

THE DICTIONARY OF
NINETEENTH-CENTURY BRITISH
PHILOSOPHERS

Volume 1

A-H

SUPERVISING AND CONSULTANT EDITORS

Gavin Budge John Morrow

Dolores Dooley Andrew Pyle

Tom Duddy Alan P.F. Sell

Caroline Franklin John G. Slater

Ivor Grattan-Guinness John Stephens

Bernard Lightman M.A. Stewart

John M. Lynch Michael Taylor

W.J. Mander Robert H. Wozniak

Giuseppe Micheli



THOEMMES PRESS

ronal ministry, similar to that of a parochial establishment, by mapping out territorial districts around each church and concentrating their educational and social programmes on those districts. But at the same time, he never ceased to maintain that an established church, encompassing the large majority of the population, was the most effective means of bringing religious instruction and social harmony to a commonwealth.

Chalmers's contributions to political economy and social reform were influenced more by the Scottish Enlightenment and civic humanism than by the New Testament. In his advocacy of a parochial organization of society, his emphasis was on religion as providing a system of moral values, which he believed would maximize human happiness in this world. But we must not forget that he was also a devout evangelical Christian, with beliefs firmly rooted in the Reformed doctrines of the Westminster Confession of Faith. He was an impassioned preacher, who proclaimed in his sermons the relative unimportance of temporal happiness in this world, when set against the prospect of eternal happiness in the next. He believed that God had given people the capacity for happiness, but he also believed that they were sinful and in need of redemption. In his theology, he was conservative, with a pre-critical belief in biblical inspiration. Like many of his contemporaries, he was deeply disturbed by the challenges to the faith being posed by science, scepticism and materialist philosophy. He saw theologian's task in his day to be a defender of the faith, rather than an innovator.

His main contributions in theology were in the area of apologetics. In *The Evidence and Authority of the Christian Revelation* (1814) he provided a lengthy review of the historical evidence for the divinity of Christ, purporting to prove that the 'external evidence' for the truth of the New Testament narratives, including the miracle stories, was overwhelming. His argument focused on the numbers and the character of those giving testimony to Christ's

work, and on the dangers they faced in bearing such testimony. In his celebrated *Astronomical Discourses* (1817), he maintained that scriptural revelation had nothing to fear from the vastness of space and billions of stars being revealed through Newtonian physics and modern astronomical observation. If there were, he suggested, large numbers of other worlds inhabited by intelligent life forms, it was also possible that God had become incarnate in each of these worlds, and established in each its own plan of salvation. His posthumously published lectures on Joseph Butler and William PALEY in volume 9 of the *Posthumous Works* (1849) offered mature and intelligent commentaries on two leading eighteenth-century lines of apologetics, and his lectures on theology, published in volumes 7 and 8 of the *Posthumous Works* provided a full exposition of Reformed orthodoxy. Chalmers's apologetic writings, however, were appearing dated by the 1840s. He tended to regard sceptics too much as enemies, infidels to be despised and defeated, rather than as rational beings to be convinced and won over through argument. He directed his writings to other Protestant Christians, and he viewed unbelief as a sin. His apologetic writings were directed largely against the deist and atheist radicals of the 1810s and 1820s. He had no sympathy for the 'honest doubter'. Thus, after his death his theological writings soon waned in influence among mid-Victorian Christians who wrestled earnestly with the doubts raised by the higher criticism and evolutionary biology, and who recognized that the unbelief of John STUART MILL or George ELIOT did not signify moral failing. Of more lasting value were Chalmers's communal programmes for the urban ministry, which exercised a profound influence on the social gospel movements in later nineteenth-century Europe and North America.

BIBLIOGRAPHY

The Collected Works of Thomas Chalmers, 25 vols (Glasgow, 1835-42).

The Posthumous Works of the Rev. Thomas Chalmers, ed. William Hanna, 9 vols (Edinburgh, 1847-9).
Sermons by Thomas Chalmers. Illustrative of Different Stages in his Ministry, 1798-1847, ed. William Hanna (Edinburgh, 1849).
A Selection from the Correspondence of Thomas Chalmers, ed. William Hanna (Edinburgh, 1853).

Other Relevant Works

Hanna, William, *Memoirs of Dr. Chalmers*, 4 vols (Edinburgh, 1849-52).
 [Taylor, Isaac], 'Dr Chalmers' Works', *North British Review*, vol. 26 (November 1856), pp. 1-71.

