

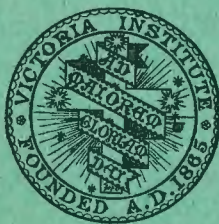
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## ABOUT THIS JOURNAL

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# FAITH AND THOUGHT

*A Journal devoted to the study of the inter-relation of the  
Christian Revelation and modern research.*

1972-3

Vol. 100

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## EDITORIAL

*Congratulations* to our President on his award of C.B.E. given in the New Year's Honours list.

*This JOURNAL — A 'Centenarian'*. With this issue our JOURNAL commences its 100th volume. The first volume was published in 1866 a year after the Society was founded and with the exception of a few years when single volumes were permitted to overlap two years, it has been published more or less regularly ever since. Lately we have been in arrears in publishing, but it is hoped that from now on three issues will be published annually in the course of each financial year ending 30th September.

*Publicity Brochures* explaining the aims and objects of the Victoria Institute have now been printed and all members will be receiving a copy. It is hoped that members will be able to use them in making the Society better known. Further copies may be obtained on application to the Assistant Secretary.

*Reprints.* We are keeping small stocks of reprints of most of the recent signed articles. They may be ordered from the Assistant Secretary at a standard cost of 10p including postage. We have a good stock of Dr. Brodeur's paper (vol. 99, p. 93).

*Prizes.* *The Langhorne Orchard Prize for 1973.* A triennial

prize of £40 is offered in memory of Professor Orchard for "an essay to demonstrate the harmony between Revelation and Philosophy or Revelation and Science" (this **JOURNAL**, 55, 6). Competitors for the 1973 competition are free to treat some aspect of either theme in their own way bearing in mind the aims of the **INSTITUTE**. The closing date is 30th September, 1973. For other details see this **JOURNAL**, 99, 174. In the opinion of the Adjudicators no essay of sufficient merit was received for the *Schofield Prize (1971)* which has not, therefore, been awarded on this occasion.

*Noah's Flood Symposium.* It is hoped to publish the papers given at this well-attended Symposium held on 20th May, 1972 in this **JOURNAL** at an early date.

*Birmingham Public Library.* We learn from the Librarian that a Department of Religion and Philosophy will be housed on the fourth floor of the new Library block in Paradise Circus. Some 70 current journals (including **FAITH AND THOUGHT**) and 36,000 bound volumes are available with many facilities for readers, including a collection of subject-indexed newspaper cuttings. Further information may be obtained from the Librarian-in-charge, Mr. R. J. Duckett.

*Supplement to FAITH AND THOUGHT.* The **VICTORIA INSTITUTE** will shortly be publishing a book entitled, **A STUDY IN CHRISTIAN APOLOGETIC** by Dr. F. H. Cleobury, a well known writer in the Christian philosophical field (his best known book is, perhaps, *The Return to Natural Theology*, James Clarke, 1967). Copies will be issued free to all members of the **INSTITUTE** and further copies may be purchased.

*Binding.* Recently we have been providing stitched copies of **FAITH AND THOUGHT** to libraries instead of the "perfect" bound copies issued to members. The cost of this service has recently risen sharply and from now on we shall be sending "perfect" bound copies to all subscribers. We have ascertained that this is unlikely to cause difficulties in view of the fact that many commercial binders are now binding single issues of journals into combined volumes by the "perfect" method.

## IN THE NEWS

**Pollution — Ernst Mach and Relativity — Beliefs of the Reading Public — Today's Babel — "The Goodness of Parasitism" — St. Mark in a Cave? — Those Stars — Shades of Spinoza.**

### POLLUTION

Pollution is now the accredited band wagon. In this connection no one seems to have thought of quoting Isaiah who speaks of "the troubled sea when it cannot rest, whose waters cast up mire and dirt" (Isaiah 57: 20, "mud and filth" N.E.B.).

There is no doubt that pollution needs to be taken very seriously indeed, but hardly more seriously than the back reaction caused by irresponsible exaggeration. The latter often takes the form of presenting a totally misleading picture as to the true facts (e.g., though it has suffered considerably, the popular idea that Lake Erie is "dead" is very far from true). Often too, statistics are used or misused to prove that, after so long a time, catastrophe is certain. Professor Karl Kapp of Basle University pointed out at a recent conference on the "Quality of Life" that, had a computer been at work in 1872, it would probably have predicted that by now there would be so many horse drawn vehicles that it would be impossible to clear up all the manure (*Times*, 13 April 1972).

In much modern writing DDT (with Dieldrin and Aldrin) is blamed (cf. Rachel Carson's *Silent Spring*). Yet twenty years ago DDT was heralded as a benefaction to man. Though extremely stable (even the South Polar Ice cap is said to be contaminated) it has now been established that it is slowly destroyed in nature and that it does little harm. Prolonged exposure to it (e.g., in spraying by professionals or in the factories where it is made) has produced no harmful symptoms at all

(*Nature*, 235, 311). Only bats (see *New Scientist*, 20 April 1972, p. 120) and a few bird predators, especially eagles, appear to suffer. But though DDT is blamed for the destruction of the rare Golden Eagle and the even rarer Bald Eagle in the U.S.A., their decline is mainly due to farmers in Wyoming who kill the birds with poison bait and even use helicopters to destroy them in flight (*Nature*, 233, 79).

The analytical methods used up to the early 60's are now known to be suspect and DDT may not be as ubiquitous as previously thought. There is no doubt that DDT and allied chemicals are, on the whole, of inestimable value to man. Norman Borlaug (Nobel Peace Prizeman of 1970 for work on high yield wheat strains), is on record for saying that if DDT is banned "I have wasted my life's work . . . . I have dedicated myself to finding better methods of feeding the world's starving populations. Without DDT and other important agricultural chemicals, our goals are simply unattainable" (*Nature*, 233, 437). Nevertheless, the use of DDT in the USA will be illegal for nearly all purposes after the end of 1972.

When man recognizes pollution for what it is and sets to work to stop it he is often successful. As Sir Kenneth Mellanby has frequently pointed out (e.g., *Times*, 4 March 1972) pollution in England is in many respects less severe than it was — for example, the "pea soup" fogs of London are now unknown. However, the greatest dangers seem to arise from unforeseen results of man's activities.

Chloro insecticides are killing fish in the water pools in East Pakistan thus reducing an important source of protein (*Environmental Pollution*, 1971, 2, 1). The eradication of the tsetse fly in Africa is causing problems. These flies, *Glossina*, of which there are around 22 species, have often been called "Africa's bane" and great efforts have been devoted to ridding the continent of them for good and all. In doing so it is said that the flora and fauna of Africa have suffered on a scale greater than that occasioned by the war in Vietnam. The

flies are hosts for the Trypanosomes and will transfer these disease producing organisms into any kind of vertebrate or avian blood. However, no great suffering is caused to the animal hosts endemic to Africa, and it now appears that the tsetse flies act as the main defenders of Africa's land animals against invaders from other countries (*Nature*, **235**, 248; John Ford, *The Role of Trypanosomiases in African Ecology; a Study of the Tsetse Fly Problem*, Oxford, 1971).

Another tragic example is afforded by the U.S.A.'s effort to save South Vietnam from the Communists. Apart from the destruction of wild life and forest, in the years 1965 - 70, 23 million craters were made by bombs in Indochina. On average they are 30 feet across and 15 feet deep. In each explosion 200 cubic yards of infertile subsoil is scattered over a wide area. The task of releveling the ground is gigantic and even when this is done the soil is impoverished for agriculture and weeds take over. Unfilled craters collect water and breed mosquitos. Pieces of metal kill water buffalos while trees hit by them succumb to fungal infections and metal makes the timber unusable. Ten per cent of the land in South Vietnam has had to be abandoned (*Nature*, 1972, **235**, 6).

Unforeseen results such as these are a salutary reminder that man is not in control of our planet.

### **ERNST MACH AND RELATIVITY**

The *Boston Studies in the Philosophy of Science* for 1970 (vol. 6, Ed. R. H. Cohen and R. J. Seeger) is devoted to an all-round study of Ernst Mach, physicist and philosopher (1836 - 1916). After an interesting and detailed survey of Mach as a physicist and psychologist of surprising versatility, the volume continues with papers on his influence on subsequent science.

Mach was an extreme positivist for whom no reality other than sensations existed. "There exists in this world nothing whatever other than sensations and their connections" (p. 168). Physical bodies, including atoms, etc. "were but thought symbols for complexes of sensations" (p. 40) and science was concerned, and concerned only, with discovering the relations between these sensations, or *elements* as Mach preferred to call them.

Mach's ideas, reinforced by his personality, fascinated his contemporaries. Young Einstein, in particular, hero-worshipped him: it was Mach who first shook Einstein's belief in mechanics as the basis of all physical thinking (p. 169) and it was Mach who provided the first hint of relativity theory — though in later years Mach himself did not wish his name to be associated with relativity which he openly attacked.

Later chapters, especially that by G. J. Holton ("Mach, Einstein and the Search for Reality") trace the gradual change in Einstein's views from positivism to extreme anti-positivism. By 1917 he realises that Mach's attitude "cannot give rise to anything living, it can only exterminate harmful vermin [i.e. wrong hypotheses]" (p. 185) and he comes to see that between sensations and the objective world there is a logically unbridgeable chasm (p. 186) and speaks of the efficacy of reason to grasp reality at all as *miraculous*. He believes in reason only in the sense that by reason man may *guess* the laws by which God made the world (p. 187): "There is no logical way to the discovery of these elementary laws. There is only the way of intuition" (p. 189). Only after "unending labour and painful doubt" (p. 174) did Einstein discover the general theory of relativity but having discovered it he accepted it in fervent faith. In the years from 1909 when the experimental evidence was for a time against him "Einstein more and more openly put the consistency of a simple and convincing theory . . . higher in importance than the latest news from the laboratory — and again and again he turned out to be right." To his friend Besso he writes in 1914 before the first expedition to test the general theory, "I am fully satisfied, and I do not doubt any more the correctness of the whole system,



may the observation of the eclipse succeed or not. The sense of the thing is too evident." To his friends he would say again and again, "But I know that the theory is correct" (p. 181).

Planck had a similar experience — for he too started as a Machian. Attention is also drawn to Dirac's remarkable account first published in 1963 (*Scientific American*, 208, 47) of how Schrödinger first discovered his well known equation: it was "by pure thought, looking for some beautiful generalisation of de Broglie's ideas and not by keeping close to the experimental development of the subject." He applied it at once to the hydrogen atom: the answer came out wrong and his faith failed — for at that time no one knew that an electron has a spin. Soon after the credit for the discovery went to another. Later, of course, the calculations came right.

Emphasis on these important aspects of scientific discovery is lacking in the all-too-common humanist approach to religion (Cf., John Wren-Lewis's book reviewed, this **JOURNAL**, 99, 241).

### **BELIEFS OF THE READING PUBLIC**

In the *Sunday Times* for 26 March 1972, Dr. Christopher Evans analyses 8,000 fully completed answers to the questionnaire on beliefs compiled by the *Sunday Times*.

Asked if they believed in telepathy, only 1.5% of those who replied were total disbelievers, 9% were cautious agnostics and 26% believed it to be established fact. In all 75% accepted telepathy as certain or as a likely possibility and of these over 60% based their belief or half-belief on personal experience. Relatively few (less than 15%) claimed to have formed their views as a result of the influence of academic literature but a larger proportion were influenced by popular articles.

On the mind-body problem, about one third took the

traditional Christian view that mind is a non-physical entity capable of acting on the body, a third thought it is an epiphenomenon arising from the complexity of the brain and inseparable from it, and a third did not know. Only 20% accepted the traditional Christian belief that man has an immortal soul and that where it goes after death depends on how we live on earth, but about two thirds in all believed in survival of some kind.

On the question of belief in God, a third believed in Him as "the one supreme Being, immortal, omniscient," a further one fifth accepted Him as real but not personal, and a third did not know. Only 18% stated that God did not exist. Relevant to recent discussion in this **JOURNAL** there was a nearly 2:1 majority in favour of some form of religious education in schools.

The idea, popular in some quarters, that religion is anti-scientific, received no support. "An anti-science backlash would be expected to be particularly strong among those of a religious or mystical frame of mind, but the results of this questionnaire fail to bear this hypothesis out." About two thirds of the strongest believers in telepathy, God, etc., testified strongly to the wonders and benefits of science. In the whole group 18% were anti-scientific but only 3% strongly so.

The two most surprising findings related to spiritism ('spiritualism') and astrology. On the spiritist issue of the possibility of communication with the dead, about 65% thought that it is possible (fewer than 9% thought it had been demonstrated and 13% thought it was possible but wrong or unwise). An even larger proportion of replies — 75% — indicated at least some credence in astrology as a predictive science (12% thought it had been proved beyond reasonable doubt). Despite these figures very few indeed, perhaps 1 in 20, had ever taken spiritists, mediums, palmists, astrologers or fortune tellers sufficiently seriously to heed the advice given by these people. So perhaps the 'occult revival' about which so much has been said, has not proceeded very far as yet. It must not be forgotten, however,

that readers of the *Sunday Times* may be an unrepresentative section of the community.

### TODAY'S BABEL

It is a pleasure to note that the pretentious gibberish with which some social scientists and psychologists increasingly bedeck their works does not always pass without protest. A recent and substantial work on aggression (Professor T. R. Gurr, *Why Men Rebel*, Princeton U.P., 1970), which contains 500 references and is hailed as the best treatment of collective violence to emanate from American sociologists to date, is concerned with how potential for collective violence is converted under the influence of politicalization into potential for political violence which, in turn, by actualisation, determines the magnitude of political violence. The results of the investigation are listed in the form of 80 hypotheses and corollaries, a typical hypothesis being that "the magnitude of political violence varies strongly and directly with the ratio of dissident institutional support to regime institutional support to the point of equality and inversely beyond it." Neatly enough the author so defines *violence* that violence by the state, e.g., in Vietnam, is excluded. It appears that this volume is a prelude to a number of further enlightening works on the subject, shortly to appear.

