles for his The

Reign of Grace (1888), in which liberal views on the status of the Westminster Confession of Faith and on the reprobation of the wicked almost earned him an official censure. In 1902 he was invited by the University Christian Union to speak on the Subject 'Is the Scientific Conception of Evolution Fatal to Christianity?'. The Chemistry Room at the University was 'filled to overflowing'.¹¹⁵

Salmond began by reflecting that a quarter of a century ago he had considered evolution and Christianity irreconcilable. Now, he claimed, he had more wisdom. Evolution presented no difficulty for theistic belief. It only formulated the method or process: 'Why need it be less true that God made man from the dust of the earth even if we could track the process?' The second and third chapters of Genesis were symbolic rather than historical, he believed. Adam was never a single individual instantaneously summoned into existence by the divine fiat. Rather Adam meant generic humanity, and this concept was a theological affirmation of the solidarity of the race.

Problems were caused, Salmond argued, by the view that Christianity was a supernatural communication of a body of unique and original doctrinal propositions. It was not this sort of 'semi-metaphysical catechism'. Indeed 'the less it is an inward inspiration the more fondly do we cling to the beggarly letter and the tradition; the more it is an inward joy the greater our conscious freedom to march on with all the life of reason and science, knowing that they, too, are divine.' The only proof that the gospel was of God was in his view never a chain of argumentative proof but always an immediate experience of the soul. Plainly he was influenced here by liberal German theologian Friedrich Schleiermacher, who insisted that

religious experience be granted an epistemological status equivalent to scientific facts.

Salmond saw the life of Christ in natural, evolutionary terms. He did not drop down from the skies ready made, he argued, but was born of Mary and grew up quite naturally from an unconscious babe to mature manhood: 'We are not confronted by abrupt transitions and preternatural apparitions, but see everywhere the secret process and silent evolution of hidden potentialities and an unfolding purpose'.

The lecture was listened to with keen interest throughout, and frequently applauded. Yet though most were receptive enough some found these ideas specious and dangerous. Against Salmond's assertion that Adam was a generic term, one correspondent to the Otago Daily Times quoted the text 1 Timothy 2:13. Paul plainly believed in the Mosaic account of the creation of man, he proclaimed, and that was that: 'It would appear that the only way to get certain favourite theories into line with Christianity is by closing the Old Book, and manufacturing a Christianity to suit the circumstances.'¹¹⁶

Another correspondent argued that Christ certainly spoke of Adam and Eve as historic individuals. No doubt Salmond would reply that he was merely accommodating the delusions of the vulgar, he suggested with a touch of sarcasm. The vital faith which Salmond was concerned to propagate was necessary, he argued, 'but it must be faith in the truth revealed by God regarding Christ - which truth is absolutely contradicted by the pretentious and groundless assumptions of Evolution.' He also rejected Salmond's 'silent evolutionary view' of Christ's life, arguing that his birth, baptism, transfiguration, resurrection and ascension were all miraculous and abrupt

transitions.¹¹⁷

Salmond's theory and the Bible were irreconcilable, argued 'Veritas'. Christ quoted Genesis 2:24 on the creation of Eve out of Adam's rib in Matthew 19:5, as did Paul in Ephesians 5:31.¹¹⁸ So far as 'Veritas' was concerned, that settled the matter. Here, in the emergence of simple scriptural literalism, it is apparent that fundamentalism, albeit of a restrained, non-militant variety, had arrived.

What set liberal Protestants like A.R. Fitchett, Charles Fraser, William Salmond, and C.H. Garland apart from their conservative and fundamentalist brethren? Partly it was style. Liberals tended to be intelligent, well-educated and with an intellectual flexibility and confidence that bordered on arrogance. Once converted to evolutionary views they had little patience with recalcitrant brethren. In 1870, for example, Fitchett concluded a reply to a Methodist who found his interpretations of miracles alarmingly naturalistic with more than a hint of sarcasm: 'Trusting that your correspondent's hunger for miracles will be satisfied'.¹¹⁹ William Salmond, who had himself been a difficult convert, thereafter declared the theory of special creation to be 'crass supernaturalism'.¹²⁰ One liberal Dunedin Christian who agreed with Salmond argued that it was a mistake to turn the full light of science on conservative Christians who were 'ignorant and prejudiced'.¹²¹

Conservatives found these attitudes patronizing and objectionable. As 'Another Believer in Scripture' put it, in Salmond's supporters 'the arrogant assumption of superior knowledge is very evident'.¹²² James Copland echoed this view. He thought evolutionists

were arrogant, supercilious and dogmatic.¹²³ The liberals' style undoubtedly provoked and hardened opposition, and for that matter fundamentalist opposition must also have stiffened the determination of liberals.