Further Reading

Brown, Stewart J., *Thomas Chalmers and the Godly Commonwealth in Scotland* (Oxford, 1982).
 Chevone, A.C. (ed.), *The Practical and the Pious: Essays on Thomas Chalmers* (Edinburgh, 1985).
 Drummond, Andrew L. and James Bulloch, *The Scottish Church, 1688-1843* (Edinburgh, 1973).
 Hilton, Boyd, *The Age of Atonement: The Influence of Evangelicalism on Social and Economic Thought* (Oxford, 1988).
 Mechie, Stewart, *The Church and Scottish Social Development 1780-1870* (Oxford, 1960).
 Rice, D.F., 'The Theology of Thomas Chalmers', PhD thesis (1966).
 Roxborough, W. John, *Thomas Chalmers: Enthusiast for Mission* (Carlisle, 1999).
 Saunders, L.J., *Scottish Democracy 1815-1840* (Edinburgh, 1950).
 Voges, Friedhelm, *Das Denken von Thomas Chalmers in Kirchen - mitter Sozialgeschichtlichen Kontext* (Frankfurt, 1984).
 Waterman, A.M.C., *Revolution, Economics and Religion: Christian Political Economy, 1798-1833* (Cambridge, 1991).

Watt, Hugh, *The Published Writings of Dr. Thomas Chalmers: A Descriptive List* (Edinburgh, 1943).
 ———, *Thomas Chalmers and the Disruption* (Edinburgh, 1943).

SJB

CHAMBERS, Robert (1802-71)

Robert Chambers was born in Peebles on 10 July 1802 and died in St Andrews on 17 March 1871. He was the eldest son of a cotton manufacturer and Chambers's life was one of early hardship overcome by dedicated work. Following a youth of financial hardship in which he was largely self-educated, he joined his younger brother William in Edinburgh and co-founded the publishing firm of William and Robert Chambers, which would, in 1832, begin *Chalmers's Edinburgh Journal*, one of the most popular British weeklies. Robert's influence began primarily with his scientific articles, summarizing as they did the latest findings, allowing the reading public access to ideas previously only available to the emerging scientific profession, often at the same time presenting 'exalted views of Creative Wisdom and Providential Care', and thus clearly reflecting the tenets of William PALEY. In addition to his work with the *Journal*, he wrote and edited over forty popular works within the fields of Scottish history, folklore, biography and ethnography, and produced a number of geological papers. For these achievements, he was elected to the Royal Society of Edinburgh in 1840, and the Geological Society of London in 1848, but he is now best remembered as the author of the anonymous *Vestiges of the Natural History of Creation* (1844). Deploring the increased specialization among scientists and their lack of enthusiasm for grand, unifying theories, Chambers set out to provide

an all-encompassing theory that would unify divergent fields under the banner of universal development, which, although divinely decreed and determined, was not under ongoing divine guidance. Candidates for the authorship of an anonymous work were numerous – Ada LOVELACE, HARRIET MARTINEAU, CHARLES LYELL, CHARLES DARWIN, GEORGE COMBE, RICHARD OWEN, CHARLES BAGGAGE and even PRINCE ALBERT were all posited to be the 'Vestigenarian' – yet anyone familiar with the content of the *Journal* could easily have guessed the authorship of *Vestiges*, which was officially revealed in the posthumous twelfth edition of 1884.

Chambers's message was simple yet decidedly unsettling. The whole of the creation, from the microcosm to the universe itself, was continually undergoing a process of change – a system brought about by the laws imposed on matter by the Creator at the beginning of time. Species were continually coming into being as simple entities by a process of spontaneous generation while eventually undergoing change into more complex forms. Slight delays in gestation could allow a lower type to give birth to a higher one. In this view, a divine programmer (analogous to Babbage) could build change into the underlying laws, and thus like need not reproduce like. Within this framework change in the fossil record was understood to have often occurred in a saltatorial manner (*contra* the gradualist Darwinian interpretation). It is worth stressing that *Vestiges* lacks any notion of common descent and rests on the theme of parallel lines each stretching towards the human apex. It is also worth pointing out that Chambers's theories included both the origin of life and the origin of species, whereas Darwin refused to discuss the former. Thus, although Chambers's ideas were clearly transmutationalist, they in no way formed logical precursors to (or even comfortable bedfellows with) Darwin's.

