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The Impact of Darwinism on the Concept of God in the Nineteenth Century ¹

In this fascinating historical study Dr. Young, a Research Fellow in the Department of Neurobiology of the Australian National University, Canberra City, focusses attention on the influence of evolutionary theory on the Christian idea of God. Using apt quotations he pin-points the issues which 19th century theologians and scientists felt to be at stake and traces much current thinking to its 19th century source.

The origins and development of the theory of evolution in the 19th century have been described and analysed repeatedly both by historians and by scientists, but the influence of evolution upon theology has received relatively little attention. In this essay I have tried to take a fresh look at certain aspects of this influence, taking full advantage of recent historical studies and newly available materials, and to give due weight to it as an episode in the history of religious ideas. ²

Our study takes us back into the midst of a vigorous public debate ranging far beyond the confines of scientific criticism. 'Darwinism', as the Victorians called it, was an issue that

produced genuine divisions of conviction in the 1860's comparable, for example, to the Vietnam issue in the 1960's. Both Gladstone and Disraeli thought it important enough for public comment, while Wilberforce and Gladstone made fools of themselves debating the issue with Huxley. One exchange between Gladstone and Huxley turned on whether or not the miracle of the Gadarene swine had been a divine infringement of human property rights! On a more serious level the advances of geology and biology, which culminated in the *Origin of Species*, raised issues ranging widely over the concept of God, the authority of the Bible and the nature of man. These matters were all interwoven but I have here taken the liberty of dissecting out only those opinions which bear upon the concept of God. I have also made extensive use of quotation so as to give a better picture of what was actually said at the time. The important intellectual background to this debate lies on the one hand in early nineteenth century natural theology and on the other hand in the emerging sciences of geology and biology.

William Paley and Adam Sedgwick

There is no better starting place for the views of natural theology than the works of Rev. William Paley at the turn of the eighteenth and nineteenth centuries. In many ways Paley is a figure who sums up the eighteenth century outlook and yet casts his shadow a long way into the nineteenth century, so making an effective bridge between the two. It is in his best known work, *Natural Theology*,³ that Paley presents the design argument for the existence of God, beginning with the famous analogy of a watch implying a watchmaker. He first sets out the limitations of this analogy and then extends the argument that contrivance implies design to the findings of biology, giving a long catalogue of adaptations in cumulative support for his argument. He concludes by attempting to meet difficulties posed by the problem of evil, by chance and by natural explanations of adaptations. But Paley was not a deist, and his *Evidences of Christianity*⁴ was an impressive compendium of the arguments

used to oppose deism and defend revelation and miracle in the eighteenth century.

Paley's writings are clear and cogent and his reputation in the early nineteenth century was well deserved. For instance, Darwin, looking back on his Cambridge career, ⁵ refers to the reading of Paley's works as the only part of the course which "was of the least use to me in the education of my mind." Paley's system became the standard harmonization of theology with the latest findings in biology. It was not uncommon to find references to it in the professional papers of biologists. The famous anatomist, Richard Owen, describing for the first time the ingenious adaptations for suckling in kangaroos, refers to this as "the most irrefragable evidence of creative foresight." ⁶ Not that everybody was impressed. The young poet Shelley, much influenced by Holbach and continental philosophy, wrote a pamphlet on *The Necessity of Atheism* and was moved to remark of Paley's system: "I had rather be damned with Plato and Lord Bacon than go to Heaven with Paley and Malthus." ⁷

Paley's system was enlarged and repeated many times during the succeeding forty years but it was hardly ever improved upon. It was epitomised, at more than sufficient length, in the Bridgewater Treatises of the 1830's. These served to expand Paley's system with reference to the latest results of science, especially biology, thereby reinforcing the evidence for God as Designer and Creator and also as superintending Deity. Paley's work lacked any historical dimension but by the 1830's the historical dimension in science had made itself felt in discussions of natural theology. This was taken into account by those Bridgewater authors who had appropriate topics, notably Buckland and Whewell. However, this whole style of approach is more conveniently illustrated by a short volume from the same period by Rev. Adam Sedgwick. ⁸ It is worth quoting in some detail as giving both the form and flavour of this approach. Sedgwick describes the work of the new science of geology, showing the light it throws on the history of the world and its inhabitants. He plainly emphasises the design argument:

Contrivance proves design: in every organic being we survey (and how countless are the forms and functions of such beings!) we see a new instance of contrivance and a new manifestation of an intelligent superintending power. ⁹

But Sedgwick's mind is then darkened by the possibility of those who might explain such things in terms of a connected succession of natural causes and he deals sharply with this possibility:

It is in vain that we attempt to banish an intelligent Creator, by referring all changes organic and inorganic, to a succession of constant material actions, continued during an eternity of past time. Were this true, it would not touch our argument: and every clear instance of organic contrivance or material adaption, would be a phenomenon unexplained, except on the supposition of a contriver. It would only prove that, in a certain portion of space, God had thought fit to give a constant manifestation of his wisdom and power through an indefinite period of duration. ¹⁰