The reason why liberals were such aggressive advocates of their views was because, with some exceptions, they remained fervent Christians, and warmly evangelical. They did not see themselves, as the fundamentalists saw them, as capitulating to the spirit of the age. The reason why Salmond, for instance, denounced the 'crass supernaturalism' of the traditionalists so vehemently was not because he had abandoned all notions of scriptural authority but because he still held a high view of Scripture. The only way which liberals could see to retain the moral and religious authority of Scripture was to abandon the untenable notion that it was some kind of scientific authority. In the minds of these liberal orthodox churchmen the fundamentalist insistence on the plenary inspiration of Scripture was not only theologically mistaken, but an obstacle to evangelism (especially of educated people) and must inevitably undermine the credibility of Christianity.

The main difference between the two groups, then, was mind-set. The Bible is the Word of God, fundamentalists never tired of repeating, by which they meant it was a divinely inspired repository of fixed and eternal truths.¹²⁴ The evolutionary concept of truth of the liberals appeared to them dangerously relativistic. As 'A Believer in Scripture' argued, if everything in the Bible was not true as certified by the spirit of truth then everyone must determine for himself what has divine authority and what lacks it. The Bible would

no longer be a 'fixed standard of appeal'.¹²⁵ A 'destructive evolutionary concept of Christianity' was at work within theological liberalism, conservative Methodist W.S. Allen charged. As liberal Christianity swept or interpreted away one doctrine after another, what would be left?¹²⁶ Instead of all this liberal confusion the all-sufficient source of authority for fundamentalists was 'the Bible and the Bible alone'.¹²⁷

An evolutionary concept of Christianity encouraged liberals to abandon what they regarded as outmoded, primitive, superstitious ways of thinking. They were determined to be relevant, to be in the van of spiritual and intellectual progress. Fundamentalists, by contrast, had a much more static view of Christianity. They contended 'for the faith once delivered to the saints'. Liberals looked forward to unlimited progress; fundamentalists looked backward. Some of the smaller, sectarian Protestant denominations sought to return to the primitive simplicity of the New Testament church and they found the Christianity of the liberals incomprehensible, bewildering and dangerous.¹²⁸

Fundamentalism had a certain democratic and common sense appeal. The plain meaning of the Biblical text was almost certainly the correct one, according to the classical Protestant doctrine of the perspicuity of Scripture. The Christian needed no help from either church or tradition to understand its message.¹²⁹ Thus in interpreting the essentials of Scripture the common sense perceptions of the common man could be relied upon. To those Protestants without contemporary scientific knowledge and intellectual flexibility, evolution simply did not make sense. It seemed quite obvious to conservative Christian General Schaw that a ground-beetle put into water would become, not a

swimming-beetle as the evolutionists asserted, but a dead beetle.¹³⁰ Both common sense and simple empirical observation confirmed the Genesis statement that each animal brought forth offspring 'after its kind', and this was an objection to evolution which fundamentalists never tired of repeating.

They found the allegorical and symbolic interpretations of Genesis offered by liberals incomprehensible, and tended to regard proponents of such views almost as infidels. As one correspondent, aghast at Salmond's reconciliation of evolution and Christianity put it: 'The professor does not believe, but is floundering among the fogs and mazes of science'.¹³¹

Fundamentalism also had something of a populist, anti-intellectual appeal. This may be illustrated by W.S. Allen's reply to C.H. Garland's assertion that the doctrines of repentance, atonement, and redemption were sub judice and dependent on the bearing of higher criticism on the questions of the inspiration and authority of the Bible. Such an approach, Allen objected, would effectively paralyze Christianity 'till this little knot of bookworms, who at present can hardly agree on one single thing, shall think fit to tell mankind what they may, and what they may not believe.'¹³²

Fundamentalism tended also to be sectarian and exclusivist in its ecclesiology, and often this had a millennial tinge. Rev. James Copland, for instance, announced as early as 1871 that the conflict between science and religion was portentous. A 'time of sifting' was at hand for the Church, many of whose professing members held to the erroneous doctrines of scientific positivism. But this was only to be expected, as Zion needed to be separated from the world, for then:

'Good and evil shall stand face to face, separated, developed, and ready for the final, and perhaps last, bloody struggle'.¹³³

Fundamentalists were not ipso facto anti-science however. According to George Aldridge the investigation of nature was 'marvellous'; scientists searched out the 'works of God'.¹³⁴ But if there was any apparent conflict between God's Works and His Word they unhesitatingly chose the latter. They preferred what they took to be the plain biblical facts, over speculative scientific theories, like evolution.