Vestiges, far from reflecting atheistic ideology, clearly assumes that a unitary divine being was responsible for the natural laws that brought everything into being, and to modern

readers it reads with a certain charming piety. It projects an image of a world governed by a beneficent and wise Creator, an image in accordance with the accepted viewpoint of many earlier philosophers than whom natural law exalted rather than diminished God. Chambers believed that universal law was simpler (and had greater beauty) than the exceptions demanded by those geologists who clung to literal belief in Scripture. While few naturalists of the time were biblical literalists, Chambers's words would still have proved discomforting, if only because of their directness, and he eventually removed any discussions of the scriptural implications of creation by natural law from the sixth and subsequent editions.

Vestiges' initial approval in the more radical journals by the likes of Edward FORBES (*Lancet*) and WILLIAM CARPENTER (*British and Foreign Medical Review*) soon gave way to less positive responses by extreme evangelicals and establishment quarters. The *Athenaeum* published the first adverse review (in January 1845) and began an attack that was to peak with ADAM SEDGWICK's infamous rebuttal in the *Edinburgh Review* of July of that year. Above all else, the speculative nature of the work left many reviewers cold. WILLIAM HENRY SMITH felt it to be 'an assemblage of all that is most venturous and most fanciful in modern speculation' (Smith, 1845, p. 449). Criticisms were also levelled at the scientific content of the work, most famously by SEDGWICK and BREWSTER. In truth, Chambers had not expected scientific criticism, and subsequent editions were revised in direct response to his critics, leading to a number of significant changes in his argument by the tenth edition (1853). Chambers's initial reaction to his critics was contained in *Explanations* (1845), which sought to, among other things, rebut SEDGWICK's remarks. The 1846 edition of *Explanations* offered an attack on WHEWELL's *Indications of the Creator* (1845), and attempted to show how the likes of SEDGWICK, WHEWELL and WILLIAM HERSCHTEL amended

their pre-1844 statements on natural law in attempts to distance themselves from his position; in short, they were not being consistent in their beliefs nor fair to Chambers and his theory.

Much of the professional criticism of *Vestiges* was palaeontological. Many argued that the fossil record did not show the overall progress that Chambers claimed and his theory of universal development demanded. For SEDGWICK (and indeed HUGH MILLER), the fossil record was not obviously one of increased complexity; simple and complex forms occurred together, while early forms were often complex. This argument formed the central aim of MILLER's *Footprints of the Creator* (1849), a work specifically aimed against *Vestiges*. Another objection revolved around the stability of species both in the palaeontological and neontological realms. Underlying this objection was a belief in the original creation being perfect, a logic that improved and thus could not change. Chambers, along with LYELL and DARWIN, was in the forefront of those who fought against this static view of nature, and it has been often claimed that Victorian opposition to evolution towards change, particularly change that was uncontrolled by any providential force. Chambers's mechanism of rapid saltatorial (almost revolutionary) change no doubt directly confronted this viewpoint, despite his belief in distant divine control.

Critics, however, reserved much of their venom for two particular strategies that Chambers used. While Chambers often warned readers of the *Journal* of unproven conjectural theories, he felt that, while one should be wary of novel findings, the truth often comes from such. Therefore, he adopted two 'novel findings' that, more than anything else contained in *Vestiges*, opened the door for criticism. The first of these was the Nebular Hypothesis, previously advocated by Kant, SWEDENBORG, LAPLACE and HERSCHTEL. The pro-

duction of the universe from a primordial cloud was, in fact, a pre-Socratic idea, and the idea of a developmental cosmology had become associated with French revolutionaries, working-class atheists and various naturalists such as J.-B. LAMARCK, GEOFFROY ST HILAIRE and the 'philosophical anatomists' in the radical London medical schools. This was enough to bring the idea into some disrepute with the establishment. Why then did Chambers adopt the theory? First, nebular material was observable, and up until the appearance of *Vestiges*, many of the book's most notable critics (e.g. BREWSTER and WHEWELL) had tentatively supported the idea. Second, the adoption of the hypothesis allowed Chambers to infer that, since developmental models had been considered at the cosmological level, such models should then be applicable at a lower level. Unfortunately for Chambers, as he was writing, the Earl of ROSSE resolved certain nebulae into their component stars, and very soon THOMAS ROBINSON resolved further nebulae, thus casting more doubt on the hypothesis, and removing further support for Chambers's argument.

The 'fact' that received the greatest amount of ridicule from the critics was Chambers's adoption of the experiments of ANDREW CROSSE to demonstrate spontaneous generation. CROSSE believed that he had generated a new species of mite by allowing electricity to pass through a chemical solution. To Chambers, this proved that life could come from non-living matters, providing another plank for his developmental scheme. But as with the Nebular Hypothesis, his support soon disappeared. The mite was shown to be, not a new species, but a common *Acarus horridus*, and few believed it appeared by a process of spontaneous generation. As W.H. SMITH pointed out, 'we have no recoil against this generation of an animalcule by the wonderful chemistry of God: our objection to this doctrine is, that it is not proved' (Smith, 1845, p. 454).

