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Faith and Thought

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EDITORIAL

Twenty-four years after an original proposal was made by the General Assembly of the Church of Scotland that a translation of the Bible in contemporary English be undertaken, the complete *New English Bible* was published on 16 March this year. So ended the assiduous work of a team of translators which has probably been more representative than any of its predecessors in the task of translating the Bible.

The appearance of the New Testament section of the *NEB* on 14 March, 1961 provoked discussion on a wide scale. Reviews, notices and correspondence were published in profusion. Some criticism was less enlightened and objective than others. Yet anyone who has ever undertaken translating even a part of the Bible, knows, in the nature of the case, that he must face trenchant criticism more squarely than, say, a translator of Plato or Molière.

The aim of the *NEB* appears to have been threefold; to provide a translation of the Bible which will commend itself to the ever-increasing number of non-churchgoers; to help younger people, in particular, who dismiss the Bible as archaic and meaningless; and to refresh the many readers, who, for all their attention to the Bible and its message, do not fully appreciate it owing to its very familiarity.

Time alone will tell if these aims are achieved. Meanwhile, a review of the Bible will be published in this Journal (in the next Number) by Professor F. F. Bruce. He reviewed the New

Testament edition expansively in 1961 (Vol. 92, No. 1) and now will turn his attention more specifically to the Old Testament in the complete edition.

* * *

The following note with regard to the Constitution of the Institute, incorporating the various amendments up to and including 1967, has been supplied by the Honorary Treasurer, Mr Francis F. Stunt.

At the Council Meeting following the Annual General Meeting of 20 May, 1967, it was decided that the best way to supply everybody with an up-to-date copy of the Constitution was to include a print in *Faith and Thought*. This will be found on pages 5-9 of this issue and all the amendments which have been previously agreed at different dates are incorporated in the document. The effect of the recent amendments can best be summarized by reference to the formal notice sent out by the Secretary on 3 May, 1967, calling all Fellows, Members and Associates to the Annual General Meeting at which the proposals for modernizing the Constitution were to be put forward. The proposals were intended to have the following effects:

(a) To reduce the size of the Council from a possible 33 to 11 members including the President and the Honorary Treasurer.

(b) To remove the Honorary Secretary from the list of elected officers so that the Council can provide for the continuance of business notwithstanding the resignation or death of the Secretary.

(c) To empower the Council to establish an Executive Committee for the transaction of urgent business and the setting-up of other *ad hoc* Committees as necessary from time to time.

(d) To provide for the appointment of a corporate Trustee, so saving the expense and trouble of appointing individual Trustees each time there is a vacancy.

(e) To extend the Council's powers of investment of Trust Funds in accordance with modern practice.

(f) To provide a procedure with reference to any future changes of the Constitution, and

(g) To provide for other consequential amendments.

Adopted at the first Annual General Meeting of the Members and Associates, May 27th, 1867, with Revisions of 1874–75, 1910, 1912, 1920, 1938, 1939, 1952 and 1967.

1. *Objects*

THE VICTORIA INSTITUTE, or PHILOSOPHICAL SOCIETY OF GREAT BRITAIN, was established in 1865 for the following objects, viz;—

First To investigate fully and impartially the most important questions of Philosophy and Science, but more especially those that bear upon the great truths revealed in Holy Scripture: with the view of reconciling any apparent discrepancies between Christianity and Science.

Second To associate together men of Science and authors who have already been engaged in such investigations, and all others who may be interested in them, in order to strengthen their efforts by association; and, by bringing together the results of such labours, after full discussion, in the printed Transactions of an Institution to give greater force and influence to proofs and arguments which might be little known, or even disregarded, if put forward merely by individuals.

Third To consider the mutual bearings of the various scientific conclusions arrived at in the several distinct branches into which Science is now divided, in order to get rid of contradictions and conflicting hypotheses, and thus promote the real advancement of true science: and to examine and discuss all supposed scientific results with reference to final causes, and the more comprehensive and fundamental principles of Philosophy proper, based upon faith in the existence of one Eternal God, who, in his wisdom, created all things very good.

Fourth To publish Papers read before the Society in furtherance of the above objects, along with full reports of the discussions thereon, in the form of a Journal, or as the Transactions of the Institute.

Fifth When subjects have been fully discussed, to make the

results known by means of Lectures of a more popular kind, and to publish such Lectures.

Sixth To publish English translations of important foreign works of real scientific and philosophical value, especially those bearing upon the relation between the Scriptures and Science: and to co-operate with other philosophical societies at home and abroad, which are now or may hereafter be formed, in the interest of Scriptural truth and of real science, and generally in furtherance of the objects of this Society.

But so that nothing shall be done which shall not directly or indirectly advance the Christian religion as revealed in Holy Scripture.

2. *Membership*

(a) The Society shall consist of Fellows and Members elected as hereinafter set forth and signifying interest in the Society's charitable work by financial contributions thereto.

(b) The roll of Fellows of the Society shall include such as are so designated on the 17th day of November 1952 and such other persons (whether previously Members or not) as the Council may deem proper.

(c) The roll of Members of the Society shall include those so designated on the 17th day of November 1952 and all others subsequently admitted by the Council as Members.

3. *Council*

The government of the Society shall be vested in a Council (whose members shall be chosen from among the Fellows and Members of the Society *and be professedly Christians*), consisting of the President, the Honorary Treasurer, and not exceeding nine others.

4. *Election of Council and Officers*

The President, the Vice-Presidents, and the Hon. Treasurer shall be elected annually at the Annual General Meeting (which shall normally be held on the Saturday nearest the 24th of May) with power to the Council to fill up any casual vacancies.

At the Annual General Meeting in each year, one-third of

the other members of Council or if their number be not a multiple of three then the number nearest to one-third shall also retire, in order of seniority of election to the Council, and be eligible for re-election: as between members of equal seniority the members to retire shall be chosen from among them by ballot unless such members shall agree between themselves. Casual vacancies may be filled up by the Council and shall require ratification at the next Annual General Meeting.

5.

For such annual elections nominations may be made by Fellows of the Institute and sent to the Secretary not later than 1st March in any year. The Council may also nominate for vacancies, and all nominations shall be submitted to the Fellows and Members at the time when notice of the Annual General Meeting is posted.

If more nominations are made than there are vacancies on the Council the election shall be by ballot.

6. *Membership Procedure*

Any person desirous of becoming a Fellow or Member shall send to the Secretary an application for admission, which shall be signed by one Fellow or Member recommending the Candidate for Admission. Upon such application being transmitted to the Secretary, the candidate may be elected by the Council, and enrolled as a Fellow or Member of the Victoria Institute, in such a manner as the Council may deem proper. Such application shall be considered as *ipso facto* pledging the applicant to observe the Rules of the Society, and as indicative of his or her desire and intention to further its objects and interests; and it is also to be understood that only such as are professedly Christians are entitled to become Fellows.

The Council shall have power when it deems proper to delete the name of any Fellow or Member from the roll.

7. *Council Business and Rule Making*

The quorum for meetings of the Council shall be five. The Council may make such Rules as it considers desirable for furthering the objects of the Society and regulating its

business including (a) the setting up of an Executive Committee to include the Chairman of Council, the Hon. Treasurer and another or others of the Council to transact routine business (b) the setting up of other *ad hoc* committees to which may be appointed persons who, though not members of Council, are specially qualified to advise on some particular subject (c) arrangements for associating university and other students and Christian workers and others as Associates in the work of the Society.

8. *Papers*

Papers presented to the Society shall be considered as the property of the Society unless there shall have been any previous engagement with its author to the contrary, and the Council may cause the same to be published in any way and at any time they may think proper.

9. *Property Trusteeship*

The whole property and effects of the Society shall be vested in such Bank or Trust Corporation as the Council may direct and held in trust for the Institute. The Council is empowered to invest from time to time, in or upon any investments for the time being, authorised by statute for the investment of trust funds by trustees, and in and upon such other investments as the Council shall be advised by competent stock and share-brokers and the Council shall have the usual powers of trustees in regard thereto.

10. *Funds, etc.*

All moneys received on account of the Institute shall be duly paid to its credit at the Bankers, and all cheques shall be drawn, under authority of the Council, and shall be signed by any member of the Council and countersigned by the Honorary Treasurer or the Secretary.

11. *Audit*

The accounts shall be audited annually, by a Chartered or Incorporated Accountant or Auditor, to be elected at an

Annual General Meeting of the Society for the following year, and this Chartered or Incorporated Accountant or Auditor shall make a written Report to the Council at the first Meeting after such audit, and also to the Institute, upon the day of the Annual General Meeting next following – stating the balance in the Treasurer's hands and the general state of the funds of the Institute.