This is a fair enough argument but the study of geology provides another way round this difficulty which Sedgwick is quick to point out. He has in mind the rapidly increasing evidence that different sets of fossils are characteristic of different geological strata, and this is his interpretation of it:

At succeeding epochs, new tribes of beings were called into existence, not merely as the progeny of those that had appeared before them, but as new and living proofs of creative interference: and though formed on the same plan, and bearing the same marks of wise contrivance, oftentimes as unlike those creatures which preceded them, as if they had been matured in a different portion of the universe and cast upon the earth by the collision of another planet. ¹¹

Here lies the great benefit of geological study for natural theology, in Sedgwick's view. He explicitly makes the point that in adding the historical dimension to the study of the world, geology

shows intelligent power not only contriving means adapted to an end: but at many successive times contriving a change of mechanism adapted to a change of external conditions; and thus affords a proof, peculiarly its own, that the great first cause continues a provident and active intelligence. ¹²

Now this general line of argument was entirely typical of the period. On the one hand, the adaptations of living things and the regularity of natural laws argued for the existence of the Creator; on the other hand "creative interference" with those laws showed that the Creator was an active force in a providential world. Both lines of argument were integral parts of the system and were used together. Natural law indicated design and hence God, miracle proved there was an active God.

A Difficulty

But this led to another, and less welcome, point of view. The former view pictured God as having made the world and imposed laws on it, laws which it invariably observes unless He interferes to modify the operation of His own laws. From this sprang the later view that it would better comport with the infinite majesty of God that He should from the outset impose such laws as would never stand in need of modification. This view was put forward, for example, by Charles Babbage in his uninvited *Ninth Bridgewater Treatise*. ¹³ He is famous for his "Calculating Engine," the forerunner of the modern computer, which he uses to illustrate his point. To use modern terminology, he imagines a computer which is programmed to repeat some numerical operation for a long series of terms, changes to a second form of operation for another long series of terms and then changes to a third form and so on. He then asks which computer engineer we should most respect: the one who could design his computer to achieve all this with one programme or the one whose computer would have to be interrupted and reprogrammed for each change of operation. The application of this point to Sedgwick's type of argument is obvious enough.

The same point was also argued by Rev. Baden Powell, who provided a sustained philosophical interpretation of this view.¹⁴ He particularly argues that a change in this direction would in any case be necessitated by the advance of science which now extended the uniformity of nature in time as it had previously extended it in space. The distinction between present and past would soon be as obsolete as the distinction between terrestrial and celestial.

This view did not commend itself to those who looked to miracles in the history of nature as proof that God was the active God of the Bible and not merely some remote Deity. When Sedgwick said that the question of the uniformity of natural laws "would not touch our argument" he obviously never really expected that it would come to this. A few years later, Robert Chambers published anonymously his *Vestiges of the Natural History of Creation*¹⁵ which put forward a popular but inaccurate evolutionary interpretation of current scientific results. Poor Sedgwick was horrified. In reviewing the book he writes:

The world cannot bear to be turned upside down . . .
if our glorious maidens and matrons may not soil their
fingers with the dirty knife of the anatomist, neither may they
poison the springs of joyous thought and modest feeling,
by listening to the seductions of this author . . .
who tells them — that their Bible is a fable when it teaches
them that they were made in the image of God —
that they are children of apes and breeders of monsters —
that he has annulled all distinction between physical and
moral — and that all the phenomena of the universe,
dead and living, are to be put before the mind in a new
jargon, and as the progression and development of a rank,
unbending, and degrading materialism.¹⁶

One might be forgiven for thinking that Sedgwick had made his point but this review lasts for another 82 pages! Yet Sedgwick was not a crank. He was Professor of Geology at Cambridge and a Fellow of the Royal Society, one of the most able field geologists of the century: but a scientist who had suddenly been faced with the implications of his own subject for his religious

philosophy and who was completely at a loss to understand them. To appreciate more clearly why this should have been true not only of Sedgwick but of so many of Sedgwick's contemporaries, we must turn to the scientific background during this period.

Scientific Background

During the first half of the nineteenth century, a picture of very rapid advance emerges in the sciences of geology and biology. From the first beginnings of historical geology in Hutton's *Theory of the Earth*¹⁷ to its culmination in Darwin's *Origin of Species* is a period of just over sixty years. Now this compares favourably with, say, the period of about fifty years from the origin of modern genetics to the discovery of the structure of DNA so that scientific advances were occurring rapidly even by modern standards. Particularly noteworthy is the development of the concepts of time and of historical change within geology and biology, a feature characteristic of other disciplines about this time.¹⁸ Nor was this the simple unfolding of modern concepts that it is often represented to be with the benefit of hindsight.