The long battle with reviewers culminated in 1853's tenth edition, with its large Appendix

in which Chambers replied to many of his critics by demonstrating that many of the authorities he used were also the authorities of contemporary science. In attacking Sedgwick, he not only pointed out that the geologist had once held the general position that he himself advocated, but also that, being 'neither an anatomist or naturalist', Sedgwick could not be accepted as an expert in such areas. Thus, central to his defence were his views on authority and professionalism. Chambers was a talented amateur in a period which was still largely the age of the amateur, with few professional scientists. As *Vestiges* went through successive revisions, movements within the 'scientific community' were leading to increased calls for professionalization, and by the tenth edition the negative reaction from the likes of HUXLEY was largely in response to Chambers's status as an anonymous amateur who was attempting to bring scientific issues directly to the public without the mediation of the professionals who existed at that time. The common perception that Chambers lacked experience led many critics to reject him. Brewster wrote that had the author 'performed one single chemical experiment, and endeavoured to understand its import ... he would never have presumed to write this book' ([Brewster], 1846, p. 507). Ironically, Chambers was quite accomplished as an amateur geologist, and, as author of fourteen geological works between 1843 and 1864, he was well known enough for Darwin to have a correspondence with him on geological issues (particularly regarding the raised beaches at GlenRoy).

Chambers saw himself as a natural philosopher rather than as a scientist, thus cloaking himself in an older, more inclusive tradition. This allowed him, as an amateur (as were most natural philosophers), to believe that he could synthesize the writings of the professionals in a manner that was not only novel but also in a form that would educate the masses. Like his critics Miller and Huxley, Chambers functioned as a popularizer. Yet, while Chambers

was castigated for his efforts, Miller was accepted due to his obviously more pious attitude to nature and its lessons, while Huxley, as part of the emerging scientific elite, could effectively delineate boundaries and thus maintain his status as respected scientist and trusted popularizer.

The importance of *Vestiges* (and the ensuing controversy) lies in the way it cleared a certain amount of ground for the appearance of Darwin's magnum opus fifteen years later. Darwin responded to Sedgwick's fulminations with a sigh of relief, realizing that he had covered many of the cleric's objections. Other responses to *Vestiges* led Darwin to realize that the Quinary system was inherently useless, and that the specification of hypothetical genealogies was potentially dangerous.

Perhaps affected by the reception of *Vestiges*, Chambers became less enamoured with natural theology in the 1850s and shifted somewhat to spiritualism, leaving a number of unpublished manuscripts on the subject. He felt that spiritualism only required 'some careful investigation to form a respectable addition to our stock of knowledge' (William Chambers, 1872, p. 288). One must wonder, therefore, what he thought spiritualism offered? Was it that purely mechanistic science under the influence of Huxley and John TYNDALL, having shed natural theology and natural philosophy, was too sterile? Like Alfred Russel WALLACE and St George Jackson MIVART, Chambers clearly felt that there was something more to the universe than merely 'nature red in tooth and claw'.

BIBLIOGRAPHY

- Vestiges of the Natural History of Creation* (1844; repr. in James A. (ed.), *Second Vestiges of the Natural History of Creation and Other Evolutionary Writings*, Chicago, 1994; 10th edn, 1853; repr. in John M. Lynch (ed.), *Vestiges and the Debate before Darwin*, Bristol, 2000).
Explanations: A Sequel to 'Vestiges of the

Natural History of Creation' by the Author of that Work (1845; repr. in James A. Secord (ed.), *Vestiges of the Natural History of Creation and Other Evolutionary Writings*, Chicago, 1994; 2nd edn, 1846; repr. in John M. Lynch (ed.), *Vestiges and the Debate before Darwin*, Bristol, 2000).

Other Relevant Works

- [Smith, William H.] 'Vestiges of the Natural History of Creation', *Blackwood's Edinburgh Magazine*, vol. 5 (1845), pp. 448-60.
 [Brewster, David] 'Vestiges of the Natural History of Creation', *North British Review*, vol. 4 (1846), pp. 470-515.
Ancient Sea Margins, as Memorials of Changes in the Relative Level of Sea and Land (Edinburgh, 1848).
 Chambers, William, *Memoir of Robert Chambers with Autobiographic Reminiscences of William Chambers* (New York, 1872).