12. *Changes in the Constitution*

No change in the Constitution or the policy of the Society shall be decided upon by the Council without prior notice being given in writing to the full Council and all Vice-Presidents and past Presidents at least six weeks before the meeting at which such change shall be voted upon and all those entitled to receive such notice shall be entitled to attend, speak and vote at such meeting. Any such change shall require ratification at the next Annual General Meeting.

J. R. VAN DE FLIERT*

Fundamentalism and the Fundamentals of Geology

INTRODUCTION

With increasing astonishment, I read through the book *The Genesis Flood – The Biblical Record and Its Scientific Implications*, by Henry M. Morris and John C. Whitcomb, Jr.[1] If I had been told a few years ago that an apparently serious attempt would be made to reintroduce the diluvialistic theory on Biblical grounds as the only acceptable working hypothesis for the major part of the geological sciences I would not have believed it. I would have considered it just incredible that a professor of Old Testament and a professor of Civil Engineering would write it, and that the Foreword would be written by a professional geologist.

The serious fact is that it has been written and published in a volume of more than 500 pages of excellent paper and illustrated with 28 photographs. To stress the pretended scientific value of the work, favourable comments of a theologian and various representatives of natural sciences – a geologist, a geophysicist, an archaeologist, a biologist, a geneticist, a chemist, and an engineer – are printed on the cover.

It is almost incredible that such an effort, which must have cost an enormous amount of work and money, has been made for such a bad procedure as this. I have felt very reluctant to write against it, but finally agreed to do so, yielding to stress from different sides.

* Reprinted from *Journal of the American Scientific Affiliation* Vol. 21. No. 3. September 1969 by kind permission of its Editor, Professor Richard Bube.

[1] Published by the Presbyterian and Reformed Publishing Company, Philadelphia, Penna., 1961.

There are two main reasons for this article. The first is that the authors of *The Genesis Flood* have written on the basis of their belief in the Holy Scriptures as the reliable Word of God. This belief I share. Second, it is my sincere conviction that it is a fundamental and extremely dangerous mistake to think that our belief in the reliable Word of God could ever be based on or strengthened by so-called scientific reasoning. Any attempt to harmonize the historical geology of today with the account of the first chapters of Genesis represents a colossal over-estimation of science – as well as a misunderstanding of the Genesis record – an over-estimation which is as great as that of those scientists who completely reject God as the Creator. If we thus over-estimate science, we lose the battle before it is started. The Bible does not give outlines of historical geology nor accounts of scientifically controllable creative acts of God. If we think the Bible does provide these, we have brought God's creative work down to scientific control, down to the visible things, contrary to the teaching of the Bible that 'through *faith* we understand that the worlds were framed by the word of God' (Heb. xi. 3a). We deal a death-blow to the Christian religion when we bring the Holy Scriptures down to scientific level by teaching that the Bible should give us a kind of scientific world-picture or axiomata of historical geology, or of Western science of history, or physics, biology, jurisprudence or whatever science it be. Thus, we lose the Bible as a reliable Word of God completely, because we then make its teachings dependent on the poor state of our scientific knowledge today . . . which will change tomorrow.

The over-estimation of science fails to see its possibilities and its limits. It means the corruption of true scientific working, both in the evolutionistic thinking of those who do not believe in God, and also in the thinking of Christians who do believe in God. These latter corrupt scientific work thoroughly when they start from a pretended biblical (in fact, imposed by them on the biblical teaching) elementary historical geology, into which then the geological data will have to fit. This is no less pseudo-scientific than that kind of evolutionistic reasoning that ignores God, and therefore presents truly a very bad case for orthodox Christianity today.

Scientific Pretension and Scientific Foundation

Before I start a more technical treatment of a few important geological questions, I want to make a few critical remarks of a general character concerning the pretended scientific value of *The Genesis Flood.*

First, writing a book with such significant claims or conclusions requires a thorough knowledge of the geological sciences and their principles. Neither author – one a theologian, the other a civil engineer – is a geologist. Everybody knows that in the present state of scientific development it is practically impossible for one person to master more than one branch of science. Now, the list of modern publications cited in the book is impressive but at the same time misleading. The way in which part of this literature is used proves that the real problems have often not been understood. A theologian should know how dangerous it is to lift a text out of the context and to treat it separately. This is true not only for interpreting the Bible but also for explaining scientific publications. To lift a certain sentence out of a publication, and to use it for something quite different than the original author meant, is scientifically dishonest. I realize that the authors of *The Genesis Flood* did not *intend* to do this at all, and in a few cases they even admit that the author they cite used his words in a slightly different way, but in others they give evidence of not having understood the exact bearing to which they refer. Thorough scientific work makes extremely high demands on professional knowledge.

The Essential Importance of the History of Science and Theology

Second, it is really astonishing that the authors of *The Genesis Flood* do not seriously take into account the history of the 'warfare between theology and geology'. They sound as if this were the first time that the idea was put forward that the deluge was responsible for the major part of the fossiliferous strata in the earth's crust, whereas this idea was perhaps a respectable hypothesis early in the history of the development of geology but was soon shown to be false by evidence accumulated as the science of geology began to grow. This *history* of geology is an essential part of the study to be made, and has to be taken into

account as an event which God has revealed to us in the middle of the twentieth century.

Is it any wonder, if we neglect this history, that we make the same mistakes as our fathers did one, two, three or even more centuries ago? When I saw the pictures of the pretended – but definitely not – human footprints in Cretaceous strata of Texas with the comment; 'Note the tremendous size which immediately reminds one of the Biblical statement that there were 'giants in the earth in those days' (Genesis vi. 4),[2] I was immediately reminded of the times before Cuvier when bones of elephants found in the earth were also considered to be evidence of the Genesis flood and declared to be remains of the giants of those days. Even the undeveloped science of that time was thought to confirm the reliability of Scriptures, and it is said that these bones were nailed to the doors of churches for the sake of strengthening the faith of simple Christian believers[1] I recall the days when Scheuchzer found his famous fossil which he named '*Homo diluvii testis*', the 'man witness of the deluge'.

But Cuvier, the father of comparative vertebrate anatomy, by scientific methods ascertained elephant bones to be elephant bones and Scheuchzer's "Homo" to be the skeleton of a Miocene salamander. Where then was the foundation on which those simple Christian believers built their faith? And what are Professors Whitcomb and Morris doing now for those Christians who do not know about geology but believe in the Holy Scriptures as the reliable Word of God? The so-called scientific foundation which they want to lay under the Christian's faith can be easily shown by unbelievers to be no more than loose sand. They could have known it too, if they had simply made a *serious* study of the history of the (largely man-made) problems between the Bible and geology.

Uncritical Criticism of Geological Principles

Third, the last general remark I want to make concerns the uncritical attitude of the authors regarding their own reasoning. The whole book intends to levy a fundamental attack on the

[2] *The Genesis Flood*, Text of Fig. 11, p. 175.

so-called uniformitarian principle in the geological sciences. They do not realize that, in part, their reasoning is based on the same starting point. In part, also, they fight against windmills, because most present-day geologists do not accept this principle exactly in the sense as it was understood by Lyell (who was no evolutionist when he wrote the first edition of his *Principles*[3]), but use it in the sense of a constancy of physical and biological laws, which does not at all exclude, for example, periods with climates differing from that which we know presently, or alternating longer quiet periods with shorter 'catastrophic' or paroxysmal episodes.

Besides, one could even agree that Lyell himself was not dogmatic in presenting his uniformitarian principle. His uniformitarianism is what Professor Dr. R. Hooykaas has called a 'methodological principle',[4] but not one that pretends to have 'eternal validity'. In the third Volume of the first edition of his *Principles*, Lyell wrote on page 6:

> In our attempt to unravel these difficult questions, we shall adopt a different course, restricting ourselves to the known or possible operations of existing causes; *feeling assured that we have not yet exhausted the resources which the study of the present course of nature may provide, and therefore that we are not authorized, in the infancy of our science,* to recur to extraordinary agents.

Now, in order to do justice to Lyell, it is necessary to know what he meant when he wrote these lines, and what he meant by extraordinary agents. The answer is not difficult, because on pp.3–6 of the same volume he offers examples. First of all, Lyell refers there to the controversy respecting the origin of fossil shells and bones – were they organic or inorganic substances? To this point he remarks:

> That the latter opinion should for a long time have prevailed, and that these bodies should have been supposed to be fashioned into their

[3] Charles Lyell, *Principles of Geology, being an attempt to explain the former changes of the earth's surface by causes now in operation.* 1st Ed. Volumes I-III, London 1830-1833.