A central figure in this story was that of Sir Charles Lyell, who published the first volume of his important *Principles of Geology* in 1830.¹⁹ The subtitle put his position in a nutshell: *an attempt to explain the former changes of the earth's surface by reference to causes now in operation*. Lyell's central point was that the past could be understood scientifically only by reasonable analogy with the present and that so far as the history of the earth's surface was concerned, this procedure was adequate to account for the facts. This position became known as *Uniformitarianism*, which contrasted with the prevalent idea of *Catastrophism* advocated by the majority of able geologists, including Sedgwick. The catastrophist position maintained that the surface of the earth had been subjected in the past to a series of violent changes out of all proportion to anything known at present. As we have seen, these changes were conventionally identified with 'creative interferences' by the Deity.

However, leading catastrophists were also convinced that the fossil record showed progressive development in living organisms. At each succeeding creative epoch, a new and more highly organised set of animals finally culminating in MAN, had been placed on the earth. In his *Discourse*, Sedgwick was glad to emphasise that geology proved the recent origin of man "independently of every written testimony." It was this loose correlation with the book of Genesis as well as the benefits of creative interference that gave this view its great charm. But Lyell was fully opposed to this progressive scheme because it involved "creation" and so took the matter outside the bounds of scientific discussion. This led him to take up not merely a uniformitarian position but also an anti-progressionist one. In any case, he felt justified in this by the state of the palæontological evidence.

An interesting example of this difference of opinion was provided by the discovery of some primitive mammals, thought to be marsupials, in the slate at Stonesfield — a discovery later confirmed by similar fossils at Purbeck. This put them well before the recognised age of mammals and contemporaneous with the great reptiles. Lyell felt this reflected adversely on any progressive interpretation of the fossil record. But Conybeare, a noted Oxford geologist who led the catastrophist attack on Lyell's book, did not think so. He wrote to Lyell:

You surely cannot consider the wretched little marsupials of Stonesfield to counterbalance the general bearing of the whole evidence — for all that it would lead to is only this, that in the secondary strata a class of Vertebrata intermediate in their plan between true Mammalia and the lower classes first showed themselves. ²⁰

Nowadays, one can see that the essence of Conybeare's remark is perfectly correct; indeed it has an almost evolutionary ring about it. Yet it comes from an arch-catastrophist whose natural theology was the same as Sedgwick's. Thus on this point the issue was not of catastrophism versus uniformitarianism but of Conybeare's progressive model versus Lyell's steady-state model

of earth history. Lyell was well aware of the possibility of an evolutionary interpretation of progressionism but he was not impressed by it and in the second volume of the *Principles of Geology* he gave a penetrating critique of Lamarck's evolutionary account of organic progression. So that at the time, Lyell's uniformitarianism did not lead naturally to Darwinian evolutionism although it prepared the way for it; rather it was Darwin's evolutionary interpretation that was able later to lead Lyell away from his steady-state version of uniformitarianism. There are, of course, further complications to this subject but this is sufficient to give an inkling of the subtlety of the evolution of historical concepts in geology and biology. ²¹

In England at least, natural theology was intimately bound up with this development in the minds of the participating scientists themselves. Consequently natural theology was profoundly influenced by the development of geology and in turn had its effect on geological opinion. The changing theological opinions were the result of a continuing response to scientific developments within the framework of existing natural theology. At the same time, it was not thought improper to let moral and theological tendencies influence scientific theory on such weighty matters. In this instance such considerations tended to influence catastrophists in favour of progression and this had the effect of frightening Lyell away from it. If Sedgwick was concerned that *without* creative interference there might be no God, then Lyell was concerned that *with* creative interference there would be no science. Lyell had all along linked progression with the possibility of an evolutionary interpretation and so it astonished him that men like Conybeare and Sedgwick could not see where their natural theology was taking them.

Species Problem

To see why this should be so, we must look at the state of what was called the Species Problem in the decades before Darwin. Sir John Herschel had referred to the origin of species

as "that mystery of mysteries" in a letter to Lyell in 1836²² but he went on to say that eventually it "would be found to be a natural in contradistinction to a miraculous process — although we perceive no indications of any process actually in progress which is likely to issue in such a result." Lyell was very much of the same opinion. His own hesitancy was reinforced by his ability to see all sides of the question and by his clear appreciation of the wider implications of the problem :

The ordinary naturalist is not sufficiently aware that when dogmatizing on what species are, he is grappling with the whole question of the organic world and its connection with time past and with Man; that it involves the question of Man and his relation to the brutes, of instinct, intelligence and reason, of Creation, transmutation and progressive improvement or development.²³

But even those who had no hesitations on these grounds could not foresee the way forward, as the example of T. H. Huxley indicates. In his notebook for 1858, Lyell recorded that Huxley "thinks something like transmutation and progression must be true, though not as stated by *Vestiges* and others."²⁴ Huxley explained his position retrospectively in a most instructive essay contributed to Darwin's *Life and Letters*. He held back from an evolutionary theory because up to that time the evidence for evolution seemed wholly insufficient and because no adequate explanation of the causes of evolution had been put forward. Huxley, therefore, like everybody else, was taken by surprise by the brilliant originality of Darwin's synthesis. Having read the *Origin*, he made the famous remark: "How extremely stupid not to have thought of that!" As he explains:

The facts of variability, of the struggle for existence, of adaption to conditions, were notorious enough; but none of us had suspected that the road to the heart of the species problem lay through them, until Darwin and Wallace dispelled the darkness.²⁵

That the introduction of new species could not be accounted for even by those who felt that it must eventually yield to some

natural explanation, helps to explain how it was that many able men, fully acquainted with geology and biology, were still able to use the special creation of living organisms and especially of man as the last link connecting natural and revealed theology. Take, for further example, the case of Rev. William Whewell, Master of Trinity College, Cambridge. A man of encyclopædic learning, his interests and competence ranged from mechanics and geology through the history and philosophy of science to moral philosophy and natural theology. He was a leading figure in scientific debate and was adept at coining new and appropriate terms. The word "scientist" is his and it was he who termed the geological debate 'uniformitarian — catastrophist'. In view of the growing appreciation of Whewell by historians and philosophers of science, his opinions on this topic are particularly noteworthy. When reviewing the recent development of geology, he consistently backed the progressionist interpretation of the fossil record. In the light of this, he was able to look the species problem straight in the face :

The dilemma then presents itself to us anew : either we must accept the doctrine of the transmutation of species, and must suppose that the organised species of one geological epoch were transmuted into those of another by some long-continued agency of natural causes ; or else we must believe in many successive acts of creation and extinction of species, out of the common course of nature ; acts which, therefore, we may properly call miraculous. ²⁶

Whewell had no hesitation in opting for the latter alternative. He concluded, rightly enough at the time, that geology was not competent to account for the origin of the animals and plants of the fossil record. For Lyell to suggest that the creation of new species might form a regular part of the economy of nature when no evidence for this was forthcoming was an inconsistency that formed the Achilles heel of uniformitarianism. Whewell thought it more consistent to recognise that, in this inability to explain the origin of species, geology pointed beyond itself to the region of natural theology. "The mystery of creation is not within the range of her legitimate territory" ; he said of geology,

“ she says nothing, but she points upward.” ²⁷

When the *Vestiges* appeared, Whewell did not go hysterical like Sedgwick but thought it sufficient refutation to publish a few extracts from his earlier work (including the above) with a brief preface outlining some objections to evolution, under the title *Indications of the Creator*. Later, however, when Darwin's *Origin* appeared, he was quite staggered for he rightly saw that the *Origin* was not to be dismissed so lightly. He wrote to Darwin: “ I cannot, yet at least, become a convert. But there is so much of thought and of fact in what you have written that it is not to be contradicted without careful selection of the ground and manner of the dissent.” ²⁸ But Whewell dissented in a practical manner for some years, by refusing to allow a copy of the *Origin* to be placed in the library of Trinity College. In justice to Whewell, one should note that much of his natural theology was sensible and of a high standard; we have focussed on the point of dilemma. Huxley, however, commented sarcastically on Whewell's position and saw clearly the inevitable lesson to be drawn:

If we had none of us been able to discern the paramount significance of some of the most patent and notorious of natural facts, until they were, so as to speak, thrust under our noses, what force remained in the dilemma — creation or nothing? It was obvious that, hereafter, the probability would be immensely greater, that the links of natural causation were hidden from our purblind eyes, than that natural causation should be incompetent to produce all the phenomena of nature. ²⁹

One can see with the benefit of hindsight how the advance of science turned the two pronged argument of natural theology into an awkward dilemma. For though the argument for design from organic contrivance drew on the results of modern science, the argument for a superintending providence rested on events which seemed to be inexplicable on scientific grounds. As it turned out, this meant that the evidence for God's existence was based on what science had discovered and the evidence for His continued activity on what it had not. Consequently, as science

progressively explained more and more in terms of natural causes there were fewer and fewer events left which could be attributed to divine activity.

It is particularly clear that the older natural theology had not reckoned with the progressive nature of science. It was precisely because the origin of species seemed out of reach of ordinary scientific explanation that confidence was felt in urging the claims of religion in such a territorial fashion. Often, it was practising scientists who said that something must be inexplicable in natural terms while they themselves, by their own scientific work, prepared for such an explanation. But this, of course, is in no way peculiar to a religious view of scientific work. It is a well recognised characteristic of changes in thought as great as that effected by Darwin, that the purely scientific experts of the time are taken by surprise and often reject the new views. And this means that the grounds for declaring the scientific explanation of something to be inconceivable may be undermined by new ideas which cannot be foreseen. It is intriguing that Whewell himself seems not to have grasped this point, nor its relevance to natural theology although he clearly appreciated the progressive nature of scientific discovery. He himself paid attention to this very point of the "transformations of hypotheses in the history of science" and remarked on how the mind will deny entry to the new and unfamiliar hypothesis with "a degree of obstinacy and captiousness which now appears to us quite marvellous." ³⁰ Whewell's reaction to the theory of evolution would have been a good example for his own essay!