Further Reading

- Hodge, M.J.S., 'The Universal Gestation of Nature: Chamber's Vestiges and Explanations', *Journal of the History of Biology*, vol. 4 (1972), pp. 127-51.
 Lynch, John M. (ed.), *Vestiges and the Debate before Darwin*, 7 vols (Bristol, 2000).
 Miller, Hugh, *Footprints of the Creator* (1849).
 Millhauser, Milton, *Just Before Darwin: Robert Chambers and Vestiges* (Middletown, Connecticut, 1959).
 Secord, James A., *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of Vestiges of the Natural History of Creation* (Chicago, 2000).
 [Sedgwick, Adam] *Edinburgh Review*, vol. 165 (July 1845), pp. 1-85.
 Sedgwick, Adam, *A Discourse on the Studies of the University of Cambridge*,

5th edn (1850; repr. in John M. Lynch (ed.), *Vestiges and the Debate before Darwin*, Bristol, 2000).

JML

CHANDLER, Henry William (1828-89)

Henry William Chandler was born in London on 31 January 1828 and committed suicide by taking prussic acid at Pembroke College, Oxford on 16 May 1889. He matriculated at Pembroke College, Oxford in 1848, was elected Fellow in 1853 and thereafter to the Waynflete Chair of Moral and Metaphysical Philosophy in 1867. He was curator of the Bodleian Library from 1884 until his death. Chandler lived the life of a scholarly recluse, devoted to the study of Aristotle and his commentators. He amassed copious material for an edition of Aristotle's Fragments, in which he was unhappily forestalled by the German scholar Valentin Rose. Chandler was persuaded that a complete catalogue of works concerning Aristotle and his philosophy would have been of great scholarly interest. He himself contributed to a portion of that catalogue (*A Catalogue of Editors of Aristotle's Nicomachean Ethics*, 1868; and *Chronological Index of Editions of Aristotle's Ethics and of Work Illustrative of Them*, 1898). He is the author of a standard work on Greek accentuation. On his death he left behind him a remarkable collection of Aristotelian literature that found a permanent home in Pembroke Library.

BIBLIOGRAPHY

- Paraphrase of the Nicomachean Ethics of Aristotle*. Book the First (Oxford, 1859).
A Practical Introduction to Greek Accentuation (Oxford, 1862; rev. edn, Oxford, 1881).

Robert Chambers, the anonymous author of *Vestiges of the Natural History of Creation* (1844), and in 1845 Sedgwick got his chance to attack the work in the *Edinburgh Review*, in an essay that was described by Clark and Hughes as 'one of the most noteworthy of Sedgwick's works' yet was marred by his use of 'savage ferocity instead of calm criticism or good-humoured ridicule' (Clark and Hughes, vol. 2, pp. 81, 88). In spite (or perhaps because) of the aggressiveness of Sedgwick's attack, *Vestiges* continued to be popular with the reading classes. Feeling that another attempt at refutation was warranted, he dusted-off the *Discourse*, and a fifth edition appeared in 1850.

Despite its greatly increased length, this edition of the *Discourse* really presented little new in the way of argument against transmutation beyond that offered in the *Edinburgh Review* article. As he had before, Sedgwick attacked *Vestiges* using a number of what were, at that time, standard arguments: (1) the invalidity of the Nebular Hypothesis; (2) lack of evidence for spontaneous generation; (3) lack of 'progress' within the fossil record; (4) the occurrence of 'complex' and 'simple' forms together in geological strata; (5) the complexity of many early forms; (6) constancy of 'types' and the permanence of species within the neontological realm; and (7) presence of perfection within nature. In some ways, this edition of the *Discourse* was symptomatic of Sedgwick's inability to put his best ideas down on paper. We are left with a sprawling, often confused, work that still manages to present a snapshot of Sedgwick's concerns for the future of Victorian culture and thought. As with his previous defences of design, it is his concern with the social fabric that appears foremost. Should the views within *Vestiges* become widely accepted, Sedgwick could 'see nothing but ruin and confusion... it will undermine the whole moral and social fabric, and inevitably will bring discord and deadly mischief in its train' (*Discourse*, 1850, pp. clxx-clxxi). While Sedgwick clearly felt the book to be morally pernicious, it was not the only work attacked

the former two areas, and particularly stressed the value of science within the curriculum, he castigated the utilitarian ideas of William PALEY as expressed in his *Principles of Moral and Political Philosophy* (1785), a work which was a staple of the undergraduate curriculum. Despite his place within this curriculum, a sermon against Paley was *de rigueur* among the younger clerics, and utilitarianism, whether of the Paleyite or Benthamite flavour, was old-fashioned – an eighteenth-century mode of thought attacked for its 'degrading effect on the temper and conduct of those who adopt it' (*Discourse*, p. vi). While accepting Paley's natural theology, Sedgwick felt that his moral philosophy was reductionist, secular and thus amenable to misuse by social radicals – a view he would come to hold about evolution.