[4] Hooykaas, *Natural law and divine miracle, a historical-critical study of the Principle of Uniformity in geology, biology and theology.* E. J. Brill, Leiden, 1959.

> present form by a plastic virtue, or some other mysterious agency, may appear absurd; but it was perhaps, as reasonable a conjecture as could be expected from those who did not appeal, in the first instance, to the analogy of the living creation, as affording the only source of authentic information. It was only by an accurate examination of living Testacea, and by a comparison of the osteology of the existing vertebrated animals with the remains found entombed in ancient strata, that this favourite dogma was exploded, and all were, at length, persuaded that these substances were exclusively of organic origin.

As a second example, the controversy concerning an aqueous origin of basalt and other crystalline rocks is mentioned. This was an essential point in the early controversy between Neptunists and Plutonists. Lyell says:

> All are now agreed that it would have been impossible for human ingenuity to invent a theory [the Neptunist theory] more distant from the truth; yet we must cease to wonder, on that account, that it gained so many proselytes, when we remember that its claims to probability arose partly from its confirming the assumed want of all analogy between geological causes and those now in action.

And then Lyell put the important question concerning the methodological principle in these words:

> By what train of investigation were all theorists brought round at length to an opposite opinion, and induced to assent to the igneous origin of these formations?

And the answer is:

> 'By an examination of the structure of active volcanoes, the mineral composition of their lavas and ejections, and by comparing the undoubted products of fire with the ancient rocks in question.'

He concludes with a third example, the question of whether the great alteration of the level of sea and land, proved by the occurrence of marine fossils in strata forming some of the loftiest mountains in the world, has resulted from the drying up of an ocean covering the whole earth or from the elevation of the solid land. 'A multitude of ingenious speculations' failed to explain the former hypothesis. But when 'in the last instance' the

> question was agitated, whether any changes in the level of sea and land had occurred the historical period . . ., it was soon discovered that considerable tracts of land had been permanently elevated and depressed, while the level of the ocean remained unaltered. It is therefore necessary to reverse the doctrine which had acquired so much popularity, and the unexpected solution of a problem at first regarded as so enigmatical, gave perhaps the strongest stimulus to investigate the ordinary operations of nature. For it must have appeared almost as improbable to the earlier geologists, that the laws of earthquakes should one day throw light on the origin of mountains, as it must to the first astronomers, that the fall of an apple should assist in explaining the motions of the moon.

After having given these examples, Lyell says that the geologists of his time are, for the most part, agreed on questions 'as to what rocks are of igneous and what of aqueous origin – in what manner fossil shells, whether of the sea or of lakes, have been imbedded in strata' etc. and are 'unanimous as to other propositions which are not of a complicated nature: but when we ascend to those of a higher order, we find as little disposition as formerly to make a strenuous effort, in the first instance [repeated here!], to search out an explanation in the ordinary economy of Nature'.

Sound Theorising in Geology and the 'Spirit of Speculation'

In chapter I of Volume III of his *Principles*, entitled 'Methods of Theorising in Geology', Lyell simply distinguishes two opposite ways of thinking. One starts from scratch with geological reasoning without first making a careful study of the 'ordinary economy of nature'. This method has led to untenable speculations and even absurdities: the history of geology provides several examples. This lesson of history should finally be accepted, not merely on incidental points (such as the nature of fossils, the igneous origin of various crystalline rocks etc.), but as a principle. The second method in contrast starts with a careful study of the present economy of nature, and then sees if the results of the geological processes of the past are really different from those of those going on at present. This methodological principle has to be applied to every aspect of geology and his reproach to Cuvier and his school, for example, is that

they apply it only partially but not consistently. Such critics are described in the following:

> We hear of sudden and violent revolutions of the globe, of the instantaneous elevation of mountain chains, of paroxysms of volcanic energy, declining according to some, and according to others increasing in violence, from the earliest to the latest ages. We are also told of general catastrophes and a succession of deluges, of the alternation of periods of repose and disorder, of the refrigeration of the globe and of sudden annihilation of whole races of animals and plants, and other hypotheses *in which we see the ancient spirit of speculation* revived and a desire manifested to cut, rather than patiently to untie, the Gordian Knot.

I repeat that Lyell's uniformitarianism was not dogmatic: he did not exclude the possibility that paroxysms or proceesss differing from those presently operating might have taken place in geological history. Note the important restriction in his words, 'in the infancy of our science'.

This restriction we also find in the concluding remarks of the Chapter:

> But since in our attempt to solve geological problems we shall be called upon to refer to the operation of aqueous and igneous causes, the geographical distribution of animals and plants, the real existence of species, their successive extinction, and so forth, we were under the necessity of collecting together a variety of facts, and of entering into long trains of reasoning which could only be accomplished in preliminary treatises. These topics we regard as constituting the alphabet and grammar of geology; *not that we expect from such studies to obtain a key to the interpretation of all geological phenomena*, but because they form the ground work from which we must rise to the contemplation of more general questions relating to the complicated results to which, in an indefinite lapse of ages, the existing causes of change may give rise.

Lyell had indeed been looking for the methodological basis on which a sound geological science could be built, rather than a geology full of the uncontrollable speculations which had been current for a long time prior to his writing.

Basic Uniformitarianism and the Authors of 'The Genesis Flood'

Lyell's starting point, like that of Cuvier and many others, is the constancy of law, of structural order in created things.

This, of course, is the only basis on which we can hope to speak reliably on the geological past. On this point, the authors of *The Genesis Flood* stand on exactly the same methodological basis as does Lyell. A few examples will illustrate.

There is no doubt that they consider fossils to be remnants of animals and plants which actually lived on earth under circumstances comparable to those we know presently. It is only on the basis of structural constancy that the authors can suggest that huge, but in form superficially human-like, footprints in Cretaceous strata are considered as evidence for the contemporaneity of man and dinosaurs.

A second example is the way in which the authors of *The Genesis Flood* argue in favour of what they call 'the most significant of these Biblical inferences', which is 'a universally warm climate with ample moisture for abundant plant and animal life'[5] before the deluge. For the sake of confirming this inference, the results of present day geology concerning ancient climates are good enough apparently to indicate that there were some periods when there existed a mild and warm climate over the greater part of the world. But these results are based entirely on uniformitarian reasoning. How can we ever infer a warm climate in the geological past, except on the basis of criteria which we derive from studies of the fauna and flora, or physical or chemical processes, which are characteristic of areas of warm climate we know on earth today? The distribution of coral or other reefs, for example, in the marine environment, and the absence of annual rings in the secondary wood of trees, are only two of these criteria.

A third example to show how the authors of *The Genesis Flood* depend in their reasoning on the *priori* assumption of the constancy of law, structure and even processes, is found in their speculation that the 'superficial appearance of evolution' of similar organisms in successively higher strata could be the result of the 'hydrodynamic selectivity of moving water'. After a reference from Krumbein and Sloss[6] about criteria on which the settling velocity of large particles is dependent, they write:

[5] *The Genesis Flood.* p. 243.

[6] W. C. Krumbein and L. L. Sloss, *Stratigraphy and Sedimentation.* 1st Ed. 1951.

> These criteria are derived from consideration of hydrodynamic forces acting on immersed bodies and are well established.
> Particles which are in motion will tend to settle out of proportion mainly to their specific gravity (density) and sphericity. It is significant that the organisms found in the lowest strata, such as the trilobites, brachiopodes, etc. are very 'streamlined' and quite dense. The shells of these and most other marine organisms are largely composed of calcium carbonate, calcium phosphate and similar minerals, which are quite heavy; heavier, for example, than quartz, the most common constituent of ordinary sands and gravels. These factors alone would exert a highly selective sorting action, not only tending to deposit the simpler (i.e., more nearly spherical and undifferentiated) organisms nearer the bottom of the sediments but also tending to segregate particles of similar sizes and shapes, forming distinct faunal stratigraphic 'horizons', with the complexity of structure of the deposited organisms, even of similar kinds, increasing with increasing elevation in the sediments.