Thus it is not to be expected that the theological thought of the period would have accommodated itself instantly to the new discoveries. After all, the framework of natural theology in the first half of the nineteenth century was continually developed in conscious response to the advances of science in this period. The fatal weakness of this structure was the special theological significance attached to the scientifically inexplicable and mysterious as indicative of God's active governance of the world. Yet this weakness was apparent only in retrospect and

in the second quarter of the nineteenth century this view made a reasonable harmony between the prevailing concepts of natural law and divine miracle, the latest results and the limitations of scientific enquiry and the Scriptural history of the world. But obviously they were not prepared for the extent or nature of the adjustments that were next required of a theological world on view by the theory of evolution. The unforeseeable nature of this scientific advance meant that only the actual arrival and acceptance of a respectable theory of evolution could reveal the requirement for drastically remodelling the concepts of God in relation to this world. To this extent, then, impact of scientific discoveries on the prevailing theological conceptions to a degree deserving the name crisis or conflict appears to have been historically inevitable.

P. H. Gosse

In the years following publication of Darwin's *Origin of Species* things were to get worse before they got better. Being ill prepared for this advance, Christian theology suffered from a loss of philosophical nerve. The reactions of the majority of intelligent men tended toward two opposite points of view. On the one hand there was the philosophical ineptitude of the conservative reaction against the new knowledge. One of the most fascinating, and most extreme, examples of this is seen in Philip Henry Gosse. To view him more sympathetically than is usual, one can see him as a striking example of the confusion experienced by the conservative mind. He published his notorious book, *Omphalos*,³¹ shortly before the publication of Darwin's *Origin* and its arguments were much used, or misused, by conservative opponents of evolution — including Bishop Wilberforce — in the period after the *Origin*.

Gosse's thesis is clearly and simply stated. He argued that since all animals and plants undergo a cyclical life history, creation cannot break into the life cycle at any one point without having appeared to have passed through the other stages of the

cycle. So that if an animal arose by special creation at some instant in time it must inevitably contain structures indicative of an apparent previous or *prochronic* existence before the moment of creation. A tree must be created complete with prochronic growth rings, Adam with a prochronic navel, etc. He called this the "law of organic creation" and went on to suggest that it might apply not merely to individuals but even to the entire Chain of Being :

If, then, the existence of retrospective marks, visible and tangible proofs of processes which were prochronic, was so necessary to organic essences, that they could not have been created without them, — it is not absurd to suggest the *possibility* (I do no more) that the world itself was created under the influence of the same law, with visible and tangible proofs of developments and processes, which yet were only prochronic ? ³²

Although he does not explicitly say so, it is quite clear that Gosse was prepared to believe on the basis of this scheme that the earth's rocks had been created complete with prochronic fossil record. Even Gosse himself realised that "it follows that such records are *false*, so far as they testify to time" and his contemporaries were quick to assure him that the possibility which he suggested was absurd.

Nevertheless Gosse was not a stupid man ; he was a Fellow of the Royal Society and a distinguished marine biologist and microscopist. Yet he could adopt a view which renders all history impossible ; for, as Bertrand Russell remarked, on this scheme we have no way of knowing that the world was not created five minutes ago with us all having built-in memories, etc. Also he could view God as bound by natural laws even in the act of creation in order to explain why organisms which seemed to be consistent with the rest of the natural order were in fact inconsistencies proving the miracle of creation. And Gosse could regard all this as a reconciliation between science and religion which would save him from accepting either evolution or a Lyellian steady state system. In view of the difficulties experienced

by some of the most able and best informed men of the time such as Whewell, it is not surprising that less able conservatives like Gosse, men of good faith but limited imagination, could find their way round these difficulties only by casting doubt on the validity of the results of natural science. Yet the problems faced are the same: the nature and limits of scientific history, of law and of miracle in relation to God; problems which Whewell found difficult but which Gosse found impossible.

Baden Powell

By contrast, it was the strength of the liberal theological tradition to realise that some accommodation with the new scientific discoveries was urgently needed. Its weakness lay in failing to achieve it. Take for example the work of Revd. Baden Powell already referred to. Powell was a Professor of Geometry at Oxford and a Fellow of the Royal Society — a man of considerable philosophical ability and insight. In developing the theme of his essays, his central and strongest point was to see that the uniformity of natural causes in time as well as in space was the direction in which science was heading. This, he clearly saw, would necessarily undo the natural theology of men like Sedgwick and Whewell. These men, he commented, “seek the proofs of creation, not in the *known*, but in the *unknown*, regions of Nature.” Powell himself argued that the more science discovered the world to be a perfect mechanism, the more strongly it indicated its origin in Divine design. In taking this view, he was well prepared to welcome the new discoveries and he was one of the few significant figures who had a good word to say for the *Vestiges*.