Turning to the natural sciences, Sedgwick saw the goal of natural science as the decipherment of the records of creation. All parts of the universe were 'knit together by the operation of a common law' which offers proof of 'beauty, and harmony, and order' (*Discourse*, p. 13). This in turn yielded to the argument from design and the Designer – a proof 'so strong that it never has been and never can be gainsaid' (*ibid.*, p. 19). Key to this stand was his belief that it was mischievous to consider an efficient cause as an adequate explanation for a phenomenon while denying the existence of a Final Cause. Properly interpreted, the facts of science gave clear evidence for a mind behind the creation – the Final Cause that was intelligent, benevolent, and clearly evidenced in the world. Above all else, Sedgwick clearly saw that any naturalistic mechanism of transmutation ('a theory no better than a phrenzied dream', *ibid.*, p. 23) which was applied to other species must also be applied to humankind, which would thus risk nullifying any feelings of morality and personal responsibility that were responsible for social cohesion. Materialistic science and philosophy would thus result in social collapse. Such views were directly challenged by the universal transmutationism espoused by

educational reformers at Cambridge. Early in his career Sedgwick became part of a loosely knit group of scholars who were instrumental in transforming Cambridge into a modern educational institution; for example, he supported Connop THIRLWALL's reforms – including the admission of dissenters. He was instrumental in establishing new Tripos examinations in moral sciences and natural sciences (1848), and at the insistence of Prince Albert, was appointed to a Royal Commission examining university reform which led to Parliamentary action in 1856. Despite his impact on the intellectual landscape of Cambridge, Sedgwick is chiefly remembered as a geologist and an opponent of materialistic science (as exemplified in his mind by the writings of Charles LYELL, Robert CHAMBERS and Charles DARWIN). While all evidence suggests that his ordination in 1818 was for more pragmatic than theological reasons, in 1834 he was offered a prebendaryship at Norwich Cathedral, a position he held up until his death.

Nowhere is Sedgwick's involvement in the Cambridge reform movement more obvious than in his *Discourse on the Studies of the University*, a work which also highlighted his general philosophy. First presented as a sermon on 17 December 1832, the *Discourse* was published due to student demand. Throughout the five editions published between 1833 and 1850, Sedgwick's central themes remained unchanged, and his apologia for his views of the curriculum at Cambridge remained constant. His aim, simply put, was to put the curriculum into perspective for the undergraduates, demonstrating the compatibility between their studies and their beliefs, and justifying what he termed 'sound learning and Christian education' (*Discourse*, p. 8). However, it would be rash to imagine that Sedgwick did not have a more aggressively polemical goal.

Turning to the natural sciences, Sedgwick saw the goal of natural science as the decipherment of the records of creation. All parts of the universe were 'knit together by the operation of a common law' which offers proof of 'beauty, and harmony, and order' (*Discourse*, p. 13). This in turn yielded to the argument from design and the Designer – a proof 'so strong that it never has been and never can be gainsaid' (*ibid.*, p. 19). Key to this stand was his belief that it was mischievous to consider an efficient cause as an adequate explanation for a phenomenon while denying the existence of a Final Cause. Properly interpreted, the facts of science gave clear evidence for a mind behind the creation – the Final Cause that was intelligent, benevolent, and clearly evidenced in the world. Above all else, Sedgwick clearly saw that any naturalistic mechanism of transmutation ('a theory no better than a phrenzied dream', *ibid.*, p. 23) which was applied to other species must also be applied to humankind, which would thus risk nullifying any feelings of morality and personal responsibility that were responsible for social cohesion. Materialistic science and philosophy would thus result in social collapse. Such views were directly challenged by the universal transmutationism espoused by

educational reformers at Cambridge. Early in his career Sedgwick became part of a loosely knit group of scholars who were instrumental in transforming Cambridge into a modern educational institution; for example, he supported Connop THIRLWALL's reforms – including the admission of dissenters. He was instrumental in establishing new Tripos examinations in moral sciences and natural sciences (1848), and at the insistence of Prince Albert, was appointed to a Royal Commission examining university reform which led to Parliamentary action in 1856. Despite his impact on the intellectual landscape of Cambridge, Sedgwick is chiefly remembered as a geologist and an opponent of materialistic science (as exemplified in his mind by the writings of Charles LYELL, Robert CHAMBERS and Charles DARWIN). While all evidence suggests that his ordination in 1818 was for more pragmatic than theological reasons, in 1834 he was offered a prebendaryship at Norwich Cathedral, a position he held up until his death.