The salient contrasts may be illustrated by comparing the views of ultra-conservative Presbyterian Rev. James Copland, who had opposed Fitchett in the Dunedin YMCA in 1876, with the views of William Salmond at the end of the century. Probably Copland had hardened in his conservatism, for he had been beaten by Salmond for the chair of Mental and Moral Science at Otago in 1886. He was a trained doctor, and took a rigorously scientific approach to theological questions on the basis of what he took to be the propositional truths of Genesis. The plain statement of Genesis that each animal had been created 'perfect after its kind' proved evolution was impossible, he argued in a 1901 lecture. It was his method of reasoning, not the ingenious speculations of Salmond, which he felt to be rational and scientific, in accord with sound principles of Baconian induction. The Baconian methodology was to be applied as rigorously in the science of theology, when dealing with the facts of Scripture, as in natural science. Indeed Copland argued, in an almost positivistic spirit, that Salmond's views were actually a metaphysical obfuscation of the plain facts of Scripture. On the question of the creation of Eve from Adam's

rib, he declared that Salmond 'would probably explain away the statement ... as an allegory, or a poetic fancy. Such dreamers may be biblical critics, or commentators, but they cannot be regarded as sound divines'.¹³⁵ Here was full-blown scriptural positivism. Copland had such a positivistic mind-set that he could see in Scripture nothing but scientific and historical facts. Doubtless he felt that the liberal insistence that Genesis taught religious but not scientific truth tantamount to saying that Genesis taught nothing at all.

Although it was unnecessary for Copland to oppose biological evolution, as most Presbyterian ministers had by now come to realize, his fundamental antagonism to the intellectual trend exemplified by Salmond was not without foundation. The liberal tendency to divide truth into scientific, historical, and religious senses, and to assert that though Christianity was certain in the last sense it was uncertain in the first two, was dangerous. It apparently abandoned the Christian claim to truth in the fullest and most compelling sense of that term. To accept a divorce between Christianity on the one hand, and history and science on the other, Copland was convinced, would inevitably undermine Christianity. How could the Bible be religiously true and authoritative, yet scientifically and historically dubious? It was either entirely true, he insisted, or not true at all. Yet by now his obscurantist denial of evolution tended to bring about the very divorce he feared. To suspend the truth and authority of Scripture on outdated biology inevitably alienated thinking people from the very orthodoxy he was so vigorously defending.

Fundamentalists placed much less emphasis than liberals on the

uniformity of natural law. They had a much more supernaturalist orientation. The Bible, they believed, recorded supernatural events which were actual facts. The creation of Eve from Adam's rib as described by Moses, 'A Believer in Scripture' argued in reply to Salmond, was no more unlikely than the miracle at the Red Sea, Daniel in the lions' den, Jesus feeding the five thousand, or the raising of Lazarus from the dead: 'If the record of these, as the results of immediate and as such miraculous intervention can be read as being "the language of simple, pious men in a primitive age", - not as actual facts, then may the record of man and woman's creation as given by Moses and the Prophets, be so read, and only then'.¹³⁶ Evolution was felt by fundamentalists to explain away not only the miracle of the creation but the supernatural in general. As H. Billens of Palmerston North argued: 'Admit evolution, then miracles collapse, and the whole Bible teems with them'.¹³⁷

Occasionally the fundamentalist preference for the biblical 'facts' over the scientific 'facts' produced some rather distinctive science. Noteworthy was a pamphlet by Edwin Fairburn with the impressive, and somewhat alarming title, 'Deluge of Genesis True. Universal Gravitation Not True.' Some mammoths had recently been discovered in Siberia frozen in an upright stance. Fairburn argued, with elaborate volumetric calculations, that the sudden arrival of 600 million cubic miles of ice neatly accounted not only for the frozen mammoths, but also for the Glacial Period, and for the Genesis Deluge in one fell swoop.¹³⁸ In the second section of the pamphlet he decisively rejected the Newtonian theory of universal gravitation. Reflecting the views of the eighteenth century anti-Newtonian John

Hutchinson, he argued that God, not gravity, upheld the universe.¹³⁹

Unaccountably, the scientific world took no notice. Though by no means all fundamentalists had such grandiose theories, there was no question that they preferred the authority of Scripture over the authority of science. As one fundamentalist put it, 'I prefer to hear Moses and the Prophets, than to accept the doctrine of a fallible and uninspired man as [Presbyterian evolutionist Henry] Drummond.'¹⁴⁰

Fundamentalism had most appeal to less educated laity, particularly in country areas and small towns, in the evangelical churches, and especially to small revivalist sects like the Brethren. Yet the term must be applied sparingly and cautiously. Undoubtedly there were many educated laity in the evangelical churches who accepted at least limited forms of biological evolution, and thus could hardly be described as fundamentalists. Yet at the same time they were probably suspicious of German higher criticism, and could hardly be described as theological liberals either. This moderate majority tended to remain silent, for they could subscribe to the views of neither vocal extreme.

Conclusion

The trends which had been apparent during the 1880's and 1890's continued into the twentieth century. The scientific community continued to expand and professionalize. The age of the parson-naturalist was well and truly over. By 1903 there were no clergymen at all on the councils of the Institutes.¹ They were governed and dominated by professional scientists like Hutton, A.P.W. Thomas, G.M. Thomson, Cockayne, Benham, and Charles Chilton, who was Professor of Biology and Palaeontology at Canterbury College.