But on looking more closely at Powell's theological approach, it becomes doubtful whether he saw the central problem, raised by the advance of science, for the concept of God any more clearly than those he criticised. We find him writing of the “Supreme Mind” and the “Infinite Source” behind the world. He concludes one chapter of essays thus:

The whole tenor of the preceding argument is directed to show that the inference and assertion of a *Supreme Moral Cause*, distinct from and above nature, results immediately from the recognition of the eternal and universal maintainance of the order of *physical causes*, which are its *external manifestations*.³³

Now even among the Victorian intelligentsia, this was hardly the normal conception of the God of Christianity. One would not feel much confidence in addressing the Lord's prayer to such a being. One rather suspects that this concept of God was just such as a geometer might be expected to construct for himself. In thus reducing God to a remote and impersonal postulate, Powell had effectively removed God's hand from nature altogether. Here, then, was the crux of the matter. A transcendent God who constantly interferes to achieve His providential purposes is incompatible with the scientific understanding of the world — this was clearly grasped by Powell. But a transcendent God who never interferes at all is incompatible with a living biblical religion — a point which seems to have escaped Powell's notice. Powell's accommodation with science was achieved at the expense of abandoning anything in traditional Christianity which might upset the contemporary scientific ethos. One of his last writings was his contribution to *Essays and Reviews*³⁴ in which he undoes the work of Paley's *Evidences*, undermining the credibility of the New Testament miracles. But, significantly, even he was not prepared to include the human mind in the eternal order of physical causes which he upheld for the rest of nature. Powell represented the extreme latitudinarian approach to the problems of the day and the manner of his accommodation with science tended to accentuate the problems rather than resolve them. He did not, therefore, succeed in his hope of effectively reconciling science and religion.

Popular Idea of Conflict

Unhappily, then, we hear increasingly of a conflict between science and religion in the years following Darwin's *Origin of*

Species. The outpouring of protest from orthodox circles produced the feeling of a popular war between religion and science. This was contributed to by the public debates between men like Huxley and Tyndall on the one hand and Gladstone and Wilberforce on the other. One of the first scholarly books to put this feeling explicitly into print was written by J. W. Draper.³⁵ He had some reason to know at first hand for it was his paper at the British Association meeting of 1860 which sparked off the exchange between Huxley and Wilberforce. The history of science, he explained, is not just a record of discoveries but is "a narrative of two contending powers", namely the expansion of the human intellect by science on the one side and the opposing compression from traditional religion and human interest on the other. Scientific understanding was steadily advancing and traditional religion was steadily retreating before it, though only after a struggle. "No one," wrote Draper, "has hitherto treated the subject from this point of view." Draper was independently followed in this interpretation by A. D. White, whose *Warfare of Science*³⁶ was introduced to the English market by Tyndall. This was later followed by his much larger work, *A History of the Warfare of Science with Theology in Christendom*.³⁷ Though less extreme than Draper, he pictured the steady advance of science as opposed at every step by the obscurantist forces of dogmatic theology, engaged in a "warfare" which science was inevitably winning and theology losing.

Now the significant thing about these contributions is that they all have their origin in the latter part of the nineteenth century and their accounts are clearly coloured by the feeling abroad at that time. They tended to read back into earlier times, in fact into the whole history of science, the spirit of the late nineteenth century. For this reason, these works cannot be regarded any longer as adequate scholarly interpretations of the history of science and religion, though they remain useful sources. One can sympathise with these writers being provoked into such an interpretation but in retrospect they represent an unsatisfactory, and a rather unsophisticated, response to the contemporary intellectual situation.

In addition, there was a yet more extreme reaction from rationalists and other opponents of religion during the closing years of the nineteenth century. A good example is that of Haeckel, a famous professor of zoology and one of Darwin's chief advocates in Germany. He had a very considerable reputation then but one which has not stood the test of time. In his best selling book, *The Riddle of the Universe*³⁸, he dismisses God as a "gaseous vertebrate", freedom of will as an illusion, and immortality as disproven. On science and Christianity he recommends, along with Draper's book, the works of Strauss and Feuerbach. He describes D. F. Strauss's, *The Old Faith and the New*, as: "A magnificent expression of the honest conviction of all educated people of the present day who understand this unavoidable conflict between the discredited, dominant doctrines of Christianity and the illuminating, rational revelation of modern science."³⁹

While Haeckel's extreme materialism found less favour in England and America, than in Germany, there is no doubt of its influence and Haeckel's book was reprinted by the Rationalist Press Association as a 6d paperback. It would be unkind to dwell on this extreme reaction from a reputable scientist but it does illustrate the fact that science, as well as Christianity, had its lunatic fringe, a point which is usually overlooked. It is interesting to note that other works selected for cheap editions by the R.P.A. include those of Huxley, Tyndall, Herbert Spencer, J. S. Mill, Leslie Stephen, Matthew Arnold and F. W. Newman.