Nowhere is Sedgwick's involvement in the Cambridge reform movement more obvious than in his *Discourse on the Studies of the University*, a work which also highlighted his general philosophy. First presented as a sermon on 17 December 1832, the *Discourse* was published due to student demand. Throughout the five editions published between 1833 and 1850, Sedgwick's central themes remained unchanged, and his apologia for his views of the curriculum at Cambridge remained constant. His aim, simply put, was to put the curriculum into perspective for the undergraduates, demonstrating the compatibility between their studies and their beliefs, and justifying what he termed 'sound learning and Christian education' (*Discourse*, p. 8). However, it would be rash to imagine that Sedgwick did not have a more aggressively polemical goal.

Contributions to Political Economy, vol. 12 (1993), pp. 47–69.
Rashid, Salim, 'Political Economy and Geology in the Early Nineteenth Century: Similarities and Contrasts', *History of Political Economy*, vol. 13 (1981), pp. 726–44.

Rudwick, M.J.S., 'Poulett Scrope on the Volcanoes of Auvergne: Lyellian Time and Political Economy', *British Journal for the History of Science*, vol. 7 (1974), pp. 205–42.
Stack, David, 'The "Secret Concatenation" in the Mid-Nineteenth Century: The Case of George Poulett Scrope, a Still Neglected Political Economist', *History of Political Economy*, vol. 32 (2000), pp. 553–84.

PM

SEDGWICK, Adam (1785–1873)

Adam Sedgwick was born in the village of Dent, Yorkshire on 22 March 1785 and died in Norwich on 27 January 1873. The second son of Richard Sedgwick, the vicar of the parish, he graduated fifth Wrangler in mathematics from Trinity College, Cambridge in 1808 and was elected a Fellow of Trinity in October 1810. In 1818 he succeeded the Revd John Hailsone as Woodwardian Professor of Geology – a position which stipulated that he would remain unmarried – and, along with J.S. Henslow, he founded the Cambridge Philosophical Society in the following year. As a Cambridge professor and ordained Anglican, Sedgwick saw Christianity as a vital part of the underlying fabric of civilized society, and as Senior Proctor he was responsible for ensuring that the resident students did not stray from the path of moral righteousness. Yet, as an examination of his achievements show, behind this traditionalism lay one of the most prominent

primacy of the Word over observations in the natural world. As he said while clutching a Bible—'Who is the greatest unbeliever? Is it not the man who, professing to hold that this book contains the Word of God, is afraid to look into the other volume, lest it should contradict it?' (Clark and Hughes, vol. 2, p. 582). Sedgwick would have little time with many modern opponents of evolution (particularly in the United States) who use biblical verse to override geological observation. What is fascinating is that his writings contain many of the objections, both scientific and social, that continue to be used by anti-evolutionists (of all types) to this day.

Modern historiography has not been kind to Sedgwick. He has often been portrayed as a conservative opponent to evolutionary ideas, and a man inspired by the dogmatism of his faith rather than by scientific observations. It is clear that this is not the case, and Sedgwick presents the figure of a complex individual trying to negotiate successfully the often startling scientific and intellectual changes within nineteenth-century Britain.

BIBLIOGRAPHY

- 'Presidential Address to the Geological Society', *Proceedings of the Geological Society of London*, vol. 1 (1831), pp. 281–316.
- A Discourse on the Studies of the University of Cambridge* (1833; 5th edn, 1850; repr. in John M. Lynch (ed.), *Vestiges and the Debate before Darwin*, Bristol, 2000, vols 3 and 4).
- 'Vestiges of the Natural History of Creation', *Edinburgh Review*, vol. 165 (July 1845), pp. 1–85.

Other Relevant Works

- Hudson, J., *A Complete Guide to the Lakes ... With Mr Wordsworth's description of the scenery of the country, etc. and three letters on the geology of the Lake District by Professor Sedgwick*, 4th edn (1853; 5th edn, 1859).