Amateurs might continue to play the natural theologian. Thomas Tanner, a wealthy runholder, politician, and Anglican synodsmen, lectured the Hawkes Bay Philosophical Institute in August 1901 on 'The Wonders of Creation as revealed by the Telescope'.² Professional scientists no longer found it necessary. Professor A.P.W. Thomas, who was also a keen Anglican, delivered lectures in 1904 to the Auckland Institute on 'The Present Position of the Evolution Theory', copiously illustrated with lantern slides and diagrams. Whilst acknowledging that evolution gave men a grander idea of the work of the Creator, he preferred to regard the Bible as a revelation concerned with the moral and spiritual life of man.³ The religious convictions of the new generation of evolutionary scientists like Thomas, though they might be Christian, were private and personal. Scientific discussions were now conducted without reference to the Creator, and nobody had any real need of the hypothesis of God in science.

Social Darwinist views continued to find support amongst the colony's elite, indeed probably more than ever before, for the star of Science was at its zenith. A number of identifiable groups were

represented in the Eugenics Education Society. There were politicians and civil servants like Robert Stout, George Hogben, George Fowlds, and Edward Tregear. There were professional biologists including Professors Benham, Chilton, and H.B. Kirk from Victoria University College. This signified a growing confidence on the part of the scientific community to pronounce on important social questions. Professional scientists like Hutton, Haast, and Hector had kept a much lower profile during the social Darwinist debates of the 1870's and, whilst never actually opposing the ideas of Stout and Duncan MacGregor, never supported them either. Yet by the beginning of the twentieth century professional scientists were prime movers in the eugenics movement, and playing a more prominent social role than their nineteenth century predecessors.⁴

Academics were also prominent eugenicists. John Macmillan Brown, for example, gave lectures to his local branch. William Salmond was an officeholder in the national Society. The historian of the British Eugenics movement has noted that it was religious liberals rather than conservatives who were most likely to be involved.⁵ The presence of freethinkers like Stout, Macmillan Brown, and religious liberals like Hogben, Fowlds, and Salmond in the van of the New Zealand movement lends support to this argument.

Salmond's case is particularly interesting. Theologically conservative in 1876, he spoke out against the racist social Darwinism of Stout and MacGregor. The Genesis doctrine of the creation of the human race, he insisted, did have some bearing on scientific questions. It meant that it was the unity of humanity which mattered, not racial differences.⁶ Yet by the turn of the century he had adopted

the view that Genesis was an allegory, and was denouncing the 'crass supernaturalism' of fundamentalists. He was determined, as he put it in a 1902 lecture, to 'march on with all the life of reason and science, knowing that they, too, are divine'.⁷ He was also, as we have noted, a prominent member of an organization which was devoted, beneath the euphemistic rhetoric, to the selective breeding of the human species. His basic intellectual (and even theological) position was probably closer to the romantic scientism of men like Stout and MacGregor than to the Calvinistic orthodoxy of most Presbyterians. The alarm of ordinary Christians at progressive thought was not without foundation.

Yet the religious scene was more complicated by the beginning of the twentieth century than it had been in the 1870's. Evolution was certainly a factor in the rifts which had opened up within the evangelical churches by the new century, but it was by no means the only one. These divisions must not whiggishly be read back into the evolution debates from the beginning.

Looking back over the years following the publication of The Origin of Species it is clear that, in comparison with Britain, Europe and America, evolution was accepted quickly and easily in New Zealand. It was not the case that Darwin polarized colonial society into antagonistic scientific and religious camps. Neither was it the case that the relations between scientists and churchmen were characterized by hostility and antagonism. And it was undoubtedly not the outcome of the debates that science triumphed over religion. Darwin revolutionized natural science; it was by no means clear that he revolutionized anything else.

Evolutionary biology became paradigmatic in the Institutes by the 1870's, though questions about the adequacy of the Darwinian mechanism of natural selection persisted. But scientists did not feel compelled to jettison orthodox Christian belief in accepting evolution. Indeed the consensus of opinion was that the evidence of divine design in nature had been strengthened rather than weakened by Darwin, although now it was the general inter-relations of the whole, rather than the particular designedness of the parts, that was emphasized as the ground of this belief. The colonial counterpart of the militantly atheistic German scientist, or even the aggressively agnostic British scientist, was conspicuous by his absence. New Zealand scientists had no entrenched elite backed by a religious and political Establishment to oust, and no need for radical agnostic or positivistic ideologies. Science did become secularized by the end of the century but this was the work of devout scientists who were determined that the progress of biology would no longer be held back by religious controversy. The result was that Nature replaced God in biological metaphors. But the metaphors themselves remained startlingly reminiscent of William Paley.