And further:

> Of course, these very pronounced 'sorting' powers of hydraulic action are really only valid statistically, rather than universally. Local peculiarities of turbulence, habitat, sediment composition, etc., would be expected to cause local variations in organic assemblages, with even occasional heterogeneous agglomerations of sediments and organisms of wide variety of shapes and sizes. But, on the average, the sorting action is quite efficient and would definitely have separated the shells and other fossils in just such fashion as they are found, with certain fossils predominant in certain horizons, the complexity of such 'index fossils' increasing with increasing elevation in the column, in at least a general way.[7]

These are only three out of a hundred or more examples which could be given of this use of uniformitarian (the present is the key to the past) reasoning to argue for a catastrophist conclusion.

The geological nonsense in the above reasoning is so flagrant that I don't want to discuss it. Speculative hypotheses are dangerous enough already when brought into connection with the Bible, but this is even worse than speculation. What the authors of *The Genesis Flood* should learn from Lyell's example is the fear of speculation and the necessity of a serious

[7] *The Genesis Flood*, p. 274.

search for the foundation on which a reliable geological science could be based.

A little-noticed fact is that the antagonism between uniformitarianists and catastrophists (like, for example, Lyell and Cuvier) is not nearly so fundamental as it would seem. Both geologists agree that the laws of chemistry, physics, and biology – as we know them – are applicable also for historical-geological times.

This is an unavoidable *a priori* for a science that presumes to speak at all about the history of the earth. How paradoxical it may sound: only on the basis of the constancy of law and structure can we reliably speak about changes in the development of the earth's crust and its fossil content. In other words, the processes of which the geologist studies the results must be (perhaps not in intensity and scale) essentially of the same created order as that which we actually live in and form part of. If this were not so, the whole of historical geology would be in principle beyond the scope of human scientific possibilities.

On this fundamental point, the authors of *The Genesis Flood* agree with modern geologists, at least as far as the process of forming the fossil-bearing strata in the earth's crust is concerned. The tragedy is that they have not realised that in this way they have fused the dynamite under their pseudo-scientific building, exploding their so-called 'Scriptural framework for historical geology'.

On the basis of this principle, the fundamental question is to be answered by careful observation and analysis of the world's sedimentary strata and structural relationships. Are these the result of a catastrophic process, such as the authors of *The Genesis Flood* conceive? Or are they the result of processes whose intensity and scale are generally comparable to those going on today, as modern historical geologists have concluded?

There is no doubt about the answer in the present state of our knowledge; the broad lines of present-day historical geology are to be considered as well-observed facts.

The Trustworthiness of the Geological Time-Scale Disputed

Let us now turn to a few fundamental facts and principles of

present-day geology. First of all, consider those that concern the stratigraphic column and the geologic (relative) time-scale.

As an introduction, note a few quotations from the summary of the chapter, 'Modern Geology and the Deluge' in *The Genesis Flood.*

We read on page 206:

> The geological time series is built up by a hypothetical superposition of beds upon each other from all over the world.

That this superposition should be 'hypothetical' (which here clearly means 'not factual') is argued with a quotation from a geological text book:[8]

> If a pile were to be made by using the greatest thickness of sedimentary beds of each geological age, it would be at least 100 miles high. . . . It is, of course, impossible to have even a considerable fraction of this at one place. The Grand Canyon of Colorado, for example, is only one mile deep. . . .
> By application of the principle of superposition, lithologic identification, recognition and unconformities, and reference to fossil successions, both the thick and the thin masses are correlated with other beds at other sides. Thus there is established, in detail, the stratigraphic succession for all the geologic ages.

Then the authors of *The Genesis Flood* continue:

> This frank statement makes the method by which the geologic time-scale was built up quite plain. Since we have already noted that lithologic identification is unimportant in establishing the age of a rock, it is clear the "fossil successions" constitute the only real basis for the arrangement. And this means, in effect, that organic evolution has been implicity assumed in assigning chronological pigeonholes to particular rock systems and their fossils.

There follows a second quotation from Von Engeln and Caster, which apparently should confirm this conclusion:

> The geologist utilizes knowledge of organic evolution as preserved in the fossil record, to identify and correlate the lithic records of ancient time.[9]

[8] A. D. von Engeln and K. E. Caster, *Geology*, 1952, pp. 417, 418.
[9] A. D. von Engeln and K. E. Caster, *Geology*, 1952, p. 423.

This is commented on as follows:

> And yet this succession of fossil organisms as preserved in the rocks is considered as the one convincing proof that evolution has occurred! And thus have we come round the circle again.

The trend of this reasoning is clear; historical geology is basically unsound because it has been trapped in circular reasoning. First, geologists determine the order of successsion of fossils in the earth's crust on the basis of the superposition of the strata, but at the same time they declare the position of the strata reversed – by some tectonic process – when at another place the succession of fossils is found reversed. What is more, and even worse: Behind this is the 'hypothesis' of evolution, of 'a gradual progression of life from the simple to the complex, from lower to higher' (pp. 132, 134).

Moreover:

> . . . quotations from outstanding evolutionary authorities both in geology and biology, demonstrate the great importance of the paleontological record to the theory of evolution. In turn, the principles of evolution and uniformity are seen to be of paramount importance in the correlation of the geologic strata. These principles are absolutely basic, both from the point of view of the history of the development of modern geology and from that of present interpretation of geologic field data. The circular reasoning here should be evident and indeed is evident to many historical geologists (p. 134).

How corrupted and preconceived present-day historical geology really should be is then formulated in the following words:

> The basis for the apparent great strength of the present system of historical geology is here clearly seen. Provision is made ahead of time for any contrary evidence that might be discovered in the field. The geologic time scale has been built up primarily on the tacit assumption of organic evolution, which theory in turn derives its chief support from the geologic sequence thus presented as actual historical evidence of the process. Fragments of the sequences thus built up often appear legitimately superposed in a given exposure, but there are never more than a very few formations exposed at any one locality, occupying only a small portion of the geologic column. Formations from different

> localities are integrated into a continuous sequence almost entirely by means of the principle of organic evolution (p. 136).

I give these rather long quotations in order to show in what light such a sentence as 'The geological time series is built up by a hypothetical superposition of beds upon each other from position of paleontological criteria which has been proved to be all over the world' should be read, and furthermore to give an example of the mixing up of truth and untruth in the way of arguing of the authors of *The Genesis Flood* when it concerns one of the fundamentals of geological science.

The Natural Exposure of Normally Superimposed Rock Sequences

The actual situation is that the geological time-scale is based on a factual superposition of rocks yielding a factual superposition of paleontological criteria which has been proved to be the same all over the world. In order to make this clear, we will have to deal first with natural exposures – with the way nature exposes the sedimentary rocks, which contain those documents of the history of the earth's crust which the stratigrapher investigates.

When Von Engeln and Caster state that 'if a pile were to be made by using the greatest thickness of sedimentary beds of each geological age, it would be at least 100 miles high' and that it is 'of course impossible to have even a considerable fraction of this at one place', it should be noted that they are speaking of 'the *greatest* thickness of *each* geological age'.

Two qualifying remarks should be made about this point. First, the *average* thickness of sediments of a certain age is far less than the value of the greatest thickness. Second, if at one place a geological age is represented by its greatest thickness, it is very unlikely that sediments of another age would attain their maximum thickness at the same locality.

However, it is extremely unlikely – virtually impossible – to have a considerable fraction of a pile of sediments reduced in this way, and representing all geological ages, at one place.

For example, consider the world famous example of the Grand Canyon of the Colorado River, where Paleozoic rocks,

still in horizontal position, unconformably overlie tilted Algonkian or intensely folded and metamorphosed Archean Rocks at one locality. As a result of what geologists call epeirogenic movements, this area has been uplifted vertically without changing the original horizontal position of the Paleozoic rocks. Following the uplift, the Colorado River has cut deeply into the rocks to expose, in the steep walls of the canyon, the beautiful vertical succession of more than 1,000 metres of Paleozoic strata. In this exposure of a normal uncomplicated succession, the superposition is simple and clear. The Archean basement rocks lie at the bottom of the canyon. Progressively higher up on the walls within the canyon we found the Algonkian sedimentary rocks, then the older Paleozoic rocks, and finally – around the canyon rims – the younger Paleozoic rocks.

Very often, however, things are more complicated. Frequently, the original subhorizontal position of the sediments at the time they were deposited has not been preserved; as a result of differential movements in the earth's crust, the sedimentary sequences have been tilted, broken, or folded, so that the layers usually show a dip (varying from a few degrees up to a vertical position). Topographically, these differential movements may give rise to subaerial elevations (mountains) and depressions (lowlands). The mountainous areas are subjected to erosion, which results in the development of new topographic surfaces cutting the bedding planes of the layered sedimentary rocks at an angle. Eventually, erosion may lead to so called 'peneplains' or sub-horizontal erosion surfaces of vast extent. These peneplains thus may expose thick sequences of sedimentary rocks, in thickness far exceeding those of the Grand Canyon, and of which superposition is as undoubtedly established.