In reviews (*Race*, 1971, 13, 81f) P. Abel finds much of the work tedious and its assumptions suspect, while R. Jenkins compares the hypothesis quoted to an imaginary farcical chemical ribble-rabble, such as :- "The degree in which iron ore reflects light in the red end of the light spectrum varies inversely with the proportion of iron to other chemicals contained with it."

Even more entertaining is Professor Hans Eysenck's attack on a recent book (*Biology and Knowledge*, Edinburgh U.P., 1972) by the great child psychologist Jean Piaget. Eysenck quotes some

gibberish which he assures us is on the easy side as judged by the book as a whole, analyses it in detail and decides that it is probably meaningless. "The more I read . . . the more confused I become; the words are there but they do not make any sense . . . I have a feeling that there may not after all be some rich, rewarding, succulent feast behind the forbidding facade; may be this is another tale of the emperor's new clothes." He tells us that 90% of the factual knowledge in the field Piaget is dealing with has been completely ignored and concludes, "To me this book means nothing" (*New Scientist*, 30 March 1972).

Evidently the ever-increasing use of ugly and often ungrammatical jargon has now widened the communication gap so far that one of two internationally known psychologists is no longer able to understand the other! The scientific world, like the political world, seems to be increasingly caught up in a re-enactment of the story of the tower of Babel.

### **"THE GOODNESS OF PARASITISM"**

The origin of disease producing parasites has always been a subject of particular interest. The Book of Genesis (taken together with its eschatological fulfilment as described in the Prophets) seems to imply that the original creation did not contain organisms designed to cause pain and disease. Many Christians (e.g., Clark <sup>1</sup>) have argued that the virulence of such organisms is due to disturbance of the normal relationships between different creatures and between these creatures and their environment. The evidence for this view has long been strong, but two recent articles <sup>2, 3</sup> make it as near coercive as it will probably ever be.

The authors of both articles agree that a parasite does not normally harm its host: in fact its effect is usually beneficial. Rees <sup>2</sup> concludes that, "Parasitic worms are, naturally, inherently

non-pathogenic" and he cites evidence of, e.g., their bactericidal properties. Lincicome<sup>3</sup> concurs and supplements a thorough survey with extensive experimental evidence supporting the goodness of parasitism, especially in relation to metabolic balance. He concludes that parasitism is "a metabolic ecological association of two organisms, the basis of which is chemical and the function of which is fundamentally one of molecular exchanges of social, ecological, and evolutionary [*sic*] values."

Seemingly, parasites are only pathogenic if :

1. Excessive numbers enter the host causing damage (often to the skin) by the act of entering. (This is usually related to (10) — see below.)
2. Superinfestation occurs resulting in damage after entry. (Even in cases of superinfestation there may be no apparent pathogenicity.)
3. The host's diet is inadequate (e.g., cases of gastro-intestinal disturbance associated with tapeworm infection).
4. The host is already suffering from disease.
5. The host is mutant (e.g., the human tapeworm *Diphyllobothrium latum* can produce pernicious anæmia in man, but only if the carrier has a defective intrinsic factor secretion and diminished absorptive capacity for vitamin B 12).
6. The parasite is mutant (e.g., virulent forms of normally harmless bacteria).
7. They have been introduced into the wrong host (several human parasites are in the wrong host. For a suspected case which concerns certain mammalian trypanosomes see Woo<sup>4</sup>).
8. They are in the wrong host organ (e.g., intestinal bacteria can become pathogenic if introduced into the bladder or uterus. This can occur in connection with (9)).
9. The host is psychologically or spiritually unbalanced (e.g., emotional inhibition of gastric secretion and absorption

can allow the development of pathogenicity in intestinal parasites 5).

10. The environment is abnormal (e.g., in northern waters there are occasional epidemics among fishes during which many dead and dying are found along the shores. Such epidemics are very rare or even unknown in tropical waters).

**REFERENCES :-** (1) R. E. D. Clark, *The Universe : Plan or Accident ?* 3rd Ed. 1961, pp. 206ff. (2) G. Rees, Pathogenesis of Adult Cestodes, *Helminthological Abstracts*, 1967, 36, 1-23. (Quotation from p. 2). (3) D. R. Lincicome, 1971 The Goodness of Parasitism : a New Hypothesis. In *Aspects of the Biology of Symbiosis*, Ed. T. C. Cheng, pp. 139-227. (Quotation from p. 224). (4) P. T. K. Woo, *Nature*, 1970, 228, 1059. (5) See R. J. Rushdoony, *The Myth of Over-population*, Craig Press, 1969, pp. 45f.

ARTHUR JONES  
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### ST. MARK IN A CAVE ?

On 16 March a front page headline of *The Times* reported that a discovery among fragments of the Dead Sea Scrolls had possibly put the accepted date of the Gospels in doubt. An hypothesis, put forward by Fr. José O'Callaghan in the journal *Biblica*, was that among these fragments was one which contained eleven letters that appeared in the same order and distribution as a phrase in the Gospel of St. Mark, (6 : 52f) and which therefore seemed to push back the date of that document to within some twenty years after the death of Jesus. It was said that this, if confirmed, would be "... the most important event of the century in NT research."

Some correspondence followed immediately. The present writer took up a peripheral, though important, issue of the original

report by expressing his doubt that a late date for St. Mark could fairly be described as "the accepted date". But because *Biblica* had not by that time been distributed in this country it was difficult to say much more at the time, though a cautious note was sounded by Dr. Geza Vermes, Reader in Jewish Studies at Oxford, who wondered how, without apparently knowing the original length of the lines in which the letters appear, Fr. O'Callaghan could have come to any definitive conclusion.

*Biblica* has now appeared. Clearly, Dr. Vermes' scepticism was justified as he pointed out in a further letter to *The Times*. The reader of the article in *Biblica* becomes at once aware that O'Callaghan has had to resort to using variant readings from a relatively unimportant Coptic variant of the Marcan text as well as indulge in the excision of what are believed to have been defective letters in the Greek of Egypt and Asia Minor. Nevertheless, the paper in *Biblica* is worth studying in some detail. The subject is rather technical but the following summary may be appreciated by at least some readers.

Fr. O'Callaghan's paper, (in Spanish) "Papiros neotestamentarios en la cueva 7 de Qumran?" (*Biblica*, 1972, 53, fasc. 1, pp. 91 - 100) refers principally to Greek fragments in Cave 7 which were first found in 1955 and published in 1962, (M. Baillet, J. T. Milik and Roland De Vaux, "Les 'petites grottes' de Qumran Textes" in Vol. III of *Discoveries in the Judæan Desert*, (DJD) Oxford). In studying these, O'Callaghan was surprised, whilst examining small fragments of the Septuagint, to come across what seemed to be parts of two verses of the New Testament (Mark 6: 52f) in the fragment "7Q5". This fragment which contains parts of four lines, is difficult to read but had already been dated on palæographical grounds to the pre-AD 70 period. O'Callaghan makes several suggestions as to how it could be read and in one of these, the one he favours, ten of the eleven letters in question agree with Mark. Regrettably, however, he sometimes has to read them in ways ". . . which are not listed by the original editors as possible alternatives" (C. H.

Roberts in *The Times*, 7 April). But there is one letter, a *tau* (t) which clearly does not fall into line with Mark. This is where the question of defective letters comes in. In an extended footnote O'Callaghan comments :

“The Phonetic interchange offers no difficulties of interpretation. See E. Mayser, *Grammatik der griechischen Papyri aus der Ptolemäerzeit*, I, 1, (Leipzig 1906) p. 175 : ‘The variation between dental sounds, *Tau, delta, theta*, had for a long while been a peculiarity of the Egyptian-Greek dialect. That is to say, (as Coptic shows, Stern, 15. 24) the Egyptians have difficulty in distinguishing the dental sounds and readily exchange the voiceless, voiced, and fricative, (tenuis, media, aspirata). The phenomenon also occurs in Asia Minor (as a result of the indigenous pronunciation) but does not occur in the other *koinés* . . .’ As for the Christian epoch it is enough to refer to L. Radermacher, *Neutestamentliche Grammatik. Das Griechisch des N.T. im Zusammenhang mit der Volkssprache*, (Tübingen 1925) p. 46 : ‘The mediae *beta, gamma, delta* and tenues *pi, kappa, tau* are often interchanged by the people of Egypt, and seldomer of Asia Minor, a fact which can be explained by the lack of a true media in the language of those countries. In the pronunciation there occurs a sound change in that the mediae generally take on the character of “Hauchlauten” (spirants).’”

This note represents the strongest part of Fr. O'Callaghan's argument. A number of notes follow on the remaining lines of the text from Cave 7 and then a further transcription is offered. Here O'Callaghan claims that “the arrangement of the lines, (so achieved by his own transcription) corresponds perfectly with the measurement of the lines of most of the Greek MSS of 7Q.”

It is at this point that O'Callaghan brings in the variant readings that appear to agree with his own findings. He refers to S. C. E. Legg's *Euangelium secundum Marcum*, (Oxford 1935) and invites us to refer to an accompanying contribution by Carlo M. Martini, “Note sui papiri della grotta 7 di Qumran” (*Biblica*, 1972, 53, fasc. 1, pp. 101 - 104) who calls in evidence from Kurt Aland's *Synopse*. What is a clearly visible *tau*, (in line 3 of the text) is changed for a *delta* in accordance with the claim regarding defective letters, (above)



so that O'Callaghan concludes that we have here a scrap of Mark 6 : 53f . . . *diaperasantes* . . . ("when they crossed over . . .") and he supports this by appealing to similar omissions from the text at this point in a relatively unimportant authority, (Coptic [Bohairic] ed.).

Most readers of O'Callaghan's article will feel that his claims are based on flimsy and fragmentary evidence, and at best they are quite inconclusive. No doubt we shall hear more about Fr. O'Callaghan's suggestion, but for the present it seems likely that most scholars will feel that the note of caution offered by Dr. Vermes was wise indeed. However, as Professor Bruce remarks (*Harvester*, June 1972) "since every six months or so we read of some new discovery that finally demolishes the Christian faith, it is a pleasant change to see the popular press publicizing a discovery which, if substantiated, would have the opposite effect." In a distant future, perhaps, a computer will be programmed to sort through the surviving fragments from the caves and fit together the many jig-saw puzzles represented. But the cost will be considerable.

DAVID J. ELLIS

**Note.** The last three sentences are an Editorial addition.

### THOSE STARS

Let us close in a lighter vein. The Editor of the journal *Astrology* (1971, 45, (4), 113) appears to have decided at last that scientific methods applied to the noble art of astrology just will not work. In an Editorial he says: "It is questionable whether one can effectively attempt to characterize any single astrological factor by statistical procedures." However, he informs us that Dane Sabian has now solved the problem of interpreting the astrological meaning of each degree of the Zodiac. The trick is done by Sabian symbols obtained clairvoyantly.

The Editor of *Astrology* then proceeds to sing the praises of the Swiss astrologer, K. Hirschler who has made the remarkable

discovery that chemical compounds can be assigned to the various degrees of the Zodiac according to their formula and atomic weight. The uses of the chemicals coincide in a striking way, we are assured, with the symbols of the Zodiacal degrees to which they are linked.

Well, well ! Another case of the breakdown of communication, we fear, for it is doubtful if any but astrologers will be the wiser. Astrologers invent more and more technicalities as the years pass leaving the rest of us far behind. We are sure they will be in for a bonanza time 'ere long. The newspapers have been telling us that a computer has confirmed the findings of a school boy that there must be a tenth planet of enormous size in our solar system lurking far outside the orbit of Pluto. News enough to keep astrologers, as well as astronomers, quite busy !

### SHADES OF SPINOZA

Their science roamed from star to star  
And then itself found nothing greater.  
What wonders ? In a Leyden Jar  
They bottled the Creator.

(Quoted by E. W. Russell, *Design for Destiny*,  
Neville Spearman, 1971. Author not known.)

DAVID YOUNG

# The Impact of Darwinism on the Concept of God in the Nineteenth Century <sup>1</sup>

**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. <sup>2</sup>

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*,<sup>3</sup> 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*<sup>4</sup> 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, <sup>5</sup> 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." <sup>6</sup> 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." <sup>7</sup>

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. <sup>8</sup> 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. <sup>9</sup>

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. <sup>10</sup>

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. <sup>11</sup>

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. <sup>12</sup>

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*. <sup>13</sup> 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.<sup>14</sup> 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*<sup>15</sup> 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.<sup>16</sup>

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* <sup>17</sup> 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. <sup>18</sup> 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. <sup>19</sup> 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. <sup>20</sup>

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. <sup>21</sup>

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 1836<sup>22</sup> 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.<sup>23</sup>

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."<sup>24</sup> 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.<sup>25</sup>

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. <sup>26</sup>

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.” <sup>27</sup>

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.” <sup>28</sup> 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. <sup>29</sup>

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." <sup>30</sup> 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*,<sup>31</sup> 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 ? <sup>32</sup>

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*.<sup>33</sup>

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*<sup>34</sup> 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.<sup>35</sup> 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*<sup>36</sup> 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*.<sup>37</sup> 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*<sup>38</sup>, 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."<sup>39</sup>

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,<sup>40</sup> 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."<sup>41</sup> 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.<sup>42</sup> 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*." <sup>43</sup>

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. <sup>44</sup>

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. <sup>45</sup>

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." <sup>46</sup>

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. <sup>47</sup>

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. <sup>48</sup>

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. <sup>49</sup> 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. <sup>50</sup>

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."<sup>51</sup> One of the best contributions was made by Bishop Frederick Temple in his Bampton lectures for 1884, on the relations of science and religion.<sup>52</sup> 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,<sup>53</sup> C. C. J. Webb,<sup>54</sup> William Temple,<sup>55</sup> and H. H. Farmer.<sup>56</sup> 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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## Process Theology – Why and What?