Despite the prevalence of religious belief amongst scientists some educated men felt that the future lay with Science rather than with Christianity. Radical freethinkers like Robert Stout went further, and argued that evolution disproved the Bible, and that traditional religious beliefs were the relics of a primitive, unscientific age. Despite Freethought claims to be objective and scientific, they turned evolution into a religious faith which paradoxically was in many respects analogous to the Christian

traditions they claimed to have left behind. Those who listened found Freethought entertaining rather than convincing.

One of the main reasons for the failure of Freethought to convince people that Christianity was an unscientific myth was the response of the churches to evolution. Already well-versed in reconciling Genesis and geology, and adapting interpretations of Scripture accordingly, the major Protestant denominations were far from the reactionary fundamentalist monolith of legend. After an initial period of caution and deliberation, they accepted biological evolution as readily as they had earlier accepted geology. From the early 1870's progressive ministers welcomed evolution as a far grander method of creation than the traditional view. By the 1880's this became a commonplace belief for educated Christians within the major denominations. This was signalled by Bishop Nevill 'baptising' evolution in Christchurch Cathedral in 1891.

Biblical criticism was much more significant in the genesis of the colonial fundamentalism which emerged at the end of the century than evolution. Yet in comparison with the militant American fundamentalism proper of the 1920's, it was restrained and inchoate. Many educated people found the views of fundamentalists quaint if not ridiculous. Yet though evolution was the wrong theory to reject, their underlying antagonisms to contemporary intellectual trends - to Science-as-religion, to the sacrifice of the Christian claim to truth in the fullest and most compelling sense of the term, and to the privatization and subjectivization of the concept of religious truth - were not entirely baseless, and were shared by more moderate Christians. The tragedy of *fundamentalism*

was that it exacerbated the very process it intended to prevent. Intent on maintaining a dominant position, by the beginning of the twentieth century its intractable obscurantism thrust it slowly but inexorably to the periphery of the nation's intellectual, cultural and scientific life.

If society entering the twentieth^{century} was any more 'secular' than it had been fifty years previously, and it is a big if, then science as such had little to do with it. Implicit even in the isolated comments of historians is the secularization assumption, that in New Zealand a religious nineteenth century society was replaced by a secular, scientific twentieth century one. Erik Olssen, for instance, argues that the changing treatment of the mentally ill 'clearly demonstrated the challenge to the moral - religious values of the nineteenth century posed by the rational - scientific attitudes of the twentieth'.⁸ Yet no leading scientist felt that accepting evolution entailed rejecting Christianity. Churchmen had generally come to a happy rapprochement with modern science. Both groups insisted that conventional religious and moral beliefs were quite compatible with acceptance of biological evolution.

The secularization hypothesis, if it is to have any validity, ought to be confined, in the nineteenth century at least, to the views of a radical intellectual elite of academics, politicians, and civil servants, as well as a handful of freethinkers. These men did battle, in the name of Science, against Religion. This battle was, I have shown, essentially mythical. Though they failed to make mass conversions in the nineteenth century, nevertheless in making scientific agnosticism and religious

scepticism intellectually and socially respectable, even fashionable, they helped to lay the foundation for the conviction, increasingly pervasive amongst comfortable twentieth century New Zealanders, that God's Own Country could get along well enough without Him. Though the triumph of scientific enlightenment over religious ignorance had little foundation in historical reality in nineteenth century New Zealand, it has proved to be an enduring and pervasive twentieth century myth.

Notes and References

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- 13 C J H Hayes A Generation of Materialism, 1871-1900 New York 1941, 12. For a fuller discussion, giving numerous examples of the 'military metaphor' in orthodox accounts, see Moore 40-9. In chapter three Moore discusses the way in which this metaphor has distorted historical interpretations
- 14 Hall 71
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- 18 For further examples of this interpretation see D L Hull 'Darwinism and Historiography' in T F Glick (ed.) The Comparative Reception of Darwinism Austin, Texas 1972, 392; Michael Ruse 'The Relationship between Science and Religion in Britain, 1830-1870' Church History 44 (1975) 518-22
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- 23 M B Foster 'The Christian Doctrine of Creation and the Rise of Modern Natural Science' in C A Russell (ed.) Science and Religious Belief London 1973, 294-315; R K Merton 'Puritanism, Pietism and Science' in Russell (ed.) Science and Religious Belief 20-55; R Hooykaas Religion and the Rise of Modern Science Edinburgh, 1972
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- 25 See also Anne Mozley 'Evolution and the Climate of Opinion in Australia 1840-76' Victorian Studies 10:4 (1967) 411-30

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- 5 Alan Moorehead Darwin and the Beagle London 1969, 226-7
- 6 Darwin to Grey 13 Nov 1847, Grey Letter Collection, TS, 274
- 7 Janet E Ross 'The Missionary Work of the Rev. Richard Taylor at Wanganui' MA thesis, Victoria University of Wellington 1965, 13a