In the Grand Canyon, we find a sequence (some 1,000 metres thick) of horizontal Paleozoic rocks exposed – in the steep canyon walls – in only the very short lateral distance traversed as we ride from the bottom of the canyon to the high rim overlooking the canyon.

In a large region of subhorizontal topography (a peneplain) underlain by nonhorizontal – dipping, folded, or basinal – sedimentary layers, on the other hand, nature may have

exposed sequences of rocks amounting to many thousands of metres in thickness. In such a situation, we can no longer speak of a *local* superposition. We can, for example, walk for hundreds of kilometres across a series of low-dipping sediments in the 'Paris Basin', from Triassic rocks in Luxemburg to Middle Tertiary rocks in Paris. Local differences in topographic elevation (a few up to perhaps 100 metres) are insignificant compared to the distance of a few hundred kilometres and the thickness (about 2,000 metres) of the sediments which are exposed at or near the surface. In the case of the Paris Basin, which covers a great part of France, we have a huge bowl-shaped structure, consisting of strata dipping gently towards the centre, which implies of course that the younger strata are exposed in the central, the older in the peripheral, parts of the basin. There can be no doubt about the superposition of the strata in the Paris Basin. The formations are only very gently deformed, and a tectonic reversal is entirely excluded.

A comparable but much larger structure, with low-dipping Mesozoic and Tertiary strata, is found in the Gulf Coast Area of Mexico, Texas, Louisiana, and Florida in North America. This is a huge structure of low-dipping strata, in which the superposition is unquestionably normal and also very well known (as a result of thousands of bore holes which have been drilled in the search for oil in these areas). Again, here we cannot reasonably speak of just one locality or one place. But surface and subsurface data permit an unquestionable correlation, layer by layer, and thus the establishment of the sequence of normally superimposed strata attaining a thickness of many thousands of metres.

No evolutionary theory whatsoever could or would ever suggest a reversed position of the strata in the Paris Basin in Europe or in the Gulf Coast Basin in North America. The paleontologist would thereby saw through the branch on which he sits.

The stratigraphic column has been built up essentially on the basis of sedimentary sequences in many relatively stable areas where tectonic disturbances and metamorphism played a minor role and where therefore a reversed position of the strata could *a priori* be eliminated. On the basis of solid knowledge from

these simple areas, the tools have been obtained which permit us to understand more complicated regions. This is an example of the procedure followed by every geologist when he enters a new or unknown area: he first looks for the simpler structures which permit the establishment of the stratigraphic sequence, which in turn is a basic tool for unraveling complicated tectonic structures.

In summary. I want to emphasize that the way nature exposes huge sequences of strata is usually not by cutting deep canyons or valleys into highly upheaved horizontal strata at one place, but instead by differential crustal movements followed by peneplaining erosion (which uncovers older strata in mountainous area and also furnishes sedimentary materials which are then deposited – often containing fossils – to form younger strata). As a result of such tilting and other crusta movements, great areas of dipping, but unquestionably normally superimposed, strata are now found at or near the surface, and are therefore accessible to the geologist. The huge sequences of sedimentary strata which can be studied in such relatively undisturbed positions over great areas all over the world form the solid factual basis for the establishment of the time stratigraphic column.

The Primary Superposition in Highly Disturbed Areas

However, much more is to be said. When discussing what they called 'Methods of resolving contradictions', the authors of *The Genesis Flood* write

> Furthermore, even where superposed strata are exposed, it rather often happens that the fossils appear to be in reverse order from that demanded by the evolutionary history, which paradox is commonly explained by the assumption that the strata have been folded or faulted out of their original sequence (p. 135).

It is an old story which is told here. It was already elaborated in Professor Aalders' book.[10] And it seems that this favourite

[10] Dr. G. Ch. Aalders, *De goddelijke openbaring in de eerste drie hoofdstukken van Genesis*, Kampen, 1932.

argument of professors of Old Testament is supported even by some geologists; the authors of *The Genesis Flood* give the citation of C. H. Rastall, lecturer of Economic Geology at Cambridge University, saying;

> It cannot be denied that from a strictly philosophical standpoint geologists are here arguing in a circle. The succession of organisms has been determined by a study of their remains embedded in the rocks, and the relative ages of the rocks are determined by the remains of organisms that they contain (p. 135).[11]

Now, Mr. Rastall may be a good economic geologist: he is definitely not a good philosopher because his statement is simply not true.

What are the facts? A reversed position of strata is the result of strong disturbing movements after deposition. Complicated tectonic deformation occurs when the sediments are deposited in an area which is or becomes highly mobile, in contrast with relatively stable regions.

Since the reversed position of the layers, and, of course, the inverted succession of fossils, is not of primary or stratigraphic origin, but of secondary or tectonic origin, we should find (and we do) completely independent tectonic evidence (in addition to the fossil evidence) for a reversed position of a sequence of strata. Surely, we prefer simple structural relations when establishing a stratigraphic column in an area, but we do not finally depend on them.

In many instances, we can follow a certain sequence of strata from a less to a more intensely disturbed area, and observe, for example, how in this direction the dips increase to a vertical position, and somewhat further on have turned more than 90° from the original horizontal position so that they are then 'overturned' and the sequence of layers has become in fact inverted or reversed. A gradual transition from a normal to an inverted position is in fact a phenomenon which is often encountered in folded areas. It has nothing to do with theory; it is just a matter of observation.

[11] C. H. Rastall, *Geology*. In: *Encyclopaedia Britannica*, Vol. 10, 1956, p. 168.

When in a mobile area we find with the help of fossils that a sequence of strata lies in reverse position, this conclusion if reliable implies that the strata are folded and that there must be a hinge zone along which the layers have been turned up. Such hinges, along which layers are sometimes turned over 180 degrees so that they are now in a perfect upside-down position, are perfectly visible, for example, in some deep valleys in the Swiss and Austrian Alps. Now, if our index fossils are reliable, the paleontological evidence, the succession of the fossils, must be in accordance with the tectonic-structural evidence for whatever, normal or reversed, position the strata are in. But if this is the case, and this is in fact what we find, then both evidences do mutually confirm each other. The reversed sequence in which the fossils are found locally therefore does not invalidate, but, on the contrary, fortifies their value as time markers, because we know from independent tectonic evidence that the layers there are in overturned position.

The same situation holds when, as a result of tectonic causes following differential movements in the earth's crust, rock masses are pushed up and over on top of neighbouring areas: in this way also, older rocks will lie on top of younger strata. If such an abnormal succession is of tectonic origin, we should find the fault plane, the overthrust plane, exactly at the place where the older strata appear above the younger formations. Such a situation will usually be characterized by tectonic criteria related to the overriding phenomenon. At such an overthrust plane, we often find a tectonic breccia, consisting of broken and crushed rock fragments of usually heterogeneous material. In other instances, depending on overburden and fluid pressure at the overthrust plane, friction may have resulted in such high temperature that the anomalous contact indicated by our fossils is characterized by a 'burned' or a dynamometamorphically altered zone. And here again, this is exactly how we find it. Tectonic and paleontologic evidence point in the same direction. Instead of contradicting, they confirm each other, and here again we may speak of convergent evidence.

Top and Bottom Engraved in Individual Layers

To find an answer to the question of whether we are dealing with strata in normal or reversed position, a third criterion can usually be found. It is of stratigraphic-sedimentologic character, and involves sedimentary structures found in individual layers.

Let me give a few simple examples to demonstrate the principle. On a sandy bottom, running or waving water may cause characteristic ripples in the sand which we call ripple-marks. They are often found in a fossil state. Wave ripplemarks, for example, form sharp ridges and rounded troughs. When we find in a sequence of layered strata that these sharp ridges point downwards, we therefore know that this sequence lies in an overturned position. In case the external form is not clear, the internal lamination may provide decisive evidence.

Another example, seen by almost everybody at some time, is that when a puddle or a muddy ditch desiccates, a pattern of cracks appears in the drying mud, the so-called 'mud-cracks'. Such mud-cracks also have often been fossilized as a result of the filling of the wedge-shaped openings between the polygons with other material, e.g., sand. In this manner, again, the layer was marked for top and bottom during the process of sedimentation. The points of the wedges indicate the direction in which the older layers are to be found.