**Process Theology is now quite fashionable, yet many people have little idea why it was introduced or what it is about. Charles Hartshorne and others have written extensively on the subject but much is difficult to understand. In this paper Dr. Pailin, Lecturer in the Philosophy of Religion at Manchester University, seeks to explain Process Theology in the simplest terms possible. The paper is based on a lecture given to the VI in 1970.**

In this paper I want to consider two questions raised by 'process theology' — that is, by the theistic position which philosophers and theologians such as Charles Hartshorne, Schubert Ogden and John Cobb have developed on the basis of A. N. Whitehead's later metaphysical thought. The questions are, first, 'Why do process theologians regard the concept of God traditionally accepted in Western theology as fundamentally unsatisfactory?' and, secondly, 'What in outline is the concept of God which they advance in place of the traditional one?' Since these questions limit my concern in this paper, I will not be dealing with the question of the truth of claims about God nor with the application of process ideas to other theological doctrines.

Theology has a two-fold structure. On the one hand, as the attempt to express a religious faith, it is descriptive, subservient to the faith which it seeks to express. On the other hand, because it attempts to give a rationally coherent expression of

that faith, it is also potentially, if not actually, revisionary, seeking to 'revise' or 'modify' or 'clarify' or 'correct' the initial, crude and often implicit self-understanding of that faith in order to make it conform to its standard of rationality. Fundamental problems arise in theology when it appears that these two approaches seriously conflict — for example, when it appears that the concept of God, in order to be a rationally acceptable concept of the Supreme Being, must include notions which contradict what religious faith in God presupposes. It is because they judge that traditional Western theology is characterised by a fundamental and irresolvable tension of this sort that process theologians have attempted to develop a significantly different concept of God.

*Why do Process Theologians regard the concept of God traditionally accepted in Western Theology as unsatisfactory?*

The short answer to this question is that while theology, particularly when it has been aware of philosophical considerations, has traditionally talked about God as, *inter alia*, absolute, *actus purus* (pure actuality, without any potentiality), *ens realissimum* (having all perfections), eternal (in the sense of 'beyond' or 'outside time'), unchanging, unchangeable and impassible, these notions, if taken seriously, contradict any talk about God as creating, loving, pitying, deciding and acting in relation to the world. There appears, therefore, to be a basic conflict between some of the terms which theologians have traditionally considered to be essential parts of a rationally adequate description of God and the believer's faith in God as a personal being who responds to him and is a proper object of his trust. Furthermore, it is doubtful whether notions like that of *ens realissimum* as traditionally understood can be used coherently to describe any actual being since it seems that not all values are compossible.

It may be suggested, however, that this 'short answer' is a tendentious caricature. I will, therefore, add insult to injury by briefly illustrating the problem which process theologians see in traditional theology by reference to the works of three



theologians, two of whom are of considerable importance for Western theology. Their statements show how their understanding of the demands of rationality led them to views of God which are incompatible with an understanding of faith as a believer's response to God as one who personally calls, loves and forgives him.

Anselm expounds the nature of God according to the principle that God, as the greatest conceivable being, must be 'whatever it is better to be than not to be'. On this basis he concludes that God is 'just, truthful, blessed' because 'it is better to be just than not just; better to be blessed than not blessed'.<sup>1</sup> So far his argument seems to develop a proper understanding of God's nature. He goes on, though, on the basis of the same principle to hold that God, among other qualities, must be thought of as both 'compassionate' and 'passionless'.<sup>2</sup> God must be thought of as 'compassionate' because a non-compassionate being is, presumably, intuitively an inferior being in Anselm's judgment. At the same time, God's blessedness and his impassibility would be respectively impaired and contradicted in Anselm's judgment if God were affected by sympathy for those who suffer and thus are candidates for his 'compassion'. Anselm seeks to escape the dilemma by holding that God is 'compassionate in terms of our experience, and not compassionate in terms of [his] being'. He asserts, that is, that God is 'both compassionate' because he saves 'the wretched' and 'not compassionate, because' he is 'affected by no sympathy for wretchedness'.<sup>3</sup> This attempt to harmonise the assertion of the compassion with that of the impassibility of God by describing God's actions as expressions of compassion while denying that there is anything in God which can correspond to our experience of compassion seems to be intrinsically unsatisfactory and contrary to the Christian's faith in God. It is intrinsically unsatisfactory because it involves the denial of an essential element of the notion of 'compassion' when the notion is applied to God. Talk of 'compassionate' acts which do not reflect some feeling of 'sympathy for the wretched' is talk which contradicts its own meaning. It is, furthermore, contrary to the Christian believer's faith (which is what Anselm is trying to explicate by *unum*

*argumentum* acceptable to a non-believer) in God as one who is significantly to be described as grieving over his people, loving his children like a father, pitying those who suffer and longing for the restoration of those who are lost — in the God, that is, who is described by the story of the burning bush, Hosea, the parables of the lost sheep, the lost coin and the prodigal son, and who is held to be revealed in the suffering of Jesus. Anselm's attempt to explicate God's nature thus leads him into fundamental difficulties because he accepts, apparently without question, that as perfect God must be regarded as impassible — as unaffected by others.

Thomas Aquinas' considerable — and in some ways unfortunate — contribution to Christian theology was to attempt to express it in Aristotelian terms. His acceptance of an Aristotelian structure of thought with its underlying principles led him, in a similar way to Anselm, to conclusions about the nature of God which contradict the believer's implicit understanding of his relationship to God. In his *Summa Theologica*, for example, he concludes that 'it is evident that it is impossible for God to be in any way changeable' on the grounds that God, as 'first being', must be 'pure act, without the admixture of any potentiality' (i.e., as *actus purus*).<sup>4</sup> Accordingly he claims that there are no reciprocal relations between God and his creatures by which the creature can in any way affect God. Although all creatures 'are really related to God Himself, . . . in God there is no real relation to creatures, but a relation only in idea, inasmuch as creatures are referred to Him'. Attributes of God which imply 'relation to the creature' do not describe 'any change in Him' but only 'the change of the creature; as a column is on the right of an animal, without change in itself, but by change in the animal'.<sup>5</sup> This understanding of God's activity as final causality is incompatible with talk of God as deciding and acting. It implies that God cannot in any serious way be described as 'living': his existence is understandable only as unchanging self-contemplation. It is difficult to see how this picture of an utterly narcissistic being can be reconciled with the God revealed in Jesus 'who for us men and for our salvation came down from heaven . . .'

Our third example is provided by William Beveridge who, in his commentary on the Thirty-Nine Articles, <sup>6</sup> seeks to show that they are 'consonant to Scripture, Reason and Fathers'. Beveridge states that these three authorities agree that God is 'not subject to, nor capable of love, hatred, joy, grief, anger, and the like, as they daily arise in us imperfect creatures; but he is always the same unmovable, unchangeable, impassible God.' <sup>7</sup> We are told, also, that 'it is impossible for God, who is a most pure act, to be subject' to 'suffering'. <sup>8</sup> Furthermore, it is argued that as God is essentially and wholly perfect, he can neither ever have been nor ever become imperfect: he cannot, therefore, change since change must be either from or to an inferior state. Although Beveridge can find some texts in the Bible and the Fathers and some reasons which apparently support his position, the view of God which he advances is basically irreconcilable with an understanding of God who knows, cherishes, cares for, responds to and aids men in their contingency and freedom.

These brief references to Anselm, Aquinas and Beveridge illustrate the view of God which has been adopted, more or less uncritically, by most Western theologians. In them we find a concept of God which seems at first to be rationally satisfactory, even rationally necessary, since any theistically adequate concept of God apparently needs, implicitly or explicitly, to conceive him as absolute, necessary, eternal and wholly perfect. A being who is not absolute or not necessary or not eternal or not perfect would not be 'God'. Nevertheless, as I have tried to illustrate, when Western theologians have drawn out the implications of such a concept of God, they have produced the concept of something that is more like an ideal value than like the living God in whom the believer enjoys the personal relationship of faith.

How has traditional Western theology reached this situation? It has reached it because, on the one hand, it has accepted, most properly, the principle of non-contradiction and, on the other hand, has been persuaded, again most properly, that some descriptions are required by any rationally adequate understanding of God. These descriptions include those of being an absolute,

necessary, unchanging, cause, infinite and eternal (and it does seem clear to me at least that as the highest possible being God must in some significant sense be held to have these qualities). Now these descriptions have their opposites: absolute - relative; necessary - contingent; unchanging - changing; cause - effect; infinite - finite; eternal - temporal. On the basis of the principle of non-contradiction, it is therefore assumed that if one of these pairs of descriptions is properly applied to God, the other is unavoidably denied to be applicable to him. Thus, if we affirm that God is absolute, then we are bound to deny that he is relative; if necessary, then not contingent; if unchanging, then not changing; if cause, then not effect, and so on. The basic problem with this position is that it makes it impossible to affirm coherently, for example, that 'God' 'loves' anything that is in some important respect a changing, self-determining free-agent — i.e., anything like the morally responsible beings which we understand ourselves to be. An absolute, unchanging being, that is, cannot enter into the changing relationship with such an object which is presupposed by significant talk about 'loving' it. 'Love' is importantly not an unchanging state: it involves responses which differ according to the differing states of its object. To take a humdrum example, a father's love for his two-year-old son will require different expressions according to whether the son is trying to draw a car, suffering from measles, expressing infantile rebellion or splashing on a beach. To say that God is in all respects unchanging is, therefore, to deny that his 'love' has the varying responsiveness which is part of the essence of the relationship of love. Similarly it can be argued that an absolute, unchanging being, such as God is traditionally understood to be, cannot coherently be said to 'know' a contingent and changing world nor to act and reveal himself in that world. The traditional concept of God makes God a static, self-centred, only self-knowing absolute, not a living, personal being.

### *Some Theological Responses*

There are several responses which theologians can make to this

situation, each of which has had its advocates.

First, the theologian can choose to let 'reason', as he understands its demands, control his understanding of God. He can, for instance, follow Aristotle's view of what reason requires and find the controlling norms of his concept of God in notions of 'the Unmoved Mover' and '*actus purus*'. He will, in consequence, treat talk about God as loving, caring, feeling sympathy, intervening, and so on, as pious but misleading anthropomorphisms. The 'God' of his theology shares the absolute, necessary and unchanging qualities of an ideal value or the multiplication table. Here 'theology' has abandoned religious faith and become a kind of metaphysic.

A contrary response is that of the theologian who attempts to evade the control of reason in order to allow religious faith wholly to determine his talk about God. One type of this response is found in the theology of H. L. Mansel who argues that 'the fundamental concepts of Rational Theology' are 'self-destructive' since contradictions result from the attribution to 'one and the same Being' of the three conceptions of 'the Cause, the Absolute, and the Infinite'.<sup>9</sup> These contradictions do not belong to the nature of God but reveal the limits of our understanding. We must, therefore, recognise that human reason is incompetent to judge theological matters and base our theology wholly upon God's self-revelation to us. This may seem at first an attractive solution to a difficult problem since it places on God the responsibility for correct theological statements. Unfortunately it is a spurious solution. Some control by reason seems inescapable — even if not explicitly recognised — in identifying an authentic revelation and in determining its meaning. Our recognition and explication of a divine revelation, that is, are not and cannot be wholly free from our presuppositions about the nature of God but reflect those pre-judgments even though they may also modify them. A startling illustration of this is Barth's exposition of the Biblical revelation, especially in his early theology. Whereas the Bible seems to me at least to speak of a God who is constantly present with his people and who reveals himself in personal terms, Barth finds the Bible witnessing primarily to what Kierkegaard

described as 'the infinite qualitative distinction between time and eternity'.<sup>10</sup> In spite, then, of Barth's assertion that his theology is completely determined by and expounds only the Biblical revelation, I suspect that what Barth finds in the Bible is determined by his prior acceptance of a Kierkegaardian understanding of the relation between God and man.

A third response to the problem posed by the incompatibility of the traditional theological understanding of God with the believer's faith in God is to refuse to take the offending terms too seriously. This response is found in theologians who use the the offending words but are not prepared to accept all their implications. One example of this response is found in Gore's attempt to assert that God is 'absolute' while rejecting certain unwelcome implications of this description. Gore states that 'the revealed religion undoubtedly postulates a God who is the absolute'.<sup>11</sup> He immediately qualifies this assertion, however, by adding: 'not, of course, that the universe is identical with God its Creator' and by interpreting the notion in terms of God as 'the one and only ultimate source' of all that 'exists in the universe'. In this way he shows that for him God, while described as 'the Absolute', has something over-against himself, even though it is also ultimately dependent upon himself. Furthermore, while Gore states in this sentence that God 'contains . . . all that is', he goes on to say in the next sentence that 'this absoluteness of God must . . . be qualified so as to admit of the existence, by the creative will of God . . . of free spirits' who are dependent on God and yet have 'the power of disordering . . . the world as God would have had it be'.<sup>12</sup> What we have here is an attempt to describe God on the one hand as 'the Absolute' and, on the other, as not the totality of reality and as limited in certain respects by partially autonomous reality (even if a reality which he has created) distinct from himself. This is to use the term 'absolute' but to reject part of what it traditionally means in a way that leaves it uncertain whether or not God is properly to be described as 'absolute' and, if so, what the description means.

This procedure is not uncommon in theology. Attempts

are sometimes made to render it acceptable by baptising its off-spring with the name of 'paradox'. For example, when it is stated that God is both unchanging and acting or both impassible and loving, these conjoint claims are said to be 'paradoxical' and not 'self-contradictory'. A different defence of such apparently self-contradictory claims is to hold that each term must only be understood in a way that is compatible with its associated (and apparently self-contradictory) one: for example, the 'impassibility' of God must be understood in a way that is compatible with his 'love'. Unfortunately both these defences frequently fail in practice to make it clear what the theologian is trying to assert in such cases. They leave the strong suspicion that the theologian 'wants to have his cake and eat it' — to assert, for instance, that God is absolute and unchanging (on the grounds that a 'God' who does not have these qualities cannot be believed in as God) while refusing to admit that these descriptions, when taken seriously, have implications which fundamentally conflict with other claims which he wants to make about God — such as that he responds to the needs of his people.