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- 8 R Taylor 'Geological Observations on the Book of Genesis' NZ Mag 1:1 (1850) 20
- 9 *ibid*
- 10 NZE 2:20 (1850) 276
- 11 H Miller The Testimony of the Rocks, or Geology in its Bearings on the Two Theologies, Natural and Revealed Edinburgh 1872, 241
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- 13 It was read, for example, by an Oxonian shepherd in Otago. See S Butler A First Year in Canterbury Settlement with Other Early Essays edited by R A Streatfield, London 1914, 100
- 14 Catalogue of the Books belonging to the late Sir Julius Von Haast Christchurch 1887
- 15 A G Bagnall and G C Petersen William Colenso Printer Missionary Botanist Explorer: His Life and Journeys Wellington 1948, 397
- 16 DNZB 1: 479
- 17 R B Shalders Early History of the Auckland YMCA with personal reminiscences Auckland n.d. lists the early members including these three
- 18 DNZB 1: 153-4
- 19 *ibid* 2: 303-4
- 20 *ibid* 1: 119
- 21 Oldroyd 31
- 22 Martin Rudwick's argument ought to be noted here that Cuvier preferred the term 'revolution' to 'catastrophe' because it had a more natural, regular, Newtonian flavour. He argues that there was nothing necessarily supernatural about Cuvier's 'catastrophes' and no vast philosophical gulf separating 'catastrophists' from 'uniformitarians' like Charles Lyell. See Rudwick The Meaning of Fossils 132
- 23 *ibid* 136, 138
- 24 Oldroyd 55, 58
- 25 NZE 2:20 (1850) 280

(Notes to Chapter One)

- 26 DNZB 2: 373-4
- 27 Taylor 'Geological Observations' 21-2
- 28 B Ramm The Christian View of Science and Scripture London 1955, 134-6
- 29 Taylor 'Geological Observations' 23
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- 35 *ibid* 284
- 36 P Parkinson 'William Swainson 1789-1855: Relics in the Antipodes' in M E Hoare and L G Bell (eds) In Search of New Zealand's Scientific Heritage Wellington 1984, 52-3
- 37 R Taylor Our Race and its Origin Auckland 1872, 6
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- 3 A Ellegard Darwin and the General Reader. The Reception of Darwin's Theory of Evolution in the British Periodical Press 1859-1872 Goteborg 1958, 295
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- 9 James Wylde A Geography and History of New Zealand for the use of Schools Christchurch 1868, passim
- 10 Haast H F Von The Life and Times of Sir Julius Von Haast Explorer, Geologist, Museum Builder Wellington 1948, 492
- 11 *ibid*
- 12 Cited in Moore The Post-Darwinian Controversies 83
- 13 The review appeared in The Geologist 3 (1860) 464-72 and is reprinted in D L Hull (ed.) Darwin and His Critics. The Reception of Darwin's Theory of Evolution by the Scientific Community Cambridge, Massachusetts 1973, 292-300
- 14 Hull Darwin and His Critics 159-66
- 15 *ibid* 294
- 16 *ibid* 293
- 17 *ibid* 299-300
- 18 *ibid* 299
- 19 *ibid* 300
- 20 Charles R Darwin The Origin of Species by means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life Penguin English Library edition, London 1982, 459
- 21 Hull Darwin and His Critics 295
- 22 For an analysis of Gray's views see his Darwiniana: Essays and Reviews Pertaining to Darwinism edited by A Hunter Dupree, Cambridge, Massachusetts 1963. See especially Article 3 'Natural Selection Not Inconsistent with Natural Theology' 72-146
- 23 Darwin to Hooker April 1861, quoted in F Darwin The Life and Letters of Charles Darwin, Including an Autobiographical Chapter London 1887, 2: 155

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- 24 Darwin to Hutton 20 April 1861, quoted in Nora Barlow (ed.) The Autobiography of Charles Darwin, 1809-1882, with Original Omissions Restored New York 1958, 265
- 25 The following discussion is based on Hutton's review entitled Some Remarks on Mr. Darwin's Theory London 1861
- 26 Rudwick The Meaning of Fossils 241-2
- 27 Hutton Some Remarks 9-11
- 28 The Canterbury Standard 9 Oct 1862, n p
- 29 Haast The Life and Times 230
- 30 The Canterbury Standard 9 Oct 1862, n p
- 31 *ibid*
- 32 *ibid*
- 33 *ibid*
- 34 It is also worth noting, which reinforces this point, that Robert Stout found that publicly expressing freethinking views was no barrier to occupying the highest political office in the land
- 35 Haast The Life and Times 1, 149, 642
- 36 *ibid* 642
- 37 The Canterbury Standard 9 Oct 1862, n p, *my italics*
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- 39 Darwin to Haast 22 Jan 1863, Haast MS 35 Folder 51
- 40 DNZB 1: 181-2
- 41 Testimonial by the Rev. Thomas Main to support J G Black's candidacy for the chair of Natural Science at the University of Otago, NZ Pamphlets 11 (1868-70)
- 42 Bagnall and Petersen 397
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- 44 *ibid* 24 (1891) 407
- 45 See for instance the eulogy he delivered about Huxley to the Hawkes Bay Philosophical Institute in 1896, TPNZI 29 (1896) 137
- 46 DNZB 2: 394