A great number of comparable stratigraphic-sedimentologic criteria, so-called top-and-bottom features, are known. Usually very small structures, they often give an unmistakable answer to the question whether the position of a layered sequence is normal or not, completely independent of tectonic or paleontologic evidence. In practice, the field geologist working in complicated areas is constantly concerned about the question 'normal or reversed position?' He therefore is very keen on finding such top-and-bottom features, the more so when fossil evidence is not immediately, not sufficiently, or not at all available.

It will be clear that when we add the stratigraphic-sedimentologic evidence of the sedimentary structures to the already convergent evidence of tectonics and paleontology, here remains no trace, not even a glimpse, of circular reasoning

whatsoever. Quite the opposite is true; the reliability of the fossils for relative age determination of geological formations is not denied by local occurrences in reversed order, but on the contrary confirmed. For with the help of two other criteria, independent from each other and independent of those fossils, we can irrefutably demonstrate that the layers there indeed occur in overturned position.

The Question of Correlation

With the possibility of establishing the normal succession of strata in the earth's crust, we have in principle a factual basis for the establishment of the order of succession of the fossils they contain. In order to make clear now that the order of succession is the same all over the world, and that fossils therefore may be used as time-characteristic index-fossils I have to go into a little more detail about the local and regional successions of geological formations, the gaps they necessarily contain, and the question of regional and intercontinental correlation.

When we look at a geological map of France, we can see that the relatively undisturbed sediments of the Paris Basin overlie more intensely folded sediments of Paleozoic age outcropping in various areas around the actual basin boundary. When we look now at the succession of rocks from Paris, then moving outward from the centre of the Paris Basin, to Charleroi in Belgium, we observe that the lowermost sediments of the Paris Basin, inconformably overlying the folded Paleozoic strata of the Ardennes Massiv, are Upper Cretaceous. Around the basin's edges, at the surface of this angular unconformity there is in this sequence a huge gap, because practically the whole Mesozoic and part of the Paleozoic are missing. But when we follow this contact, the outcrop of this important unconformity, in an East-South-Easterly direction we gradually encounter successively older formations appearing in the Paris Basin above the unconformity surface; these formations have been called: Lower Cretaceous, Jurassic, and then Triassic.

When we look at the geological map of the United States, we

see that (in Tennessee, Alabama, and Georgia) the folded Paleozoic sediments of the Appalachians plunge down underneath essentially undisturbed sediments of the Atlantic and Gulf Coastal Province, the oldest of which are here Cretaceous, at least at the surface.

There is a striking similarity in the position of the Coastal Plain sediments as regards the folded Paleozoic rocks of the Appalachians on one side of the Atlantic and those of the Paris Basin with respect to the folded Paleozoic Rocks of the Ardennes on the other, particularly when we look at the Paris-Charleroi section.

That identity is not only structural; it is much more complex. There is a succession of Upper Mesozoic and Cenozoic strata which, notwithstanding all kinds of differences due to locally differing sedimentation conditions, can be compared and correlated with that in the Paris Basin, on the basis of the fossil faunal contents of the sediments. That is to say, when we compare the sequences of strata on both sides of the Atlantic Ocean, where the superposition is unquestionably known, there appear to be differences in the faunal content of successive layers; these differences allow for a descriptive stratigraphic subdivision, and they occur in the same order of succession. And when we look now at the underlying folded rocks and establish therein the stratigraphic superposition, we find, first of all, that the faunal content of these layers is totally different from the overlying strata, but very similar to that of the folded Paleozoic formations of the Ardennes. Furthermore that comparison of the sequence in the United States and in Europe *also* reveals faunal characteristics for a subdivision *in the same order* in America and Europe. All this has nothing to do with evolutionary theories. We simply find a factual superposition of faunal elements (in the strata) which occurs in the same order on both sides of the Atlantic. On the basis of such experience in comparing or correlating stratigraphic columns all over the world, we can then finally say that fossils may be used for indicating the place of the formation in the sequence. This experience of correlating the superposed strata all over the world is essential; every index fossil is constantly being checked on its guide value by new stratigraphic field work, by

the many bore-holes of the oil companies, etc., all over the world and every day.

The basis of our subdivision of geological time is found in the fact of a worldwide complex identity of the succession of sedimentary strata. The 'older' or 'younger' can without any doubt be established in both the locally and the regionally exposed strata. The 'as old as', the 'time correlation', on a regional to continental scale has its base in the identity in the complex succession of stratigraphic series in different places, a complex succession which practically eliminates any other interpretation than that of 'same age' (on a certain scale and with a certain degree of accuracy, of course).

We take the example of the Paris Basin/Ardennes and Gulf Coastal Plain Province/Appalachians again. It is clear that the unconformable superposition of unfolded Cretaceous and Tertiary sediments on folded Older and Younger Paleozoic sediments (which, both in relative detail, show comparable faunistic similarity on both sides of the Atlantic) reveals a complex identity structurally and stratigraphically to the effect that a geologist can give no other interpretation than; an older period (Paleozoic time) in which sedimentation took place in the areas; then folding, mountain building and erosion at or towards the end of this time; finally, renewed sedimentation in at least part of these areas in Mesozoic and Cenozoic times.

We could go a little bit further now and ask about so-called Jurassic and Triassic sediments which appear under the Cretaceous of the Paris Basin. What about their equivalents in the South eastern States of the United States? Do they really exist, and are they in a position comparable to those in Europe? The map shows that the oldest deposits of the Gulf Coastal province outcropping at the contact with the Appalachians are of Cretaceous age, which implies a gap here for Jurassic and Triassic. Is this implication correct? Yes, because for example away from this surficial contact, from Yucatan to Florida, the oil-well bore has struck older deposits underneath the Cretaceous, showing paleontological characteristics of Upper Jurassic age. Normally underlying sediments, possibly Lower Jurassic, Triassic or Permian, could not be identified as such because of lack of fossils. But when we go, for example, to the

Southwestern part of the United States we find a normal superposition of dated Permian, Triassic, Jurassic and Cretaceous sediments covering very large areas in Utah, Colorado, Arizona and New Mexico. The same order of paleontologic criteria in the succession of strata – in Europe, in America, in Asia, Africa and Australia, all over the world – this is a fact which simply cannot be denied except by those who do not know or do not want to know. But the factual situation is there for everyone who wants to go and see.

Parenthetically, I want to point out that therefore evolution (in the descriptive sense that flora and fauna on earth have been subject to change almost continuously in the course of geologic time) is also to be considered as a well observed fact, which is of course something quite different from a theory of evolution and from an evolutionistic philosophy.

Reworking: Mixing of Fossils of Different Age

But, the authors of *The Genesis Flood* might react by saying that we are still dishonest with our representation of the fossil succession as an observed fact, because in several instances mixed faunas are found, which would therefore represent a mixture of older and younger fossils. Then, they might say, we come along with a complicated interpretation of reworking or comparable phenomena, but that interpretation is only an interpretation, and the *fact* is that these fossils do occur together in the same bed. And we would have to answer that that is true, but truth and simplicity do not always go together.

When fossil-bearing sediments become subject to erosion, one must expect not only redeposition of the inorganic components but also those of organic origin. This general consideration already implies that a mixing of fossils of differing ages as a result of reworking processes must occur. But, reworking or redeposition in general results in characteristic features by which it can be determined as such.

In the Netherlands, we find silicified Cretaceous sea urchins as elements in Pliocene fluviatile gravels. Marine animal remains in fluviatile beds is of course already anomalous, but furthermore the silicified tests are rounded by their having been

transported, and we know the place where they have been washed out of the sediments in which they were originally embedded.

A second example is that, in muds of the Wadden Sea, Cretaceous Foraminifera are found together with the recent foraminiferal assemblage. These Cretaceous elements, however, are found in the smallest fraction (smaller than 0.15 mm) of the washed residues. They are washed out of Cretaceous deposits of the Paris Basin exposed in the Channel, sorted by longshore current action, and only the finest material reaches the Dutch Wadden Seas. Here, although differing preservation already demonstrates the correct conclusion, the uniform size indicates sorting and proves the allochthonous character of these elements in the faunal assemblage.