What, then, is the theologian to do? None of the three responses to the fundamental problem for theology which we have discussed is satisfactory. Reason and faith seem to require that we talk of God in some respects as absolute, necessary, unchanging, cause, infinite and eternal and in other respects as relative, contingent, changing, effect, finite and temporal. Can the theologian do this, though, without falling foul of the principle of non-contradiction? Can, that is, the theologian find a way of using both sets of descriptions in a coherent manner or must he give up theology as an inescapably self-contradictory and so meaningless activity? My claim is that Process Theology offers a way of talking about God which overcomes this fundamental problem in a way that meets the demands both of religion and of reason.

One thing further, though, needs to be said before we investigate the concept of God advanced by process theologians, viz., that it is important to avoid being hypnotized by words. Because we talk of the Admiralty Board, we should not think

that we could use a ruler to measure the thickness of that 'board'. Such a view would indicate that we had failed to understand what is meant by 'board' in this context. This is important when we consider concepts like absolute and relative, necessary and contingent, unchanging and changing, as they are applied to God. We must consider what these concepts mean in the context of God-talk and not be so dominated by their use in other contexts that we fail to appreciate that they have more or less different meanings there.

### *Five Points in Process Theology*

Process theology, as its name implies, derives its conceptual structures from process philosophy, the metaphysical thought primarily developed by A. N. Whitehead though with various antecedents stretching back to the pre-Socratics. Among the principle points of process philosophy are five which are particularly relevant to process theology. *Firstly*, what is real is held to be in 'process'. What is unchanging is either dead and past or abstracted from the real. What is real, living and concrete is continually in process of change. This claim may be supported by the insight that what is most real for any person is not the apparently (but illusorily — cf. what the atomic physicists tell us) unchanging existence of objects like tables and chairs but his own existence and that that existence involves an identity through change — as 'I' become aware of 'my' existence, the 'I' of whose existence 'I' am aware is changing, even in the very process of becoming aware of it. *Secondly*, and following from the first point, what is real is necessarily in time. It has a past out of whose decisions and events it has become what it is now and a future in which what it will become will be determined by the past and by decisions and actions made by itself (if possible) and by others from now onwards. *Thirdly*, it is held that no real entity is a totally discrete individual but that each entity is part of a social process in which it both affects and is affected by all other real entities. This is not to say that every other entity affects a specific individual equally — some entities are far more 'important' and effective in their influence



on a particular entity than others — but it does imply that ultimately everything is bound up and interacts with everything else in a complex way which resembles a society rather than the relationships between numbers in a multiplication table. *Fourthly*, it is claimed that the highest form of power is not mechanical force but the attractiveness and persuasiveness of love which draws others to co-operate rather than compels them to obey. This again may be backed by consideration of personal existence where it seems that I am more truly in the 'power' of those whom I freely choose to obey than of those who coerce me against my will and who never, as a result, win my consent to their plans. *Fifthly* and finally, it is held that God, as Whitehead put it, 'is not to be treated as an exception to all metaphysical principles' — as the traditional concept of God seems to require — but as 'their chief exemplification'.<sup>13</sup> It is on this basis that Hartshorne has developed his concept of God. What is this concept?

### *Essence, Existence and Actuality*

First a short digression is necessary.

The distinction between essence, existence and actuality is fundamental to an understanding of Hartshorne's position. Hartshorne summarises the distinction between existence and actuality in this way: "Existence" is merely a relation of exemplification which actuality (any suitable actuality) has to essence'.<sup>14</sup> Let me try to explain this, at first sight obscure, definition by means of an illustration. Take the statement 'A table exists in the next room' (a rather odd way of putting what we would normally express as 'There is a table in the next room' but not a way which, I think, alters the meaning of the statement). This statement is true if and only if there 'exists in the next room' (a phrase whose meaning we shall regard as clear and not concern ourselves with further) something which has the 'essence' of being a table. Now, simply on the basis of our knowledge of English, we can roughly specify this essence: the essence of being a table, let us say, is the essence of being a solid object which has a flat top,

supported by legs, and is large and strong enough for articles to be placed on it. The presence of any object in the next room which meets this specification would, then, allow us to state truthfully that 'A table exists in the next room'. It should be clear, however, that a wide range of actual objects would allow us to make this statement truthfully, for there are many different kinds of tables. Thus while the statement that 'A table exists in the next room' would tell us that there is in the next room something which is a solid, flat-topped object with legs, large and strong enough to hold articles, we could not tell from this affirmation of its existence what precisely was in the room. Only by inspecting the actual table could we discover in which of the various possible ways the essence of being a table was here exemplified. To say, then, that some 'a' exists is to say that some abstract essence (the essence of being 'a') is somewhere and somehow actualised in an appropriate concrete form. The abstract essence of 'a', however, only specifies more or less widely the range within which an existing 'a' must be concretely actualised. It does not specify its concrete actuality. Furthermore, no 'a' can exist wholly and simply as actualising its essence: as existing it must actualise that essence in some determinate way. A table, for example, cannot exist simply as 'flat-topped' — it must have an actual flat top with, therefore, a particular shape, a particular size and a particular degree of flatness.

### *Hartshorne's Concept of God*

We are now in a position to consider Hartshorne's concept of God.

When we consider any object apart from God, we find that both its existence and its actuality are relative, contingent, changing, effect, finite and temporal. To take, for example, the first two of these qualities: whether we consider a man, a table or a manuscript, we find that its existence is neither absolute nor necessary. It cannot prevent itself being affected or being destroyed by others, nor is there any necessity for it ever to exist at all. That it does happen to exist is due to forces

other than itself. Furthermore, there is no necessity for it to have the actual form that it has. In the case of anything other than God, then, there is no need for it to exist, let alone to have this or that actual form. In the case of God, uniquely, this is not so. God's existence, in order to be appropriate to God, must be regarded as absolute, necessary, unchanging, cause, infinite and eternal. A being whose existence did not have these properties could not be regarded as 'that than which a greater cannot be conceived'. What this means, for example, is that God, as God, must be thought of as existing always and everywhere and forever, as one who can never be destroyed, as one who can never be prevented from existing as what he is, as one who cannot be made to exist as anything other than what he is except by his own volition. (Hartshorne describes this unique mode of existence as *omnitolerant*: it is an existence which, as absolute and necessary, is compatible with, and cannot be destroyed by, all possible relative and contingent objects and events.)

So far Hartshorne's concept of God may seem to agree with that of classical theism. His great insight is to see that this understanding of God's existence does not imply that God's actuality must have the same formal properties. All that the necessary character of God's existence implies for God's actuality is that that actuality must exemplify God's mode of existence in some appropriate form. Thus God's actuality may be understood as relative, contingent, changing, effect, finite and temporal if and so far as this understanding of his actuality is consistent with the nature of his existence as we have described it and is an appropriate exemplification of that mode of existence. If this can be done, then we have a way of talking about God which both recognizes his essential 'Godness' and allows us to use personal descriptions of him meaningfully. Hartshorne claims that, so long as we observe the distinction between abstract existence and concrete actuality, this can be done.

Consider, for example, God's knowledge. We can say that in terms of God's abstract existence his knowledge is absolute: in principle, that is, his knowledge is totally unrestricted, he knows all that there is to be known without any possibility of error.

In terms of his concrete actuality, however, his knowledge is relative to what there is to be known: even God cannot know more than what is knowable. While, then, God knows all that has happened and all that is happening everywhere in the universe, he does not and cannot know the name of Henry VIII's ninth wife nor, since I do not now possess one, the weight of my cricket bat. While, therefore, as *God's*, his knowledge must in principle be complete, unlimited and inerrant, in practice the concrete content of God's knowledge must be relative to and limited by what there is to be known.

Or consider God's reality in relation to the world. That God *is* has always been true and always will be true. God, as God, must be conceived as one who did not come into being through the agency of something prior to himself and as one who cannot be prevented from being by anything other than himself (and, *pace* some of the 'death-of-God' theologians, probably as one who cannot destroy himself). At the same time nothing else has ever or will ever come into being except as ultimately dependent upon God. In terms of bare, abstract existence, therefore, God's reality is to be described as necessary and as the ground of all other reality while the reality of all else is to be described as ultimately dependent upon his reality. Since, however, not all possibilities are compossible, the nature of God's reality in relationship to the world at any time depends in part upon God's choices and in part upon the state of the world. For example, whether God relates himself to the world as impersonal mandarin or as concerned father may depend upon which role he chooses to adopt. Furthermore, the consequences for him of his relationship to the world, which ever role he adopts, will be affected by what the world is actually like. In its concrete actuality, then, God's reality is partly and importantly contingent. If, for example, he chooses to relate himself as a concerned father to a world which is marked by suffering, his actual reality will include sympathy for and so sharing in that suffering. If, alternatively, he chooses to be an impersonal mandarin and the world is marked by suffering, his actual reality may be describable as a state of bliss but it will lack the value of sympathy with the state of others. Thus, while God's reality in relation to the world is

necessary in that he is always there as its ground, it is contingent in that how he is real for the world is partly determined by his own choices among non-compossible values and partly by the state of the world.

Again, consider the nature of God's love. His love may be said to be unchanging in that he never ceases to love men to the utmost. At every moment God seeks what is best for men, both corporately and individually. Granted, however, that we are creatures who change and who live in a changing world, what is best for us at one time may not be the best for us at another time. To take a trivial example which I have already used: love for my two-year-old son involves me in different actions towards him according to whether he is throwing a tantrum, trying out a new toy or walking near the edge of a cliff. The fact that at one time I ignore what he is doing, at another I am prepared to assist him if he asks and at another take a firm hold on him does not, I hope, mean that my love for him varies in its quality at these different times. What it does mean is that my love for him is appropriately expressed in different responses at different times according to what is best for him at each time. In a similar way but on a universal scale, consideration of what it means for God to love suggests that while in abstract principle God's love for men is unchanging in that it is never anything other than perfect concern for the best for men, in concrete practice, in order to be perfect love, it must be expressed in different ways appropriate to the different situations that arise. Thus in order to be perfect love God's love must be said to be both unchanging in principle and changing in its actual modes of expression.

As a final illustration of Hartshorne's understanding of the attributes of God, consider the activity of God. God's activity can be said in abstract terms to be eternal in the sense that God never ceases to express his love and to seek the fulfilment of his purposes in creation. At no time is God not affecting the process of events. What God in practice actually does, however, simply because it does affect the process of events, is itself temporally ordered. While God uses the past and plans for the

future, it does not seem possible to conceive of even God affecting either what is not yet there to be affected (i.e., those events themselves which are still future events) or what has been eternally fixed by having already happened (i.e., those events themselves which are now past as distinct from present evaluations of and responses to those past events). Thus while in terms of God's abstract existence, his activity is to be described as eternal in that there was no point in a temporal order when it began nor will there be any point in such an order when it ends, in terms of God's concrete actuality his activity is to be described as temporal in that his actions which affect the temporal process of concrete reality must themselves be limited by what at any point in time is there to be affected.

Hartshorne calls this concept of God *dipolar* because it uses both of various pairs of opposites (i.e., directly contrary terms) to create the formal structure of its concept of God. He claims that the resulting description neither is self-contradictory nor reflects an arbitrary affirmation of different notions according to our theological wishes in different contexts, since it is systematically related to a distinction between the 'existence' and the 'actuality' of God.

We should note, however, that the resulting dipolar understanding of God's nature does not mean that the opposite of any term which is properly predicated of God is also to be predicated of him. Such an implication would, if valid, make mockery of any meaningful talk about God for it would mean, for instance, that a God who was described as loving, knowing and good would also have to be described as hating, ignorant and evil. The dipolarity of Hartshorne's understanding of God, though, does not apply to all the attributes of God nor is it applied to some of the divine attributes and not to others in a methodologically arbitrary way. It is important here to distinguish between what may be called the *formal* or metaphysical concepts of reality — such as absolute and relative, necessary and contingent, unchanging and changing — and the *material* attributes of reality — such as personal, conscious, active, knowing, loving and good (and their opposites). Hartshorne's dipolar under-

standing of God uses the metaphysical concepts of reality to create a formal structure in terms of which God's material attributes are to be understood. Thus dipolarity, as Hartshorne uses it, does not mean that a loving, knowing and good God is also to be described as hating, ignorant and evil but that God's love, knowledge and goodness are to be understood in a dipolar manner.

This dipolar structure for understanding God allows us, I suggest, both to affirm what must be affirmed about the uniqueness of God's mode of existence if we are to speak of God at all and not of some lesser form of reality and, at the same time, to speak meaningfully of him as active, related and personal. It provides us, then, with a coherent, adequate and appropriate way of conceiving God which overcomes fundamental difficulties in the classical concept of God.

#### *Comparing Traditional and Process Concepts*

Since, though this way of understanding God is to be judged by its adequacy and appropriateness as a concept of God as well as by its internal coherence, various decisions have to be made about what the notion of God requires in choosing between the traditional and the process concepts of God. For instance, must God's 'eternity' be understood as a state of absolute simultaneity 'outside time' (if that can mean anything) as the traditional theological view holds, or can it be adequately described as a temporally ordered 'everlastingness' which has neither beginning nor end and so which is in no way threatened by the passage of time? Process theology regards the latter view, which admittedly is not without its own problems, as fully adequate for what we need to say about God as eternal. It judges that the traditional view pays a metaphysical compliment to God which, on analysis, turns out to be meaningless when applied to a being who can be significantly described as living, choosing and doing.

Again, must God's 'omniscience' be understood to include, as traditionally it is held to include, foreknowledge of all future

events or is it adequate to the notion of God as the perfect being to regard his omniscience as referring to his knowledge of all that has occurred up to now and his knowledge of the probabilities of what is likely to happen in the future? Process theology argues that since time is part of the structure of reality, the future, *qua* future, is necessarily not yet here to be known even by God. Consequently since it can be no diminution of God's perfection for him not to know what is not there to be known, the denial of divine foreknowledge in the process concept of God does not mean that that concept is inadequate.