(Notes to Chapter Two)

- 47 TPNZI 1 (1868) 31-33
- 48 *ibid* 31
- 49 *ibid* 32
- 50 *ibid* 443
- 51 *ibid* 2 (1869) 300
- 52 *ibid*
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- 55 *ibid* 3 (1870) 326, 328
- 56 *ibid* 1 (1868) *passim*
- 57 *ibid* 2 (1869) 192-6, 402, 411
- 58 *ibid* 1 (1868) xv - xvii
- 59 *ibid* 10
- 60 *ibid* 11
- 61 *ibid* 14 - 15
- 62 For example by Mr Justice Ward and Alfred Eccles as president and vice-president respectively of the Otago Institute. See *ibid* 2 (1869) 427, 429
- 63 *ibid* 1 (1868) 15
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- 65 *ibid* 428
- 66 *ibid* 427
- 67 *ibid* 406
- 68 *ibid* 410
- 69 *ibid*, italics in original
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- 77 ibid 2 Apr, n p
- 78 ibid 11 Apr, n p
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- 80 For the development of Butler's views on evolution, and a comparison with Darwin's see Willey, Lecture III
- 81 ibid 64
- 82 For a fuller discussion of these points see ibid 73-84
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- 84 C W Richmond Man's Place in Creation Wellington 1881, 3
- 85 ibid 5-8
- 86 ibid 10-13
- 87 Nelson Examiner 18 Aug 1869, 3
- 88 ibid
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- 93 TPNZI 2 (1869) 281
- 94 ibid 284, 287
- 95 ibid 292, 295
- 96 A B Suter Address to the Clergy and Lay Representatives of the Twelfth Synod of the Diocese of Nelson, November 30, 1869 Nelson 1869, 7, 8
- 97 ibid 16-17, 30, 18

(Notes to Chapter Two)

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- 101 Hall 71
- 102 Harper to Richmond 16 Aug 1869, Richmond - Atkinson Papers 2, 291
- 103 NZP 1:1 (1866) 7
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- 107 Jenkin's review appeared in The North British Review 46 (1867) 277-318 and is reprinted in Hull 303-44
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- 109 Darwin to Haast 28 Jan 1868, Haast MS 35 Folder 51
- 110 For the views of Maurice and Kingsley on evolution see Moore The Post-Darwinian Controversies 89-91
- 111 A H Reed (ed.) Further Maoriland Adventures of J.W. and E. Stack Dunedin 1936, 9
- 112 NZP 1:1 (1866) 7
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(Notes to Chapter Three)

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- 37 J T Thomson Social Problems: An Inquiry into the Law of Influences London 1878, 56
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- 45 ibid 4 (1871) 419-20. See also ibid 12 (1879) 56
- 46 ibid 10 (1877) 546
- 47 ibid 4 (1871) 67. For a similar rationale for the pursuit of science see R C Barstow's address to the Auckland Institute ibid 10 (1877) 546
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- 52 The various papers all appear in TPNZI
- 53 Parsonson 2
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- 77 A S Thomson The Story of New Zealand: Past and Present - Savage and Civilized Praeger reprint edition, New York 1970, 81
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- 90 R Taylor Te Ika a Maui, or New Zealand and its Inhabitants,

(Notes to Chapter Three)

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- 4 O Hadfield A Reply to the Question 'Is a Miracle Opposed to Reason?' Wellington 1875, 11, 21
- 5 'Zetaethes' (pseud.) A Reply to the Bishop's Reply Wellington 1875, passim
- 6 A Stock The Early Date and Consequent Truthfulness of the Four Gospels Wellington 1875, 23
- 7 ibid 25
- 8 W Salmond The Christian Doctrine of Providence and Prayer 26
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- 10 A summary of Fitchett's lectures appears in Christian Observer 1:9 (1870) 159-60
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(Notes to Chapter Four)