We found a very interesting example of mixed faunas when working as stratigraphers for an oil company of the Royal Dutch Shell group in North Borneo. The washed residue of a shale sample appeared to contain a normal assemblage of beautifully preserved Paleocene (Lowermost Tertiary) Foraminifera, but also a few very poorly preserved *Miogypsinas*, larger Foraminifera of Miocene (Lowest part of Upper Tertiary) age. At first sight, the perfect preservation, absence of sorting, and normal assemblage of these Paleocene Foraminifera, mixed with some 30–40 million years younger *Miogypsinas* which were in part pyritized and very badly preserved, was astonishing. From the field geologist, we knew that big 'exotic' blocks of probably Paleocene age occurred scattered in the shale. We then looked at the part of the sample which had not been washed, and the solution of the problem was found. The sample consisted of a dark grey shaly matrix, in which a great number of angular fragments of a light coloured marl were disseminated. It was clear that the angular fragments were redeposited fragments of an older formation and that they appeared indeed to contain the Paleocene fauna. The autochtonous sediment – the dark shaly matrix – was apparently formed under more or less anaerobic conditions, as a result of which sulphuric acid was formed, which in turn attacked and in part pyritized the calcaeous shells of *Miogypsina* during or shortly after deposition. The Paleocene Foraminifera in the

original sediment of the angular elements were perfectly protected against such chemical activity in the Miocene basin.

Stories like this may sound complicated, but in fact they are not. Again here, the way in which the resedimentation process was written down in the structural relationships of the younger sediment did not deny, but on the contrary again confirmed or corroborated the reliability of the fossils – in this case pelagic and larger Foraminifera – as index fossils.

Structural Uniformity and Actual Experience

Within the scope of this article it is impossible to deal with everything which the authors of *The Genesis Flood* have presented. There is one important and fundamental thing, however, concerning which I want to spend a few sentences – the practical meaning of the so-called uniformitarian and actualistic principles in geology.

As a first remark, I don't like -isms. A term ending in -ism usually means an overestimation of the aspect, modus, state of affairs or whatever is meant by the term. The question which has to be answered, however, is this: have those people who are considered to be the fathers of uniformitarianism or actualism seen something fundamentally essential for our geological scientific knowledge, even if they may not have correctly defined, not fully understood, or over- or underestimated what they had seen?

As a historical geologist, who always has to do with *documents* of a geologic past in the earth's crust, I cannot pretend to speak even one reliable word about geological history except on the basis of what I called above 'structural constancy'. 'Structural' is meant in a very large, generalized sense. The only way to distinguish differing processes in the documents is by means of the differing structures they may reveal. Sedimentary processes produce typical, characteristic structures, and tectonic processes produce other differing, but also characteristic structures in the rocks of the earth's crust. There are, of course, also many kinds or types of sedimentation processes, the results of which can be differentiated on the basis of the differing structural characteristics produced – such as lithologic and

paleontologic criteria, texture and structure (in a restricted sense).

The general rule will be that the more detailed the interpretation, the more detailed also our structural analysis will have to be. The general starting point for an interpretation of the sedimentation processes in geologic history on a really, and the only possible, scientific basis will therefore be the assumption that a catastrophic sedimentation process would have to show characteristic structural relationships, and that, on the other hand, the normal, actual sedimentation processes necessarily result in different characteristic structural features. In other words, when our analysis of fossil sediments reveals in great detail the same structural relationship as that which is actually formed under present day condition, the only conclusion which can honestly be drawn is, 'It is the same process'. Ascribing comparably structued sediments to catastrophic processes would be something like declaring that fossil fish which we have found on the basis of fossil remains to look in detail like actual fish, were not really fish living in water but birds flying in the air.

The example may sound silly, but it clearly shows the basic role of structural *uniformity* even for the determination of fossil remains, and demonstrates also the link with actual life' *experience*. What could we say about the function of the organs of fossil fishes, or about the environment they lived in, if we did not know the living fish in its environment today?

Now, in view of the need for more detailed reliable interpretation of depositional environments of fossil sediments, one branch of geological sciences, called sedimentology, has grown very rapidly during the last decades. A major part of the work done by the sedimentologist was and still is a detailed analysis of actual sedimentation processes and their results in modern depositional environments. Of course, when we want to know what the characteristic features are of sediments found in a middle neritic marine environment (the zone of approximately 40–100 metres depth [20–50 fathoms] on the shelf), we shall first of all have to obtain samples of the modern sediments in this area, examine them in detail and study all kinds of physical, chemical, and biological conditions in the zone. In addition, we

shall also have to study the bordering (inner neritic, and outer neritic) environments to be able to specify their characteristics also in a differential diagnosis.

Modern analyses of these sediments 'in formation' are done in very great detail, in both the physicochemical and biologic criteria, with the result that a very detailed classification of sediments as related to their depositional environment appears to be possible. But it also appears that this 'key of the present' indeed fits into the sediments of the past, because most of them show, often in astonishing details, the same structural relationships. The identity is there. The uniformity is written down in the fossil sediments themselves. There is no way out unless one wants to declare, to pick up the above examples, that the fish is a bird. The identity may exist on a small scale (e.g., the number of Foraminifera *per gram* of sediment, and the precentages of different species or genera with respect to the total foraminiferal assemblage) but also on a large scale. To conclude I would like to give one example of the latter.

The authors of *The Genesis Flood* try to deny the evidence for deposits which required a very long time to form, such as coral reefs. Some of them at least are explained as being redeposited during the Flood (pp. 408, 409).

Now there are different types of reefs and different organisms which can build reefs, in addition to corals. Reefs have played a very important role in the geological history of the earth's crust, and sedimentologic research is particularly active in investigating the depositional environments of reef limestones and those immediately related to the reefs.

Let us look at a barrier reef. It lies at a certain distance from a shore, and separates a lagoonal environment (between barrier-reef and shoreline) from the open marine environment. At the sea-side of the reef body, we distinguish a fore-reef area, on the land-side a back-reef zone. The reef-body itself consists of a core of unlayered, massive limestone, built up by the sedentary reef-building organisms still in original life position; it is bordered by coarse, and farther away finer reef detritus, which, particularly the latter, are often very well bedded. Now, we do find barrier- and other reef bodies at many different levels in the stratigraphic column. But we do not find, say, the

core of a barrier-reef body, as a strange element in other deposits. On the contrary, in Silurian reefs in Gotland, in Devonian and Lower Carboniferous reefs in Belgium, the Jurassic reefs in the Jura Mountains, and Cretaceous reefs in the Apennines, etc., etc., we can recognize and locate, in addition to the reef bodies themselves, the associated depositional environments with their characteristic sediments and faunas; the lagoon, the fore- and the backreef zones, and the open marine environment.

On a small scale and on a large scale, there is no question whatsoever of some catastrophic mixing-up; on the contrary, everything is found exactly in the place where it should be, compared with actual sedimentation conditions in reef and associated environments. We find structural constancy in detail, even when we consider variation as a result of different reef-building organisms (such as calcaceous algae, stromatoporoids, bryozoans, corals, rudistids, or combinations).

These are the facts of stratigraphic and sedimentologic research, which are at the basis of the major results of the geological sciences. This basis makes it possible indeed to say that the broad lines of present-day historical geology dealing with the formation of the earth's crust in geological times in the order of hundreds of millions of years, are correct, and are to be accepted as a well established fact.

Science and the Bible: Not the Fundamentalistic Way

It may seem as if I have written very little about fundamentalism so far. However, I was fighting against it all the time, but silently and indirectly until now.

The book of Whitcomb and Morris was written on the basis of what we usually call a fundamentalistic or biblicistic viewpoint. This standpoint implies the belief that the Bible teaches us principles, fundamentals or elements of human science in general and of historical-geological science in particular.

For the fundamentalist, therefore, the reliability of the Bible as the Word of God is related to *scientific* reliability. For him this is particularly true with respect to the first eleven

chapters of Genesis. This conception, however, implies inevitably that science and God's Revelation in the first chapters of the Bible are placed on the same (scientific) level, on the basis of which scientifically obtained data about the history of the earth and man will have to fit into the 'Biblical scheme or framework'.

The 'question' of the reliability of the Holy Scriptures can thus be fought out on the scientific field, and, as a consequence we then see theologians enter this field, as Professor Whitcomb now does as Professor Aalders did in Holland a few decades ago, and as so many before them have done since the end of the Middle Ages.

But these 'scientific' battles for an infallible Word of God have been lost right from the start. In constant retreat, the theologians have had to surrender every position they had once taken in this struggle. That's what the history of the warfare between science and theology should have made conclusively clear. The tragedy of men who wanted to defend the reliability of the Word of God 'scientifically' should have taught us that this entire approach was wrong. It should have convinced us that this science is a very bad ally, because its word had only temporal and no eternal value.

The most tragic aspect of the fundamentalist conception seems to me that his standpoint requires *scientific* proof, so that he must somehow live in fear of the results of developing scientific work, because indeed this development could then also *disprove* the reliability of the Holy Scriptures. And this leads to the cardinal question whether in this way the fundamentalist's conception does not reveal an implicit faith in science, which is far more dangerous for Christian religion than is the scientific development itself.