Again, must God's 'perfection' be understood to imply that he is unchanging, as theology has traditionally held — presumably on the grounds that any change in a perfect being must be to relatively imperfect states, or is God's perfection adequately protected when he is conceived as a being whose later states can surpass his former states but who can never at any time be surpassed by others? Hartshorne has devoted considerable energy to developing this latter view of God's perfection as 'dual transcendence'. The traditional understanding of God's perfection as implying that he must be unchanging is criticised on the grounds, *inter alia*, that to be absolutely unchanging is a state which seems on reflection to be inferior to our own imperfect state as beings with a limited ability to be aware of and to respond to events. To regard God as unchanging is to regard his perfection in terms of that of a ball-bearing — for a perfect ball-bearing would never lose its pure sphericity whatever pressures were applied to it — rather than in terms appropriate to living, personal existence. God's perfection is consequently expressed as a state of continual maximum self-surpassingness where, in terms of God's knowledge for example, at any moment God knows all that is and has been up to then actual but at any later moment knows also what has come to be actual since that earlier moment. This does not mean that God's earlier states are relatively imperfect but that at each moment he is totally aware of and responsive to all that there is at that moment to be aware of and responsive to, including all that has happened up till then. In this way it is possible, according to Hartshorne's process theology, to speak appropriately and



significantly of God's perfection in terms of change in God.

### *Panentheism*

Hartshorne not only describes his understanding of God as *dipolar*, but also as *panentheistic*. What does *panentheism* mean? He uses this term to distinguish his position both from the *theism* of traditional theology and from the *pantheism* of those who identify all reality with God, and to indicate his own view of the relation between God and the world.

There are three, and only three, ways in which God can be thought of as affecting and as being affected by the world. He can be thought of as affecting and as being affected by no, some or all events in the world. To affect and to be affected by some but not all events is an imperfect state and therefore not appropriate to God. To be affected by no events in the world is to be like Aristotle's Unmoved Mover. It is a state appropriate to a perfect ball-bearing or an ideal but, as I have already suggested, is not appropriate to the perfection of a being who is significantly described in terms such as personal, loving and knowing. A being who affects no events in the world is absolutely irrelevant to the world and, so far as the world is concerned, non-existent. Such a being could not be described as the God of religious belief. If, then, God is not to be identified with all reality, the only appropriate way to describe him is as a being who both is affected by and affects all events in the world. This, basically, is the panentheist view of the relation between God and the world. It sees God and the world neither as two asymmetrically related entities where only one (the world) can be affected by the other (God) — the defective view of traditional theism — nor as self-identical — the defective view of pantheism — but as two reciprocally interdependent entities which affect each other. This does not deny the world's dependence upon God for its existence but it does allow to the world a certain (God-given) autonomy which empowers it to act, within limits, independently of God, either co-operating with or opposing his purposes. Hartshorne illustrates this relation of God to the world

by the relation of an ideal teacher to his pupils or of an ideal ruler to his subjects. The ideal teacher, for example, would always be totally aware of his pupils' needs and continually be responding to them as he attempted to bring each of them to the highest realisation of their potentialities that was compatible with a similar realisation by all the rest.

Process theology thus describes God both as maximally influenced by all events — for nothing at all can happen without him being totally aware of it — and as maximally influencing all events. God's influence over events, however, is held to be controlled by his purposes, particularly by those that are expressed by his creation of free creatures and by his love for that creation. God is not regarded as exerting his influence as a coercive power which destroys the freedom of others but rather as exercising his power in love. He is presented, accordingly, as one who seeks to lure others in their freedom to co-operate with his purposes so that each individual may attain the maximum creative satisfaction that is compatible with the same fulfilment of all other individuals. This view of God also means that God is seen as one who shares in the suffering of those who suffer and in the joy of those who rejoice. He is no distant, cut-off, impassible and impassive deity but a God whose love for his creatures makes their feelings part of his own. The creature thus contributes to the life of his Creator. Before the preface to *Man's Vision of God* Hartshorne quotes approvingly from Blake's *Songs of Innocence* :

‘O! he gives to us his joy,  
That our grief he may destroy,  
Till our grief is fled and gone  
He doth sit by us and moan.’

In the end the dipolar panentheist conception of God can be seen as a serious attempt to provide a coherent structure for understanding God which makes it possible for theologians to affirm that ‘God is love’ without denying *either* the ‘Godness’ of God *or* the full reality of his love.

The structure is not without its critics. Professor H. P. Owen,

for instance, describes it as 'a self-contradictory piece of anthropomorphism' which is presented in a 'logically sophisticated form'.<sup>15</sup> My own judgment, for what it is worth, is that Professor Owen has failed to appreciate both the basic logic of Hartshorne's dipolarity and the inherent unsatisfactoriness of the traditional concept of God.<sup>16</sup> In particular it seems that he has not completely understood the crucial distinction between existence and actuality. Consequently his criticisms of Hartshorne's dipolar pantheism are based upon an inadequate appreciation of that concept.

In this paper, I have had time only to answer briefly the questions of the 'Why' and the 'What' of process theology, not to engage in detailed examinations of criticisms of it. Having thus warned you that process theology is thoroughly rejected by some, I want to close by suggesting that it has arisen out of a proper dissatisfaction with traditional ways of talking about God and that it offers a basic conceptuality for such talk which is at least worthy of serious consideration. Process theology, though, like process philosophy, presents a way of thinking about things which in some respects is radically different from our traditional ways. It is important, therefore, to consider it in terms of its own conceptual structures. Confusion and misunderstanding will arise if we try to evaluate it in terms of a different conceptuality — such as that which underlies traditional theology. Finally, it should be noted that much process thought is bound up with panpsychic positions. Although I have not had time to discuss this point in this paper, I am not convinced that the two are necessarily linked and therefore I do not consider, in spite of what I have just said, that the unacceptability of panpsychism necessarily shows the unacceptability of the concept of God advanced by process theologians.

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EDITORIAL NOTE. *It is our usual practice to use capitals for pronouns referring to God but to do so in this paper seems undesirable since they occur so frequently; often several times on a line.*

## ESSAY REVIEWS

# The Supernatural and the 'God of the Gaps'

The relation of God to the world is pictured by Christians in various ways. For instance, (1) God is transcendent in that He is outside nature but occasionally intervenes miraculously to achieve His ends ; (2) God is immanent in nature in the sense that everything that happens, including evolution, is an expression of His activity : all events are miraculous if we like to put it that way but none more so than others ; (3) God is not so much in nature as in man's experience of love, goodness, etc., He is the 'ground' of our being ; (4) God is the efficient cause, that is the cause other than itself, of the whole of the natural world.

A recently published book <sup>1</sup> by Professor Morton has some interesting comments on these and similar views. It provides a focal point for renewed discussion of old controversies.

Professor Morton, author of *Man, Science and God*, is a zoologist who until 1960 was a lecturer in zoology at Queen Mary's College in the University of London. Since then he has been Professor of Zoology in the University of Auckland, New Zealand. He is an active Christian and writes from a definitely Christian angle.

His coverage is wide and there is evidence on every page of his book that he has thought carefully about the topics he discusses. In general he follows Professor E. L. Mascall and (with respect let it be said) is a good deal easier to read than his master.

### *No Connection*

Like Mascall the Author is at pains to say again and again that there is no direct relationship between science and religion. "A natural theology could tell us no more about our father in heaven than sociology could tell us about our father in Hampstead" (p. 168). "Transcendent causes keep clear of the natural order; they are obstinately incapable of being verified in naturalistic terms. Science neither proves nor challenges them" (p. 130). This view saves the Author from the all too prevalent idea that God is to be found in the evolutionary process. "Eloquent of design as the world may be, there can be no trace of plan inherent in evolution itself. If I am asked what the study of evolution can of itself tell me about God, the answer . . . must be a bleak 'Nothing'" (p. 95).

On the evolutionary issue, Dr. Morton bids us beware of the "naive teleology of a God with itching fingers, intervening to give mutation and recombination a creative push this way or that" (p. 95). God, for the Author, as for Mascall, is no part of science (p. 96); most emphatically He is not a 'God of the gaps' (p. 8) for that would imply that with advance in science God would be squeezed out of places where He was formerly supposed to have been active. Rather He is at the back of the whole show, the ground of its being, the transcendent Cause, which cannot reside in itself, since that would make nonsense of reality (Ch. 8).

So far so good. But how does the Author know that this is so? He cannot rest his case on science for that is contrary to his thesis, so he falls back on theology. But this makes one wonder why science, which fills half the book, needs to be brought in at all. Why was the book written? The science and the

Christian theology are at least mostly sound enough, but the two domains seem unconnected — save in the sense that the one lies behind the other. Must we wade through so much science to be told so little?

In the past most Christians have seen at least an analogical connection between science and theology (a recent paper<sup>2</sup> on how Newton connected them is of great interest in this connection) but the Author does not overtly concede even this — though he seems to imply it in places. He also completely ignores the types of relationships between incompatibles in science discussed in particular by Scot Blair.<sup>3</sup> Nor does he say anything about the search for half-way points between the spiritual and physical realms which have occupied men's thoughts for centuries.<sup>4</sup>

### *Nature and Supernature*

However, there is much in Professor Morton's book which apparently contradicts the above. In his treatment of freewill and the supernatural, for instance, he stresses that direct awareness of our own bodies convinces us that two principles are at work. The body's servo-systems (viscera, heart, lungs, etc.) function automatically and it is reasonable to think of them as following laws of nature (p. 201). Yet we exercise control over many muscles and when parts of the motor areas of the cortex are stimulated, causing voluntary muscles to contract, the sensation is quite different from that experienced when the same contractions are due to volition. Given this duality of causation in the private world, we need not be surprised if we discover that both systems are at work in the world at large. There are the automatic impersonal processes with which science deals, and there is also causation by mind which expresses volition by interaction with nature. Whether we call the second kind of causation, either in ourselves or by God on the world, *natural* or *supernatural* depends on how we use language.

Science is concerned with collecting together and classifying

similar events, materials, etc., i.e. members of the same class. "Scientific laws are statements and predictions about probability. A purposeful act — whether it be postulated of man or of God — is in this sense not a member of a class but in its own right unpredictable and unique" (p. 207).

Dr. Morton illustrates his point by referring to the well known story of how Archbishop Cranmer, when burnt at the stake, thrust his right hand which had written the false recantation into the flames. General observation of nature would lead us to frame a physiological *law of reflex pain avoidance* according to which Cranmer should have kept all parts of his body away from the fire for as long as possible. Yet "confronted with this information about Cranmer, we do not feel obliged to say that any law of nature has been breached, or that we must extend the principles of physiology to take account of any new facts."

What happened at Cranmer's martyrdom was a unique event, the result of Cranmer's volition. The event falls into no classification whatever and is not therefore to be included in science. We must not therefore think of it as a gap in scientific knowledge, or imagine that Cranmer's freewill will be squeezed out of the story when science has refined her law of pain avoidance to cover a wider field. In a similar way, if God interacts with nature, we need not feel obliged to speak of the abrogation of natural law, or the squeezing out of God as science advances.

From this it will be evident that Professor Morton's reconciliation between science and theology depends upon his limitation of the field of science. This mode of thinking is apparent also towards the end of the book where the Author discusses the three types of laws of science as distinguished by Sir Arthur Eddington. The third type, called *transcendental* by Eddington, includes all laws which deal with fixed integral quantities (quantum laws). Morton suggests that these are not strictly a part of science. "If the capacity to predict be really one of the requirements of a valid scientific construct, the transcendental laws might not form a proper part of the scientist's conceptual apparatus at all"



(p. 210). This again suggests that he entertains such a narrow and rigid idea of science, that almost by definition, theology is excluded.

### *Freewill*

On the question of freewill, Dr. Morton reminds us that physics allows of indeterminacy. But freedom of will is not freedom in this, the *quantum* sense (were it so we should all be in need of psychiatric care). "Penny tossing choice would be a worse basis for rationality than determinism" (p. 56). Those who, like Professor Gilbert Ryle, argue that physics is irrelevant to freewill miss the point which is, of course, that if one kind of freedom can operate without disruption of nature's laws, another can do likewise (p. 46).

What positive evidence have we that mind can act directly on matter? This certainly seems to happen in our own brains when we exercise our will to move our muscles and Eccles' view of this is plausible, he thinks.

Psychosomatic illness and cures afford additional evidence, difficult to gainsay. Consider the chemical basis of an allergy. Clones of cells originating in the thymus gland and other centres generate antibodies to a foreign protein. Under deep hypnosis a verbal command can change the chemical molecules. "This access between mind and psychology is as mysterious — no more and no less — as the transaction between neurone and volition. The mind would seem to be supremely sovereign over what happens in the body." And of course the moral life must be involved too (p. 74).

### *Miracle*

Our difficulty with regard to miracle arises because we cannot conceive of supernatural power "getting a toehold within the

system" of nature at all. But "the explanatory gap runs not between God on the one side and the created world on the other, but cleanly through our own selves, between our conscious purposes and their fruition in nerve impulse and action" (p. 208). "The philosophical problem of myself acting freely is as profound as the problem of God acting by miracle" (p. 201).

If we are to get back to belief in the Christian God, says the Author, we must "think of God as able to act directly upon the world for the realisation of certain values." Without such a belief it is impossible to think of Him as showing compassion to His creatures, far less keeping His people like the apple of His eye, or hiding them under the shadow of His wings. The sophisticated mind may and does find great difficulty in accepting such a view, but sophistication of this kind is perhaps a worse hindrance to entrance into the kingdom of heaven than mere acquisition of wealth, for it is the result of the corruption of a nobler faculty (p. 205).