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- 15 Hutton 'The Doctrine of Evolution' 342
- 16 F W Hutton Australasian Association for the Advancement of Science Presidential Report Hobart Wednesday, January 8, 1902 Hobart 1902, 29
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- 18 *ibid* 32 (1899) 262
- 19 NZH 17 Mar 1884, 3
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- 22 CG 1 Mar 1873, 29. Note that the Church Gazettes in both the St Johns College Library and the Auckland Diocesan Archives have been bound without title pages, so I shall refer to them by date rather than by volume and issue numbers. Pagination is irregular and it is given as it appears in the bound volumes
- 23 *ibid* 1 Apr 1873, 57
- 24 *ibid* 1 Sept 1879, 89. For similar views see *ibid* 1 Aug 1876, 87; *ibid* 1 July 1879, 63-4
- 25 Church Gazette Supplement 1 Jan 1875, n p
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- 53 J A Connell The Difficulties of Evolution Dunedin 1881, 6
- 54 For a full report, on which this account is based, see ODT 24 Oct 1876, 2-3
- 55 T Bracken Pulpit Pictures Dunedin 1876, 29
- 56 ODT 25 Oct 1876, 4
- 57 *ibid*, 5
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- 60 ibid 1 Nov 1876, 2. See also ibid 4 Nov 1876, 3; ibid 13 Nov 1876, 3
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- 62 ibid 21 Nov 1876, 2
- 63 Bracken Pulpit Pictures 15 on Thomas Roseby
- 64 FR 1:1 (1883) 12
- 65 ibid
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- 67 Parsonson 3
- 68 Oldroyd 246
- 69 Parsonson and Oldroyd are of course not the only ones to use 'fundamentalism' in such an anachronistic and indiscriminate manner. Moore finds B J Loewenberg, Henry Steele Commager, and Richard Hofstadter guilty on this charge too. See The Post-Darwinian Controversies 69
- 70 Hall 71
- 71 Gordon 14
- 72 J C Firth The Perils of the Age Auckland n d, 6
- 73 Harper Evolution 3
- 74 ODT 24 Oct 1876, 3
- 75 For an extremely helpful discussion see Marsden Fundamentalism and American Culture 14-16
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- 77 Taylor Our Race and its Origin 6
- 78 James Hill The Probability of Christianity: A Sermon Auckland 1875, 10
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- 81 Connell The Difficulties of Evolution 25. See also James MacGregor Regarding Evolution: The Previous Question of Science Considered Oamaru n.d. [1885?] 3, and James Copland

(Notes to Chapter Four)

- The Origin and Spiritual Nature of Man Dunedin 1885, 16
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- 83 Copland The Origin and Spiritual Nature of Man 16; Connell The Difficulties of Evolution 23
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- 90 Review of the Rev. A.R. Fitchett's Lecture on Evolution Sydney 1876, 7
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- 93 Hill The Probability of Christianity 9
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- 95 *ibid* 8:8 (1876) 3
- 96 *ibid* 8:10 (1876) 7
- 97 The only surviving account, on which this description of Brunton's sermon is based, is Bracken's Pulpit Pictures 64-5, and it must be borne in mind that Bracken was not at all sympathetic to revivalists like Brunton
- 98 Hall 71
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- 102 Firth The Perils of the Age 5-7

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- 1 R Stout Evolution and Theism Christchurch 1881, 7-8
- 2 G Higinbotham Science and Religion, or the Relations of Modern Science with the Christian Churches Dunedin 1883, passim
- 3 C M H Clark A History of Australia Melbourne 1962, 4: 304
- 4 T C Farnie Science and Religion. A Review of Judge Higinbotham's Lecture Dunedin 1883, 3, 7
- 5 Reports of the debate appear in NZH 18 Jan 1884, 5; *ibid* 5 Aug 1884, 6
- 6 FR 1:11 (1884) 5; NZH 19 Aug 1884, 3
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- 8 NZP 5:6 (1883) 110
- 9 FR 2:15 (1884) 7
- 10 G H Scholefield Newspapers in New Zealand Wellington 1958, 151
- 11 For further discussion see the article by P J Lineham 'Freethinkers in Nineteenth Century New Zealand' NZJH 19:1 (1985) 62-3
- 12 FR 2:23 (1885) 8-9. The original Methodist claim appeared in NZ Meth 2:23 (1885) 6
- 13 FR 2:23 (1885) 8-9
- 14 *ibid* 2:18 (1885) 1-2
- 15 1886 Census
- 16 FR 1:5 (1884) 6
- 17 For a fuller discussion of these points see Lineham 'Freethinkers in Nineteenth Century New Zealand'
- 18 For a more detailed discussion see Turner 'The Victorian conflict between religion and science' and Desmond Archetypes and Ancestors
- 19 Haast The Life and Times 237
- 20 Press 3 June 1893, 2

(Notes to Chapter Five)

- 21 Nevill Sermons on Questions of the Day 14
- 22 Harper Evolution 5
- 23 E Whitehouse Freethought Auckland 1885, 17
- 24 C Bodington Some Difficulties of Belief Auckland 1885, 6, 5
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- 26 ibid 1 Jan 1886, 6,5
- 27 This account is based on the report which appeared in the Southland Times 14 July 1886, 2
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- 29 NZP 2:8 (1882) 20
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- 32 L H Barber 'The Social Crusader: James Gibb at the Australasian Pastoral Frontier, 1882-1935' Ph D thesis, Massey University, 9
- 33 NZP 6:8 (1885) 146
- 34 ibid 5:8 (1884) 153
- 35 ibid 2:10 (1888) 187-8; ibid 2:12 (1888) 227
- 36 ibid 3:5 (1888) 96
- 37 NZJS 2:8 (1885) 370-1
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