The conflict interpretation of the history of science and religion was challenged by a number of books which appeared in the late nineteenth and early twentieth centuries. The most substantial of these, written as a deliberate corrective to the views of Draper and White, was the two volume work of Zöckler,⁴⁰ who paid special attention to the difficulties of the first chapter of Genesis. Another valuable work was written by Robert H. Murray, who tells us that "one main purpose in writing this book has been to prove that there are just as many preconceived notions in science as there are in theology."⁴¹ Though not

entirely satisfactory, he provides very sympathetic and readable accounts of the work of Darwin, Huxley and Lyell. However, neither of these books, nor others like them, seems to have made much impression on popular opinion. The Draper-White interpretation has shown a remarkable persistence, so much so that it is still largely treated as the "received doctrine" nowadays. The reasons for this are complex and would themselves make an interesting historical study. The perennial popularity of this dated view does pose a problem for those of us who wish to propagate a more adequate interpretation of the history of the relations of science and religion.⁴² With regard to our period of study here, the representation of a continual and progressive conflict is particularly misleading for two reasons: not only does this not represent the feelings of any of the major figures involved in the debate during the first half of the nineteenth century but also it tends to conceal the fact that where particular points of apparent conflict arose, they involved genuine issues which deserve serious study.

After this, it will be refreshing to learn that there were Victorian clergymen who made a deliberate effort to understand science and to accommodate Darwin's views to orthodox theology. For instance, there was Rev. Charles Kingsley, a man of many parts even by Victorian standards. As well as parish priest, he was a chaplain to the Queen, a fellow of the Geological Society and a professor of modern history at Cambridge but is best remembered as novelist and poet and for his efforts towards social reform. In the present context, he is of interest because he knew Darwin, Huxley and Lyell personally and freely corresponded with them. In the 1850's we find that Kingsley valued Paley and the Bridgewater Treatises though more in the spirit of a nature lover than as a formal system. He had been delighted by his own study of sea shore life and sent many specimens to his friend, and acknowledged expert, P. H. Gosse. This moved him to write a book of amateur natural history, called *Glaucus*, in which he expresses some thoughts on natural theology. He was impressed with books by Sedgwick and Hugh Miller but was not impressed by Gosse's *Omphalos*. "It is with real pain," he wrote in a

new edition of *Glaucus*, "that I have seen my friend Mr. Gosse, make a step in the direction of obscurantism, which I can only call desperate, by publishing a book called *Omphalos*." ⁴³

When Darwin sent him a copy of the *Origin*, Kingsley wrote, in acknowledgement of it, that "if you be right, I must give up much that I have believed and written" but he went on to make it clear that he was ready to accept Darwin's views without prejudice.

I have gradually learnt to see that it is just as noble a conception of Deity, to believe that He created primal forms capable of self development into all forms needful . . . as to believe that He required a fresh act of intervention to supply the *lacunas* which He himself had made. ⁴⁴

Darwin was evidently pleased with this for he quoted it in the conclusion of later editions of the *Origin* as coming from "a celebrated author and divine." Kingsley went further and put his finger on the central point which is brought out in the following very instructive letter written to his friend and fellow churchman, F. D. Maurice, a few years later :

I am very busy working out points of Natural Theology, by the strange light of Huxley, Darwin and Lyell. I think I shall come to something worth having before I have done. But I am not going to rush into print this seven years, for this reason : the state of the scientific mind is most curious ; Darwin is conquering everywhere, and rushing in like a flood, by the mere force of truth and fact. The one or two who hold out are forced to try all sorts of subterfuges as to fact, or else by invoking the *odium theologicum* . . .

But they find that now they have got rid of an interfering God — a master-magician, as I call it — they have to choose between the absolute empire of accident, and a living, immanent, ever-working God. ⁴⁵

Kingsley did not achieve an immanent God, as so many

others did, by abandoning the miraculous and transcendent, but by asserting that all natural events were a "perpetual and omnipresent miracle" in their being dependent on divine activity. He had trained himself in this point of view for some years before the *Origin* appeared. In 1858 he wrote in another letter that "my doctrine has been for years . . . that below all natural phenomena, we come to a transcendental — in plain English, a miraculous ground." ⁴⁶

Kingsley engaged in a very interesting exchange of letters with T. H. Huxley on this subject and Huxley's letters are especially worth reading because we catch him in a different frame of mind from his usual polemical self. He speaks of a 'freemasonry' between them and writes that it is "a great pleasure" to discuss these issues with Kingsley. He emphasises how, for him, the main problem concerns the difficulty of any adequate concept of God in the light of the results of modern science :

Whether astronomy and geology can or cannot be made to agree with the statements as to the matters of fact laid down in Genesis — whether the Gospels are historically true or not — are matters of comparatively small moment in the face of the impassable gulf between the anthropomorphism (however refined) of theology and the passionless impersonality of the unknown and unknowable which science shows everywhere underlying the thin veil of phenomena. ⁴⁷

From the position which he had developed, Kingsley was able to meet this point constructively :

The unknown *x* which lies below all phenomena, which is for ever at work on all phenomena, on the whole and on every part of the whole, down to the colouring of every leaf and the curdling of every cell of protoplasm, is none other than that which the old Hebrews called . . . The Breath of God. ⁴⁸

In these letters, Kingsley and Huxley between them focused on the central problem posed by Darwinism for the concept of