It is also clear that Sedgwick was not a religious opponent of the new geology. While Sedgwick had originally been a believer in a young earth and in 'Flood' or 'Mosaic' geology, he recanted this view in his 1831 address as President of the Geological Society. He termed flood geology 'a philosophic heresy' and felt that Mosaic geologists 'committed the folly and sin of dogmatizing on matters they have not personally examined' ('Presidential Address', p. 313). This recantation illustrates his lifelong view that scientists should not use religion as the handmaid of geology, or theologians the facts of science to prove their theological premises. Sedgwick became a 'Gap theorist', a believer in a period between the first and second verses of Genesis which corresponded to the geological record as observed. As he said at the 1844 British Association for Advancement of Science meeting while defending geology against the literalism of William Cockburn, the second verse 'may perhaps describe the condition of the earth after one of the many catastrophes by which its former structure had been broken up, and of which we can, on its present surface, find so many traces' (Clark and Hughes, vol. 2, pp. 79–80). Conflicts between science and religion were not to be solved by

shifting and shuffling the solid strata of the earth, or dealing them out in such a way as to play the game of an ignorant and dishonest hypothesis – not by shutting our eyes to the facts, or denying the evidence of our senses; but by patient investigation carried out in the sincere love of truth and by learning to reject every consequence not warranted by direct physical evidence.

(*Discourse*, p. 111)

While his views on the age of the Earth changed radically, his opposition to transmutation remained constant throughout his life. This aside, Sedgwick clearly cannot be seen in the same mould as the scriptural geologists who opposed scientific investigation, citing the

because of perceived threats to society. Other works assailed included David Friedrich Strauss's *Das Leben Jesu*, Hegel's *Philosophy of Nature*, Locke's *Essay concerning Human Understanding*, Lorenz Oken's *Physiophilosophy* and the Oxford Movement's *Tracts for the Times*. The resistance to Oken's work gives us a clue as to one of the underlying reasons for Sedgwick's extended tirade – Sedgwick was clearly rooted in the Cuverian functionalism of Cambridge, in direct opposition to the Romantic transcendentalism of Edinburgh and London. As a believer in universal design and teleology, he had to reject the transcendental anti-teleological theories of Oken, even if modified for British tastes by Chambers or Richard Owen. Sedgwick was deeply hostile to Owen's attempts to bring Oken to Britain, and expressed vocal concern about the eminent anatomist's transcendental leanings.

One is tempted to come away from *Discourse* with the impression that Sedgwick opposed the inroads that proto-modernity and scientific thought were making into British society – this would however be a gross oversimplification as he played a great part in the development of modern geology. Prominent in the Geological Society (Fellow 1818, President 1829) and the British Association for the Advancement of Science (President 1831), Sedgwick, along with William Buckland and Lyell, co-authored a governmental report which led to the foundation of the Geological Survey, thus aiding the professionalization of British geology. As a scientist, Sedgwick is remembered as the author of a number of significant papers rather than of monumental works (as was Lyell and some of his peers), yet his own research left a mark on the development of geological science. Between 1836 and 1840 he co-authored an influential series of papers with Roderick Murchison which established the Devonian era, and subsequently a number of disputes with Murchison (and others) were to deeply influence mid-nineteenth-century geology.

A Memorial by the Trustees of Cowgill Chapel (Cambridge, 1868).

Supplement to the Memorial by the Trustees of Cowgill Chapel (Cambridge, 1870).

Preface, in J.W. Salter, *A Catalogue of the Collection of Cambrian and Silurian Fossils Contained in the Geological Museum of the University of Cambridge* (Cambridge, 1873).

Further Reading

- Clark, J.W. and T.M. Hughes, *The Life and Letters of the Reverend Adam Sedgwick*, 2 vols (Cambridge, 1890; Farnborough, 1970).
- Garland, Martha McKinnon, *Cambridge Before Darwin, The Ideal of a Liberal Education 1800–1860* (Cambridge, 1980).
- Rudwick, Martin J.S., *The Great Devonian Controversy: The Shaping of Scientific Knowledge Among Gentlemen and Specialists* (Chicago, 1985).
- Secord, James, *Controversy in Victorian Geology: The Cambrian-Silurian Debate*, (Princeton, 1986).
- Spekman, Colin, *Adam Sedgwick, Geologist and Dilettante 1785–1873: A Biography in Twelve Themes* (1982).

JML

SEELEY, John Robert (1834–95)

John Robert Seeley was born in London on 10 September 1834 and died in Cambridge on 13 January 1895. He was educated at the City of London School before entering Christ's College, Cambridge in 1852, graduating in 1857, bracketed first in the Classical Tripos and winning the Senior Chancellor's Medal. He was classical lecturer at Christ's until 1859 (when he returned to his old school as chief classical assistant) and also a Fellow of the