From Dr. Morton's book and particularly from the example of Cranmer which he cites, one gains the impression that the differences between the various schools of thought in the Christian world are often about language rather than about fact. Some scientists might wish to include Cranmer's act as part of the subject matter of science, because it is (or was) observable and affected subsequent events. They might claim that advances in neurophysiology would explain it in due course so that Cranmer's freewill would be squeezed out of the picture. They might point out that it is difficult to distinguish between Cranmer's act which took place once only, and very rare physical phenomena which, though they may have been observed once only, might possibly be observed again.<sup>6</sup> Or to take another example, suppose non-living matter became alive, just once, in the early history of our planet. If from that one living thing all others were derived, are we to put that one event outside science? And if we say that it *is* outside science, how can we afford to mock at the idea of a Creator with itching fingers looking around to see where He can push a molecule this way or that to bring about unique

events ?

Or there is the case of the nova of 1572 ? <sup>7</sup> When it appeared it was thought to be the only one of its kind and so was classified by scientists as a miracle outside the scope of science. But in later years astronomers observed other novae and these, like that of 1572 were also beyond the orbit of the moon. It was therefore decided that novae were not miraculous after all and they were duly assigned a place in science. Was God squeezed out ? Suppose many had later done what Cranmer did, would their acts receive a rightful place in sociological science ?

To some extent at least what we include in science is a matter of choice. The more rigidly we exclude unique or possibly unique events or facts, the more plausible it will be to say that we cannot reach theological conclusions from the study of science. If, with Morton, we exclude all unique, or supposedly unique, events our God will be the 'wholly other' who does not interfere with the laws of science. If, on the other hand, we think of science in a more inclusive way, we can hardly avoid thinking of God as intervening in science and it will then be reasonable to hold that scientific findings may sometimes lead to theological conclusions. To assert or to deny that science can tell us something about God may then be meaningless in itself : all that we are saying is that we do or do not take a wide view of what we think ought to be included in the word *science*.

If we take Professor Morton's strict view of science it is certain (as indeed he agrees) that we shall sometimes be confronted with actual or supposedly unique events (e.g., Cranmer ; nova of 1572 <sup>7</sup>). Because on his view they do not belong to science, our failure to explain them cannot then at the time be described as pointing to gaps in scientific knowledge. However, if it later turns out that they are not unique after all (cf., nova of 1572) they become (on Morton's view) a part of science. Seen retrospectively, therefore, the supposedly unique events belonged to science all the time. Such events may or may not be due to intervention (by God or some other mind) ; being fallible

we are liable (like the astronomers of 1572) to make mistakes. When we do make a mistake it may seem as if God has been squeezed out, so to speak: it makes no odds if He is squeezed out of *science* as such or out of explanation in general. The Author cannot have it both ways. If he believes that God has a 'toehold' in the physical world, he cannot afford to poke fun at the idea of the 'God of the gaps' or of God as on the look out for molecules which need an extra push or two to accomplish His plans. Unfortunately in the book under review the Author attempts to preserve his cake and eat it too. However, taken as a whole he is commendably honest and draws frequent attention to the inconsistencies and absurdities of current views. For example, he points out that many modern theologians now euphemistically refer to the supernatural as the sacred (p. 107), so anxious are they to avoid the appearance of being thought anti-scientific!

### *The Devils*

It is instructive to compare the modern debate with a similar discussion at the time of the witchcraft trials. Witches, by the power of the devil, did wonderful things (or so men said) in a day when theology demanded that only God could work supernaturally. Did not the facts point to the conclusion that the devil, like God, could also perform miracles? Of course they did, But theologians felt that it would be impolitic to admit as much. "What effects soever Devils or those called Witches do bring to pass in humane Bodies are wrought by natural Means, and proceed from natural Causes" wrote Dr. John Webster, the Protestant.<sup>8</sup> Catholics, like St. Thomas, said that "all angels good and bad, by their natural power . . . are able to transmute our bodies" while Henry Kramer and James Sprenger, Pope Innocent VIII's obsequious Inquisitors, declared that though witchly activities may appear miraculous to *us*, they "are not properly speaking miracles as are those which are outside the whole of created nature, as are the miracles of God and the saints."<sup>9</sup>

The issue here was purely verbal as it still is today (at least in so far as it is unmixed with sheer disbelief of the Christian verities). Define your idea of the natural to include what angels and devils can do and of course there is no need to assume that their actions are *supernatural*. But define what God and holy saints do as supernatural and of course there is a rigid distinction between these acts and the others, even though both may appear outwardly similar.

The debate, it seems, has now ascended the scale. The doings of angels and devils were once declared natural not supernatural: today modern theologians are saying the same of God Himself. Dr. Morton, with an apt quotation from Eddington, brings us back to earth (and common sense) with a jolt: "Either the physicist must leave his causal scheme at the mercy of supernatural interference from me, or he must explain away my supernatural qualities," the materialist, of course, favouring the latter view that man is not supernatural but only complicated.

Though Dr. Morton's book is a vast improvement on much that has been written on this subject in recent years, we are still left with the impression that it is not entirely free from compromise. However, his treatment of much of the modern theological writing is as scathingly critical as any could wish!

#### *Robinson and Others*

Bishop Robinson's God is "fashioned out of *our* ultimate depths and *our* existence" but has nothing to do with the "role of God as creator and sustainer of the world" (p. 108). God is "essentially immanent in ourselves and discoverable by personal relationships 'in depth'," thinks Robinson (p. 190). What, wonders the Author, was Robinson's God doing at the middle of the Jurassic age? And are we not better off without pretentious phrases like "ultimate reality," "ground of our being" and the like? Is God to be dismissed as a "mythological personification of the vital energy of personal values"? Do not such notions

display a degree of anthropocentricity that "would have shaken Archbishop Ussher and the old time special creationists off their feet" ? (p. 124).

As for prayer, Robinson's view that it "is the responsibility to meet others with *all I have*" (p. 191) draws the comment from Dr. Morton that such "advice on prayer [is] misconceived and even harmful." For a busy Christian man, contacting his fellows in the daily run of life, true prayer only too easily goes cold in "business of action" (p. 194).

Turning to other moderns, Bultmann's definition of the word of God in terms of what happens to the hearer strains our credulity as much as older views, thinks Morton (p. 185). But the Author is more favourably disposed towards Jung, though in this section he uses language which borders on the mystical and one is left wondering what it means. ("The inner Christ is born within us"; "The union of the God above and the God within"; "Christ is not only the symbol of the Self, but is the Self indeed" (pp. 142-4).

In the closing chapters the Author reveals himself as a Bible-loving Christian of High Anglican persuasion who believes in conversion and deplors the lack of Bible study in the churches today. Certainly he has produced a sensible, thought-provoking and, let us add, well-indexed book which deserves to be read by Christians of all persuasions. Unfortunately there is some needless repetition.

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4. See R. E. D. Clark, *The Christian Stake in Science*, 1967, Chap. 9.

5. See this JOURNAL, 99, 166.
6. See this JOURNAL, 1940, 72, 156; 99, 8.
7. See Kocher, this issue, p. 79.
8. *The Displaying of Supposed Witchcraft*, 1677.
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R.E.D.C.

## Hardly a Battle — Kocher on Science and Religion

**Most of us have grown inured to the stories of how, in bygone battles between science and religion, science always won the laurels. In an important work P. H. Kocher considers in detail one of the periods at which the warfare is popularly believed to have been at its height — the Elizabethan period when medieval conceptions of the universe were in decline and the foundations of modern astronomy were being laid. What does he find? The article that follows is full of surprises.**

Kocher's '*Science and Religion in Elizabethan England*' deserves to be much better known than it is, both on account of its high level of scholarship and its interest to the Christian apologist. Regrettably enough it has not been previously reviewed in this JOURNAL — better late than never!

It is not difficult for the historian, on looking back over the centuries, to fancy he can discern an age-long war between science and faith. Nor is it difficult for him to document the struggle: he has but to follow the technique of A. D. White in his monumental *History of the Warfare of Science and Religion* by quoting unbalanced feidist Christians who denounced findings of science

and contrast them with utterances of sane scientists who favoured the new learning. The overall impression created is inevitably one of a battle field.

Kocher's book deals with the Elizabethan period in English history, that is the period just before Newton and the founding of the Royal Society. It is obvious that the author has devoted many years to studying everything of substance published in this period, the period which determined the atmosphere in which the great advances of the seventeenth century were made. He writes with great clarity and in a beautiful prose. Many quotations from the originals are given and there are no generalities unsupported by proper documentation. The author gives careful analyses and classifications of all ideas current in Christendom, in particular of Roman Catholic, biblical and Reformation doctrines, which might be construed to aid/hinder the development of science: it is in this unusual feature, perhaps, that the chief value of the work lies.

The book is arranged in 16 chapters covering such topics as astronomy, medicine, psychology, Providence, views about the end of the age (did the thought that the end of world was near make science seem less worth while?), astrology, magic and so on.

The general conclusion reached is that there was no war between science and religion. The tendency for science to proceed without overt reference to religion did of course tend to make religion less real to the ordinary man in some ways; yet not, perhaps, in others as when man began to gain a new vision of the magnificence of the creation. However, the increasing stress on God as the first Cause did tend to depersonalize Providence.

On the controversial Copernican issue, the new view was largely supported in England by orthodox and prominent divines but many others turned to variations of it suggested by Tycho and Gilbert.

A very literalistic interpretation of some, though not of all passages in the bible, (mention of the four corners of the earth,



etc.) would suggest that the earth is flat. In the 4th century of our era some of the church Fathers (Lactantius in particular) turning in revulsion from pagan cosmology, sought to build up a picture of the structure of the world based on Scripture only. The resulting flat-earth theory was generally rejected by Christians who, even in the middle ages, realised that such matters must be decided by observation as well as by revelation. On scientific matters, at least, the Bible could not be interpreted without external reference. In the 16th century the lesson had been well taken to heart (p. 199). Scientific arguments in addition to scriptural ones were freely used both by those who defended the Ptolemaic picture as well as by the Copernicans. At best the Bible issue might have delayed the final acceptance of the geocentric view of the solar system by a short while, but even this is uncertain.

Turning to medicine, it was generally believed at the time that God was responsible for disease, often sent as a judgment for sin. Did this make the physician give up his efforts to cure a little sooner than he might otherwise have done? Since God's healing was generally held to operate through doctors called to serve Him in this way, the effect of the belief might well have been the opposite. In fact there is no evidence to show that medical skill was hindered by theology. (Though not within the purview of the book, a fair case could be the other way as a result of earlier theological objections to dissection of the human body. But this is offset by the great help which theology has been to medicine in other ways, e.g. in the discovery of drugs such as the salicylates.)

The greatest bombshell of the period was the appearance of a *nova* in Cassiopeia just four centuries ago in 1572. Thomas Digges and John Dee, using the method of parallax, were able to show that the brilliant new star, visible to the naked eye by every man in Europe for 16 months, lay outside the orbit of the moon (p. 174). In Ptolemaic astronomy the heavens, beyond the orbit of the moon, were not subject to change. Here, then, was a clear cut issue. Either the accepted system of astronomy was wrong, or it was correct in principle but the nova was a miracle

— a new star like the star of Bethlehem, perhaps.

“Many of course dodged or did not see the issue: they merely non-committally recorded the observed facts of the nova’s position, magnitude, and so on. But the intensely interesting point is that the first impulse of those who did face the issue, including some of the best scientists of the time, was to declare the phenomenon definitely a miracle . . . There seems not to have been a single astronomer in England who immediately and completely renounced Aristotle on this occasion.” Similarly in Denmark, Tycho Brahe led the way stating that the nova “shined forth most miraculously and contrary to the Laws of Nature, even in the highest Firmament”. To make it, said Brahe, God must have taken celestial matter from the Milky Way. (p. 175. A similar interpretation was commonly given by scientists, including Brahe, for the origin of the comet of 1577).

Only later, after a few decades had passed, was it discovered that changes beyond the moon were not uncommon — several comets appeared and Halley discovered the law governing the return of the one named after him. It then became clear that such events could not be miraculous after all: by general consent miracles were very rare events.

Another fascinating instance in which it was science rather than theology which supported the old order, is afforded by astrology. According to the usual humanist version of the history of science we might expect to learn that theologians supported this ancient superstition while go-ahead scientists were all against it: exactly the reverse is the case. Of the six full length polemics against astrology, five were by ecclesiastics (a sixth was politically motivated). “There is no escaping the conclusion that the array of the Elizabethan clergy against divination by the stars was almost unbroken. And who, on the other side, did speak up for astrology? To the bewilderment of the modern analyst, chiefly the foremost scientific men of the age.” With the exception of a few divines who were themselves scientists, “the apologists for astrology were an almost solid front of physicians, astronomers and other natural philosophers renowned for their achievements”

(p. 202f). “ Scientists for once unwittingly played the obscurantists. It was a singular spectacle but not without its ironies ” (p. 224).

The general absurdity of the idea that theology and science were at war is seen from figures which Kocher has been able to collect which show that about 40% of those who published scientific works in the period were themselves clergy (p. 116). It is interesting to be reminded that Francis Bacon found encouragement for science in the biblical prophecy that knowledge would be increased in the latter days. It was generally believed that the end of the world would come around 2000 A.D. so that science had about 400 years of development ahead.

The Author concludes that the situation is little changed today and believes that the Elizabethans had hit upon the right synthesis. “ Science must not run amuck but must remember God as its source and its final end. Scientific method is a device only, not a synthesis ” (p. 330).

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## SHORT REVIEWS

## SCIENCE AND RELIGION — AN EVOLUTIONARY VIEW

A. R. Peacocke, *Science and the Christian Experiment*,  
OUP, 1971, 214pp., £4.00 and PB £1.25.

In this book the Author, a Christian, a scientist and a Fellow of St. Peter's College, Oxford, seeks to link the scientific and theological enterprises by laying stress, *inter alia*, on such common features as personal involvement, intellectual integrity and a common attitude to new ideas.

After outlining his purpose the Author summarises the whole of science (in one chapter!), and discusses such topics as the meaning and importance of evolution, creation, the immanence of God as Holy Spirit in the cosmos, Christ and evolution, and the Christian view of matter.