God. Part of the answer was seen by Kingsley in the rediscovery, one might call it, of the immanence of God ; in seeing natural causes not as an alternative to but as an expression of divine activity. The kind of expression just quoted illustrates Kingsley's interest in the development of some definite conception of the relation of divine activity to natural law, a necessary task, which he struggled with, not always successfully. But equally, if the concept of God was to keep any useful meaning for religion, it was necessary to retain transcendence as an attribute of His personality and not merely as a Great First Cause. In this, Kingsley seems to have experienced no difficulty, referring naturally to the "Living God" of traditional Christianity. But to Huxley it appeared to be an insuperable difficulty. The further problem here was to unite a concept of God as the ground of the universe which science reveals with a concept of God as the spirit with whom there can be true fellowship. Now Kingsley's position, so far as it went, was spiritual common sense rather than philosophical theology but it was a common sense which escaped many of his more philosophical colleagues.

Not that the concept of divine immanence had been entirely forgotten. Paley saw that natural laws were not a substitute for divine action. "Effects are produced by power, not by laws," he wrote and added, "He who upholds all things by His power may be said to be everywhere present." He was discussing the theological doctrine of omnipresence — and he further remarked that "the language of Scripture seems to favour" this idea. ⁴⁹ Whewell, too, had emphasized the same kind of thing in his *Bridgewater Treatise* :

The laws of nature are the laws which [God], in his wisdom, prescribes to his own acts ; his universal presence is the necessary condition of any course of events, his universal agency the only origin of any efficient force. ⁵⁰

But undoubtedly this sort of idea had been largely overwhelmed by the more remote concepts which followed easily from the watchmaker type analogy and by the impression of the rigid mechanical fixity of natural laws. This idea had also been

greatly played down in comparison with the emphasis on creative theology, this meant that a considerable task of reconstruction was required in order to develop a satisfactory concept of God. So far as I have discovered, no one really succeeded in the task of reconstruction in the nineteenth century. Kingsley, we have seen, took a step in that direction. Several able men made helpful and soothing remarks but none of them really broke away from the concepts developed in the first half of the century. Possibly the old habits of thought were so pervasive and tenacious that only the passage of time and the rise of a new generation could bring the fresh outlook required.

The numerous writers on science and religion in the latter part of the nineteenth century illustrate this point well. There were several writers in this class whose purpose was reconciliation but few, if any, whose schemes were both scientifically and theologically adequate. This may be seen by reading such variously gifted writers as the Duke of Argyll and Henry Drummond. Even the titles of their books indicate the preoccupation with the earlier notions of "laws impressed on matter by the Creator."⁵¹ One of the best contributions was made by Bishop Frederick Temple in his Bampton lectures for 1884, on the relations of science and religion.⁵² The tone of those lectures is thoroughly constructive but most of the discussion is carried on in terms of the "one original impress" of laws on the creation and subsequent "divine interpositions." For all the liberality of his views, Temple still felt that certain parts of the evolutionary process required divine interpositions, notably the origin of life and the evolution of the human mind. But these were exceptions which Darwin and Huxley would not have been prepared to allow. On the whole, Temple made as much progress as possible within the earlier terms of reference but does not really seem to have travelled beyond them.

We have to look to the twentieth century to find the transformation of thought which paves the way through this problem. Then we find a number of leading philosophical theologians directing their attention to precisely this question. These people

provide varied interpretations, of course, but there is considerable agreement among them in concentrating on the concept of God as personal or rather of personality in God. Then the way forward is seen to lie in redeveloping and re-emphasising the divine personality and not in diluting or abandoning it as the Victorians were inclined to do. The workers to whom I refer include F. R. Tennant,⁵³ C. C. J. Webb,⁵⁴ William Temple,⁵⁵ and H. H. Farmer.⁵⁶ Of these William Temple seems to me the most helpful and the most far reaching. By making a father and son comparison of Frederick Temple's Bampton lectures with William Temple's Gifford lectures, one can see very effectively the contrast and development of thought on this topic from the late nineteenth to the early twentieth century. Thus William Temple is able to see the divine immanence as a corollary of the divine personality, writing that the world is "the medium of God's personal action." He is also able to reinstate miracle as an expression of divine personality, on the principle of sufficient reason, saying that it "is not a specimen of a special class, it is an illustration of the general character of the World-Process."

But this recovery of theology in the group of writers to whom we have referred, takes us right out of the nineteenth century and into a new sphere of thought. The writings of those people are relevant in two ways. Firstly, all were very able men who looked back directly at the problems raised by the nineteenth century scientific world view and tried to produce a philosophical theology whose concept of God was adequate for the day. In so doing they finally broke out of the nineteenth century mould. Secondly, all the works mentioned were completed before the chill wind from the continent blew across English theology. German theologians and the Vienna circle radically shifted the centre of theological attention with the result that this group of writers have been largely lost sight of. Nevertheless, it is to them that we need to refer because they provide the most direct link between the problems of the nineteenth century and the present day.

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