The discussion follows lines already made familiar by such writers as Lloyd Morgan, Charles Raven, C. G. Simpson, Teilhard de Chardin, Michael Polanyi, W. H. Thorpe and others. Little if anything appears to be new and in the Reviewer's opinion most of the views expressed have been more persuasively presented by others. Nevertheless there will doubtless be many who will welcome this synthesis of a number of strands of thought now woven into one and illustrated by apt quotations. The printing and format, too, are in the highest tradition of the Oxford University Press.

Theologians in the past have been castigated for their dogmatism. In this book the dogmatism is as pronounced as ever, but is centred on interpretation of scientific fact. The contrast between J. D. Bernal, the materialistic Marxist and A. R. Peacocke, the Christian, is, to say the least, surprising. Bernal, while expressing his views strongly enough (in *What is Life?*) commendably devotes a long chapter to scientific argu-

ments which tell against them: Peacocke, on the same issue, (the theory that there is a gradual transition between the non-living and the living right up to the higher forms of life without entry at any stage of a non-material principle from outside) enters no *caveat* at all. He seems unaware that views of this kind owe more to faith than fact (see A. Jones, this **JOURNAL**, 98, (2), 25).

On the question of life the Author (p. 86) follows Polanyi in drawing an analogy with a steam engine. The steam engine obeys the laws of physics but it is untrue (or at least pointless) to say that atoms have primitive undeveloped steam-engine-like qualities; similarly it is pointless also to say they have primitive consciousness. (The Author, on p. 131, alludes to but fails to face the fact that an outside factor is necessary to turn a collection of atoms into a steam engine — he seems content to assert repeatedly, but without giving reasons, that in the case of life no outside factor is involved.)

As for creation, it is not a process which occurred in time because God made (or makes?) time (but see this **JOURNAL** 99, 73): therefore to speak of creation is to make a present claim about God and “the act of creation by God . . . [has] the same relation to all points in time” (p. 128). God creates through the evolutionary process, the implications of which need to be worked out by Christians (p. 123). God, as the Holy Spirit, is immanent in matter and in man who is no longer to be thought of as a ghost in a machine. God’s activity in matter is continuously creative, so that the coming of Christ and the role of the church are to be viewed in dynamic (evolutionary) terms. In Christianity, especially in the Eucharist, mental and material realities are combined (p. 178–184).

An interesting argument is that just as a collection of building materials on a site is best explained in terms of what will ultimately develop there, namely a house, so the cosmos is best understood in mental terms because it gave birth to mind. In this way an argument from design is developed which differs from the classical watch-maker argument (p. 134).

It seems strange that the second law of thermodynamics is not mentioned, nor the biblical doctrine that God will remain when the cosmos, far from continuing to actualize ever new emergent potentialities, will have waxed old like a garment. After the late Canon Raven had, during the course of a lecture, made a particularly outrageous statement about the second law, a research worker in physics approached him in the hope of a rational discussion. "Are you connected with the Cavendish Laboratory?," asked Raven, quite curtly. "Yes," said the researcher. Raven took to his heels and was gone! One has a feeling that Dr. Peacocke might do the same!

#### WHAT MADE SCIENTISTS TICK?

Trevor H. Levere, *Affinity and Matter, Elements of Chemical Philosophy, 1800-1865*, Clarendon Press, 1971, 230pp., £4.00.

This is a fascinating book, often amusingly written but heavily documented in the best tradition of scholarship. It tells the story of the "sublime speculation" (to quote Davy) that a fundamental simplicity underlies the apparent variety of chemical species and qualities and of the early attempts to unravel the nature of the forces which hold atoms together. It deals in great detail with the development of the ideas of Davy and Faraday, and in lesser detail with those of many other scientists of the day, Whewell, Oersted, Dumas, Laurent, Berthollet, Berthelot and others. A later chapter (Chapter 6) deals with contributions from organic chemistry.

At various times in the history of science men have fancied that they already knew most of what was knowable: the task of future scientists was merely one of filling in relatively un-

important details. In chemistry this was the case around the beginning of the eighteenth century when John Freind lectured at Oxford explaining with great enthusiasm that atoms are held together by gravity so that there was and could only be one chemical system which in turn dovetailed into Newtonian astronomy. There was the drawback, of course, that chemistry could not yet be tackled mathematically, but that was no cause for worry as the mathematicians would soon get busy. In essence man now knew the principles governing chemical phenomena and only details remained to be filled in. This gravitational chemistry, with which the book deals in some detail, thrived for a century and then declined until in the end it received support only from some mathematicians. [In parenthesis it may be added at this point that another recent book (Arnold Thackray, *Atoms and Powers*, Harvard UP and Cambridge, 1970, pp. 23 + 326, £4.20) also tells the story of Newtonian chemistry.]

One main purpose of the book under review is to trace the philosophy which lay behind the great discoveries of the period dealt with.

In this connection there has, in recent years, been considerable speculation on the part which German philosophy, particularly that of Schelling, may have played in the development of the ideas of Davy and Faraday. Levere doubts if it exerted any influence at all. Speaking of Davy he writes: "At the basis of his philosophy of science lay eighteenth century natural theology: it was to this that Davy owed his seminal convictions of the simplicity, order, unity, and purposefulness of the cosmos; and his theory of matter, together with his life's work in the laboratory, can be seen as attempts to illustrate these convictions by discovery in the natural world" (p. 24). All his ideas derive from natural theology plus Newtonianism, rather than German idealistic metaphysics (p. 25). His life's work was a search for the unity of nature but "the unity of nature and the unity of God were implicit in one another." He saw the different manifestations of the unity of force as governed by "an energy of

mutation impressed by the will of the Deity" (p. 27).

"Davy knew that the world, designed and created by God, was ultimately one, simple and purposeful. He did not allow his religion to trespass into the laboratory, but he did let it guide and determine his fundamental beliefs about nature; and although he would not allow religion to decide upon the content of a theory, nevertheless he could let it be effective in the selection of theories" (p. 60).

"His theology came to appear to him as a major source and justification for his philosophy" which was not at all typical of the scientists at the time (p. 45). To quote Davy himself:

And being sure from revelation, that God is omnipotent and omnipresent, it appears to me no improper use of our faculties, to trace even in the natural universe, the acts of His power and the results of His wisdom, and to draw parallels from the infinite to the finite mind. (*Consolations.*)

The third chapter deals with Faraday, the Sandemanian, whose attitude to science differed little if at all from that of Davy. The view that Faraday kept his religion and his science in separate compartments of his mind is based on a single quotation from the great scientist. It is clearly untrue, except in the limited sense that Faraday did not seek theological justification for specific hypotheses put forward in his laboratory. In one short passage discussing the atom and not intended for publication Faraday, as Levere points out, mentions God three times. Faraday often connected the powers of nature with the power of God and in his lectures he would not infrequently end on a note such as this:

. . . . . the harmonious working of all these forces in nature, until at last, the molecule rises up in accordance with the mighty purpose ordained for it, and plays its part in the gift of *life itself*. And therefore our philosophy, whilst it shows us these things, should lead us to think of Him who hath wrought them; for it is said by an authority far above even that which these works present, that *the invisible*



*things of Him from the creation of the world are clearly seen being understood by the things that are made, even His eternal power and Godhead.*

Nevertheless, in Levere's view, Faraday did not argue inductively to God as did Paley: he adopted the theology of nature rather than natural theology — an attitude common among evangelicals of the time. It is interesting to note that he distinguished the laws or powers innate in matter from those impressed on matter by God. This made him wonder if perhaps radiation was a power without matter, because otherwise it was hard to imagine the one without the other (p. 101).

## TWO BOOKS ON MORALS

J. N. D. Anderson, *Morality, Law and Grace*,  
Tyndale Paperback, 1972, 50p.

This is a topical and thought-provoking treatment of a subject which has suffered as much from the illiberalism of the liberals as from that of the hyperorthodox.

The author, Professor of Oriental Laws and Director of the Institute of Advanced Legal Studies of London University, is uniquely qualified to treat it in a non-parochial way, and Christians accustomed to conventional analyses may find it particularly helpful to see the current debate against a background that ranges over Buddhist, Muslim and Hindu thought as well as that of the West.

Attacks on morality are of two kinds. The commonest sort take as their target particular "do's" or "don'ts" of traditional codes. Less common, but more sweeping in aim,

are those that question the whole notion of morality by denying human responsibility. Professor Anderson's first and longest chapter, on "Morality and Determinism," is devoted to a rebuttal of this latter line of argument. Though inevitably condensed, it offers a valuable guide to the literature, and clears all the ground needed for the main discussion.

How far may legal sanctions properly be used to preserve moral standards? Is our society really "permissive" — or is it merely lax in selected moral areas, while "singularly intolerant of opinions which it deprecates" (p. 41)? Are the communists right in believing that "sexual laxity tends to undermine the moral fibre of a democracy which they are seeking to destroy" (p. 50)? Can we really speak, in any general and meaningful way, about acts which "deviate from accepted morality but harm no one" (p. 72)?

Questions such as these — admirable material for discussion groups of all ages — are sensitively probed with the conclusion that the law cannot disclaim all concern with "moral harm."

The problem of tyranny and injustice receives equally thought-provoking treatment. When, if ever, should tyranny be resisted? Can there be a "just revolution"? Contemporary efforts to portray Jesus as a "freedom fighter" are exposed for the nonsense they are, without loss of sympathy for champions of the oppressed.

The resort to force of any kind is held to be justifiable only as an evil which must be lesser than any alternative; but if it is so justifiable, a Christian has no special right to claim exemption from his share of the burden.

Although I personally found this argument convincing, it may perhaps be the most debatable. In particular, not everyone may feel that "there is all the difference in the world between a sudden, well-planned movement to overthrow a tyrannical regime in which there is every prospect of swift success, and the

inauguration of a guerilla struggle which may go on for years and is probably (or very possibly) doomed to ultimate failure" (p. 96).

The difficulty here may be to distinguish the view of the man on the ground from the hindsight of the historian!

The concluding chapter, on "Morality and Grace," begins by outlining some of the difficulties of attempts to base morality on purely utilitarian considerations. Biblical teaching on the subject is placed in the context of other world religions in a way that I found particularly illuminating.

The antithesis sometimes drawn between Old and New Testaments in this connection is exposed as superficial and misleading. Only the "ceremonial" and "civil" laws of ancient Israel were rendered obsolete by Christ. The *moral* law "in its essence, is both eternal and immutable: necessarily so, for it is an expression of the character of God himself and of that righteousness which, alone, can measure up to the divine standards" (p. 119).

The harmony of Old Testament and New Testament emphases is well summed up in the book's concluding sentence: "(Christ) offers a salvation unequivocally based on grace, not morality, which is wide open to the most debased of men, and need only be accepted by the empty hand of faith; but he also calls his disciples to the highest standard of ethical living — and makes available to them a supernatural grace which, alone, can enable them to respond." (p. 124).

D. M. MacKAY

Maria Ossowska, *Social Determinants of Moral Ideas*,  
Routledge and Kegan Paul, 1971, £2.00.

There is much of interest for the Christian in this scholarly and well written book by the Professor of Moral Philosophy at Warsaw University.

On the evolutionary issue, the Author points out that although a vast amount has been written on the evolution of morals, it is rarely made clear whether an author has in mind the gradual coming into being of morality as such, i.e. as distinct from the absence of morality, or the improvement of morality as distinct from immorality. Usually the second is implied which leaves the first question untouched. Another interesting point is that it is often impossible to explain the origin or persistence of customs by natural selection, for frequently enough they do not encourage survival. Several instances are given, a particularly interesting one being that of chivalry in the middle ages. For centuries the rules of chivalry were kept so punctiliously that armies preferred to be beaten, and often were, rather than act in a way which would ensure victory. Again, the Polish gentry despised commercial agriculture to the great harm of themselves and of the nation, although this prejudice resulted in much of the best agricultural land being left unworked (pp., 106f, 135).

The book contains excellent summaries of the arguments which have been used on such topics as whether there is a universal morality, the relations of morality to religion, on what basis can we found ethics? and how standards of moral behaviour depend upon extraneous factors (the main point of the book).

Of great interest is the contrast brought out between European and native attitudes to war. A Trobriander on being told of the numbers killed in a single battle in World War 1 was incredulous, for it was impossible, he reckoned, for the victors to eat so much flesh. On hearing that Europeans were not cannibals, he was furious asking "Is it not a shame to kill so many people for no use!" (p. 109). Some primitive tribes

(e.g., in Australia) provided their enemies with weapons to ensure that both sides should have an equal chance of winning. In ancient feuds between Pisa and Florence, it was understood that if one side lost its fleet by a storm, the other would wait for its reconstruction before declaring war.

The Author's insight into helplessness is important. In a paper read in 1958 she stated clearly that when the young feel helpless two avenues are open. Either (like the modern drop-outs) they can follow the advice of Epicurus ("Live privately: the wise man does not take part in public affairs unless circumstances oblige him"), or (like violence-loving gangs in many countries), they can cling to the illusion of power by indulging in wilful destructiveness.

As in most discussions of this kind confusion may arise between outward manifestations of morality (e.g., should married couples reveal their mutual affection overtly, p. 66), and the basic question which is whether a person wants to do the right thing. What is *considered* to be the right thing may and often does show great variation. Thus among the Zulus it is accepted that a man who has a row with his wife goes home to his parents and is no longer held responsible for feeding and housing his children (p. 67). This and other cases are cited as "examples of possible effects of the family structure upon morality." In fact they are irrelevant to a Christian understanding of morality (compare the sin of Corban in the New Testament, Mark 7: 11, where the accepted practice is condemned as wrong). Maria Ossowska is not herself confused: she states plainly that she is only concerned with morality as a "neutral term": what she discusses has little to do with "emotionally loaded" words like right and wrong! But when specialists so limit language it is no cause for wonder that the man in the street picks up the idea (among others) that morality is relative!

## THE PUZZLES OF SEX

Leslie Paul, *Coming to Terms with Sex*,  
Collins, 1969, £2·10.

Despite the enormous literature on sex very little has been written to help us to understand it from a Christian point of view. The subject abounds with difficulties and raises questions which are rarely tackled: why the universal horror of incest (a horror unknown among animals)?, why did God choose circumcision as a sign of His people's union with Himself?, why the extraordinary close relationship between sadism and sex?, why the age-long condemnation of homosexuality and masturbation?, why the seeming impossibility of treating sex like any other bodily function even when the young are indoctrinated from birth to do so? The questions are endless.

It would be too much to claim that Leslie Paul can answer all these questions, yet he does tackle them in a most interesting way. Even if we may not always agree with his ideas, his book more than repays study.

First he discusses incest. There is not a tribe on earth where it is not proscribed and precautions taken against its possibility are often over-strict. Yet the origins of these prohibitions are veiled in mystery: there are no legends and no explanations are given. We can understand the reason — a society which permitted incest would be self-destructive. The ultimate barrier to incest “is not a conventional but a moral one and this arises precisely because human beings are endowed with insight and foresight.” It is hard to think that early man reached this conclusion by experience and reason or that he knew how to imprint it on his offspring! From the first the exercise of sex was the gift of society, the individual was never free to indulge as he pleased. The widespread rite of circumcision at puberty drove the lesson home: thereafter, in return for tribal membership, the young man is compelled on pain of death to obey the tribal sexual code. Jewish circumcision, performed in childhood, may imply that sexual morality applies to the whole of life, not adulthood only: certainly it is far more merciful

than circumcision at puberty.

The life of society is intimately bound up with sex, but modern man is seeking to break the link. In so doing he dissociated himself from all human feelings. The Nazi guards, described by Schenk, having shot the men in the little French town of Oradour-sur-Glâne, assembled all the women and children in the church. In doing so they showed uncommon kindness and gentleness, hugging and fondling the young, playing and joking with them to the last — then without the least compunction they closed the doors and burnt them all to death. The story serves to illustrate atomization — the dissociation of man from his feelings including sex — which is becoming increasingly prevalent today. [Witness the IRA atrocities.]

Science too is becoming soulless, the worker indifferent to the uses to which his labour will be put, while sex is becoming a mere commodity. First Kinsey invades privacy, then Masters and Johnson watch the sexual act in their laboratory “with an insolence of which only the most humble scientists are truly capable, and as though their own motives could never be suspect even to themselves, and the value and meaningfulness of their knowledge was beyond question” (p. 92). Their subjects, of course, show all the irrational quirks of human nature but the white linen coats of the professional voyeurs remain unsoiled — they have dissociated themselves from their private lives.

The same tendency is seen in Alex Comfort, in his *Anxiety Makers*, who writes of masturbation as if it were of no more significance than the liquid paraffin oil *versus* constipation controversy waged by Sir Arbuthnot Lane. But anti-masturbation feelings were not the invention of crazy doctors (however crazy some of them may have been) but “an expression of the deep anxiety of society about uncontrolled sexual activity . . . mankind has a right and duty to be anxious about this. A deep *angst* about sexual activity is the precondition of being human” (p. 108).

The Author attacks sex education in schools (Ch. 4) which, in thought, encourages the child to invade the privacy of his parents. Such education, he claims, produces many psychoses.

He cites the reaction of a shocked child who said: "You liar! My parents would never do a thing like that!" (p. 135).

The book continues with a fascinating picture of the tension in the human mind. In the waking world the body is rejected, being covered (save for face and hands). In sleep the world is rejected and the body accepted. The child comes home to be fondled. The unending rhythm and the tension between the demands of the world and the body lead to the enrichment of both (p. 148).

Since the 1960 Old Bailey decision over *Lady Chatterley's Lover* the de Sade stream has entered English literature and films. Revolting examples are cited. Any experience is justified — whether good or bad.

Pornography in films is now defended and violence too because there is said to be "no evidence that it does harm" (p. 180). A despicably hypocritical defence, thinks the Author. From early years the child sees fists and guns doing what sweet reason cannot, or does not, or is not given a chance to do. It is difficult to credit with sanity the TV producer who insists that TV viewing is harmless: what right have the TV companies who defend it thus to sell time to advertisers if TV does not influence viewers? Their arguments are a disservice to all who speak or write in the hope of being listened to.

In a masterly closing chapter the Author seeks to relate sex with religion. The two forces which man feels to be beyond him are the religious and the sexual. In neither sphere can he feel master of his fate. If God be dead, then sex is all there is. Either sex is made meaningless, unbearably trivialized, like brushing the teeth, or blowing the nose, or sex becomes the ultimate climax of life to which all else must be made to bend. Everything non-sexual then loses its meaning and man becomes the slave of sex.

In civilisation sex is sanctified by restraint and redirected for the common good: in Christianity it is subordinated to love. In the love of a man for his wife the Christian is reminded of the love of Christ for the church. (Ephesians 5).



## GUILT AND DEATH

Norman Autton (Ed.). *From Fear to Faith: Studies of Suffering and Wholeness*, SPCK, 1971, 90p.

There is a good deal of worthwhile material in this slender volume which contains essays by N. Autton, W. A. Lishman, Archbishop Anthony Bloom, John Hinton, Professor C. F. D. Moule and Bishop Ian Ramsay. Much of the book is concerned with pain and death — especially with men's attitudes to them, including reactions to watching others suffer. The tone is throughout most helpful and reverent. Lishman and Hinton deal particularly with psychological aspects; Blum cites moving instances of concentration camp sufferers, and Moule seeks to reconcile theories of the Atonement.

An interesting point concerns illness and death (John Hinton, Chapter 4). It is well known that in primitive societies these are never accepted as normal: instead they are attributed to magic or witchcraft. In Western society death if not illness is regarded as normal in old age but Hinton draws attention to the undercurrent of feeling that they are not normal after all. Those who have to watch the sufferings of others tend to blame the sufferers, relatives, doctors, nurses or themselves. Two thirds of widows interviewed within 12 months of their husbands' deaths admitted to occasional feelings of anger sometimes directed towards themselves. They were looking for the cause of the final illness with the object of finding someone to blame or to punish (p. 51). In many cases there was (as with C. S. Lewis in his remarkably honest *A Grief Observed*) a feeling that God was to blame (p. 58). Among psychiatric patients, especially, when the relationship between husband and wife is bad the death wish is common. "When such wishes come true the survivor feels as if he has been magically responsible. Grief in such cases seems to persist as an attempt to make up for the griever's own sense of guilt" (p. 53). There seems little doubt that beneath the veneer of civilisation most (or all) of us sense a connection between death and guilt — which is, of course, what the Bible asserts.

## HITLER THE EVOLUTIONIST

Daniel Gasman, *The Scientific Origins of National Socialism: Social Darwinism in Ernst Haeckel and the German Monist League*, Macdonald, 1971, xxxii + 208pp., £4.

In 1853 Count Gobineau published his pessimistic and notorious work, *The Inequality of the Human Races* (Eng. Ed. 1915). The white Aryan race, the only race of men descended from Adam and truly human in nature, was superior to all others but, like superior races in the past, it would soon lose strength by racial mixture and decline.

Gobineau had had little influence at the time and his book might easily have passed into oblivion but for the rise of evolutionary Darwinism sponsored in Germany by Ernst Haeckel (1834 - 1919). As a boy Haeckel dabbled in biology. He collected insects in large numbers and classified them under the curious categories of "good" and "bad" — the bad being those which did not fit neatly into the procrustean classifications made for them by biologists. As he grew up he became increasingly a fervent nationalist and supporter of Bismarck. With the devotees of *Naturphilosophie* he sought to discover general laws of the universe and here Gobineau provided the ground of his thinking.

In 1860 the inevitable happened: Haeckel read Darwin. "Scales fell from my eyes" is how he afterwards described the effect and for the rest of his life he thought of little else. Before long he was pouring out a torrent of literature, of which *The Natural History of Creation*, 1868, *Human Genius*, 1874, and *The Riddle of the Universe*, 1899, became best sellers. In these, apart from Darwinism, he sought to propagate a pantheistic nature-religion, much in keeping with the romantic German tradition of the day. His pan-psychism animated all matter, organic and inorganic. "Desire and dislike, lust and antipathy,

attractions and repulsion, are common to all atoms." Atoms had souls "eternal and undying" and the universe itself was a "colossal organism" bound in one by cosmic ether. And so on.

As a result of these outpourings Haeckel became the recipient of much exaggerated eulogy. He was referred to as "the greatest theologian of his day", while it was prophesied that a distant posterity would rank him higher than Jesus Christ.

In 1906 Haeckel and his friends founded a union of Darwinists called the *Monist League*: within five years it had a membership of 6,000, held regular meetings in 42 cities and published a weekly. Its members believed passionately in the law of struggle and saw "in our common German nation a healthy embryo which is capable of evolution"; but evolution of the German "Volk" depended on racial purity and the chief danger was — Jewish contamination. Previously such views had been held only by a fanatic minority: under Haeckel (followed by Ostwald) they were given the prestige of science by the Professor of Zoology at Jena. Haeckel himself did not suggest the mass murder of Jews to preserve the Aryan race, but one of the Monists (Heinrich Pudor, p. 165) did.

According to the Monists belief in absolute ethics was a fallacy: "the moral order of the world has dissolved in fog, morality [was] an ephemeral product of human poetry, success and survival in evolution [were] the absolute determinant of morality and ethics" (p. 49). The struggle for survival was nature's way, it was necessary for millions to be sacrificed so that the species, that is the Aryan race, might be preserved.

In politics the biological model to be emulated was that provided by the social insects. A nation's culture was to be reckoned in terms of division of labour, as exemplified by colonies of ants, bees and termites (p. 83), liberal views and parliamentary government being rejected outright. The movement was haunted by the feeling that time was running out. Wilhelm Shallmayer argued forcefully that previous nations and civilisations had died because they did not know how to avoid death, but now

evolutionary biology had shown the way. It was the duty of the State to examine new born children and kill those with defects, and similarly with the old. Drink and excessive sex were to be stopped. And poverty, too, for poverty was due to feeble-mindedness and the poor were often inebriated (p. 93).

Since internecine struggle within the ant-like population of a state was unbiological, struggle had to be carried on elsewhere (Ch. 6). So empire building was called for to subdue backward races. Evolution taught that some races should conquer others and "spread more at the expense of the lower, backward and smallest groups" said Haeckel. He mentioned tribes approaching extinction, but it was of little matter for it "would be easier to train the most intelligent domestic animals to a moral and civilised life" than most natives. However, colonies of blacks might be permitted to exist according to the needs of white men.

Haeckel and his friends also founded the select and violently anti-semitic Pan-German League which exerted a huge influence on the State over the years 1880-1900: it was responsible for all the naval and army bills. When war came in 1914 Haeckel was by no means in his dotage. He roused the German nation to support the war on the basis of evolutionary biological theory. He had hoped that the English, as fellow Aryans, might have struggled against the rest of the world hand in hand with the Germans, but in their perversity they wanted to dominate the world alone fancying themselves "a chosen nation selected by divine Providence to bring true culture to all the other nations". Execrable conceit! The peace-loving Kaiser had never wanted the war, all he desired was the biological right of superior nations to dominate the weak (p. 143).

These are the ideas which were current when Hitler was a young man. Was he directly influenced by Haeckel? Before WW1 Hitler read many books and it seems more than likely that Haeckel's best sellers were among them, though there is no definite record that they were. However, Hitler *does* say clearly that in his youth he was greatly influenced by Wilhelm Boelsche and Nansen the explorer, both of them members of the Monist

League. In conversation in 1930 Hitler showed a detailed critical knowledge of Haeckel's *Riddle of the Universe* and he also referred to Darwinian evolutionary views frequently which, since the German people chiefly came to know of Darwin through Haeckel, argues a familiarity with the latter. Moreover, Hitler's views on science, art, evolution, politics, religion, Christianity, nature and eugenics were in the main those of Haeckel. Sometimes passages in Hitler are almost word for word what Haeckel had said before. For example there is the statement made both by Haeckel and by Hitler (also by H. S. Chamberlain) that Christ's merits derived from his Roman ancestry, his true father, a Roman soldier, having seduced Mary. Similarly he copies almost word for word what Haeckel had said about the difference between Aryans and natives exceeding that between natives and animals (p. 164).

In 1933 the Nazis held celebrations in honour of Haeckel. He was often honoured in Nazi journals as a precursor of national socialism. As for evolution, the Nazis, naturally enough, made good use of it when it suited their aims. But not otherwise : to press home the origin of the Aryan race from inferior anthropoid progenitors might have proved embarrassing !

Modern historians have tended to treat Hitler's ideas as imbecile but original. They are nothing of the kind says Gasman. They were a reflection of widely held beliefs which had been prevalent in Germany at the time of his youth, for which Haeckel who combined Darwinism with romanticism, was mainly responsible. The extent to which Hitler followed the Monists in their belief that nature provides the pattern for man is shown by the fact that Hitler even sought to make technology subservient to nature. He agreed with bicycles because he saw in the spokes descending to the ground and rising again as the wheels turned, an analogy with legs in motion. But he would never travel in an airship for this was an unnatural vehicle, no creature being lighter than air. As for ships he thought propellers was wrong, ships ought to be propelled by great flappers from the side like fish.

Finally Hitler not only thought as an evolutionary Monist, he died like one too. In the struggle for survival Germany had been beaten. Therefore Germany was the inferior race which had no right to exist any longer. He destroyed himself and ordered a scorched earth policy for his country.

This book which was originally a dissertation for a doctorate in history at Chicago is well written, scholarly and impressively documented. The author believes that the role of science, especially biology, in the origin and evolution of German fascism has been neglected in the past. This valuable work remedies the omission and will long be a source of reference both for the history of the German State and the social effect of nineteenth century evolutionary teaching.

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