A few years ago, I was speaking to a conference of Reformed ministers in the Netherland about some fundamental facts of geology. In the discussion, one of them arose and declared that, if he were convinced that what I had told them was true, he would immediately abandon his ministry. But I ask myself what kind of a religion is Christianity when scientific geological facts can prove or disprove the reliability of God's Revelation to man? What then do we really believe in? In *our* own 'image',

conceptions or ideas about an infallible Bible? In an interpretation of the first chapters of Genesis with the help of current natural scientific knowledge just as earlier theologians did with the help of a world picture, incidentally, usually already out of date in their own time? Does the message of the Bible then really necessarily change with the changing world picture? It surely does as long as we continue trying to accommodate Genesis and geology.

Instead of giving human scientific work its proper place in the light of Scripture, fundamentalism indeed implies, as I indicated already in the beginning of this article, a colossal over-estimation of natural science. Neither geology nor any other natural science can ever be a direct exegetical tool, as they have been used, and still are used in fundamentalistic conceptions.

However, the history of the natural sciences and the results of modern geology, for example, could play a far more modest role, the role of an indirect exegetical tool. Such would be not a tool to test, to prove or to disprove the reliability of Scriptures, but to test the reliability of our ideas and conceptions about the Bible, the inspiration, and the historicity of the first chapters of Genesis.

The reliability of the Word of God spoken in this world through his prophets and apostles is beyond the reach of scientific control, because the Bible is not a scientific book. As such, it is not vulnerable to the results of science. Therefore, Christian astronomers, geologists, and biologists can work without fear as long as they respect the limits of their own scientific field.

Our ideas and conceptions concerning the Bible may indeed appear to be vulnerable to the results of scientific development. This state of affairs seems to be difficult to accept, particularly for many evangelical Christians. It cannot be denied, however, that there is 'revelation' (be it of a different kind than that of the Bible) in the development of this created world, also in the results of human scientific and technical advances during the last centuries. It cannot be denied and should not be denied that, as a result of this development, our (scientific) world picture (Weltbild) has obtained huge dimensions, both in

time and space and has become entirely different from that of the authors of the Bible. But, this is the world God has wanted us to live in, we and our children.

The fundamentalistic view, conservative in an erroneous sense, requires us to accept a so-called 'biblical world picture' which should be normative for scientific work. This is a poor predicament indeed for contemporary Christianity, because it tends to transform twentieth century Christians into aliens, standing, as it were, in Old Testament times. Since this is, of course, not possible, the fundamentalistic view tends to deprive them of their belief in a reliable Bible. It alienates us from the words of Eternal Life, which we understand through *faith* and not through *science*, and which stand firm in this rapidly changing world.

R. E. D. CLARK, M.A., PH.D.

A Double Standard?

In earlier times Christians often took delight in real or supposed scientific confirmations of their faith. This attitude is currently changing. In the contribution by Professor Van de Fliert, reproduced in the present Number of this Journal, it has been identified with old-fashioned fundamentalism. Van de Fliert writes: ' . . . It is a fundamental and extremely dangerous mistake to think that our belief in the reliable Word of God could ever be based on or strengthened by scientific reasoning'. To suppose otherwise, he continues, is to reveal a vast 'over-estimation of science'. If we hold the fundamentalist view, 'we lose the Bible as a reliable Word of God completely, because we then make its teachings dependent on the poor state of our scientific knowledge today . . . which will change tomorrow'.[1] 'For the fundamentalist the reliability of the Word of God is related to scientific reliability . . . the question of the reliability of the Holy Scripture can thus be fought out on the scientific field.'[2]

Three reasons in all are given for the repudiation of the older view. Firstly, it is claimed that attempts to support Christianity by appeal to science necessarily imply a double standard. The loyal Christian must decide whether to accept the final authority of the Word of God or of science; he cannot have it both ways. Secondly, it is claimed that science is ever on the move, a shifting sand on which no building can safely be constructed. Thirdly, it is stated to be a fact, familiar to every historian of science, that Christians who pin their faith on science always bring their religion into disrepute. To quote Van de Fliert again, they are in constant retreat, 'the theologians have had to surrender every position they had once taken in this struggle. That's what the history of the warfare between

[1] p. 11.
[2] *op. cit.*, p. 14.

science and theology should have made conclusively clear'.

Let us examine these arguments. Firstly, there is the contention that if appeal is made to science in support of Christian belief, we shall find ourselves encumbered with a double standard of truth, the Word of God *and* science, instead of the Word of God alone.

This argument cannot be accepted as convincing until we have considered its validity in relation to Christian thought on a wider canvas. Supposed double standards of a similar kind are encountered in other connections. If there is a double standard between the Word of God and science, there is also a double standard between the Word of God and conscience. In the latter case, to force a man to declare which of the two is his ultimate standard would be extremely foolish. If he opted for the Word of God he might (with witch-persecuting Christians in the past) interpret it in hideous ways; if he opted for conscience he might declare the inner light sufficient, and revelation redundant.

How, then, do Christians solve this dilemma? Most of us would claim that an appealing feature of the Christian message lies in the harmony which we find existing between Christian teaching on the one hand and the inner light of conscience which 'lightens every man coming into the world' (Jn. i. 9), on the other. This being so, can it ever be right to force a Christian to decide whether the Word of God or his conscience is his final authority? Conscience needs religion and religion needs conscience; we simply ought not to think in terms of setting the one up against the other.

Science affords another analogy. The scientist claims that he constructs his theories on the basis of ascertained fact, yet, in framing them, he has an eye to what seems reasonable and possible, perhaps also (as in mathematical physics) as to what is aesthetic. Which then is his real authority? Fact? Or his inner feeling of propriety? It would be unfair to persecute him with the dilemma. The two, he believes, work together.

The position between religion and science appears to be similar. The old adage that true religion and true science can never conflict is more than a cliché: it is the expression of a conviction of their interdependence. Like the Psalmist we may

see the laws of nature and the laws of God in harmonious synchronism (Ps. xcii.).

The difficulty in the case of Christianity and science seems to arise from a confusion. If we say that the Bible *or* the Word of God is the sole authority for faith we do not mean precisely and literally what we say. The revelation of God does not exist in a vacuum: it stands in relation to man. It is *we* who are called upon to understand the revelation: it is the Spirit of God who enables us to do so.

In the last resort, then, the Spirit of God is our authority. He may make use of the revelation previously given by God, but also of conscience, a sense of propriety and of reason by which we gain understanding both of the Word and of science. It is semantically confusing to speak of two ultimate standards. In the last resort there is one standard and only one: the standard of God Himself who reveals Himself to man. If we do not usually speak in these terms it is because we cannot directly settle issues by appealing to the Holy Spirit, so that in practice, as in science,[3] we must appeal to derivative standards. But we have no right to assume that there cannot be more than one derivative standard and in fact Protestants hold that there are at least two, the Bible and conscience, while Roman Catholics accept the Church and conscience.

In the Providence of God many factors may operate to persuade a man to become a Christian; it is wrong to limit God by claiming that agreement between the Bible and science may not be one of them. A man who is weighing up the pros and cons of a course of action may be tipped one way or the other even by an argument which in itself is not weighty. But science can offer more than this. Some men, at least, are so impressed by the coherence between incidental scientific teaching contained in the Bible on the one hand and scientific findings on the other, that for them this agreement constitutes one of the grounds of their belief in God. To minimize this fact

[3] For example the atomic weight of an element was originally defined as the mass of an atom of the element relative to the mass of an atom of hydrogen. But this presupposes an impossible experiment. Cannizzaro's derivative definition was therefore adopted – the atomic weight is the least weight in grams in one molecule of any of the volatile compounds of the element.

on account of a preconceived notion that it *ought* not to be so, because science *might* change, or because it is illogical to prove the greater by the lesser, is to ignore known facts about the ways in which men do in fact change their minds.[4] The stepping stones in a river bed may be slippery and unstably embedded, yet bring a man to firm ground on the other side. In the case of science, however, the Bible assures us that some at least of the stepping stones are unusually firm, the invisible things of God 'being clearly seen by the things that do appear' (Rom. i. 19–20).

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We turn to the second argument, best known through its brilliant development by Karl Heim;[5] the argument that science and religion must never be closely linked because science is a shifting sand.

To the writer, at least, it is difficult to understand how anyone can bring himself to make so sweeping an assertion, unless indeed, his knowledge of science is substantially confined to the border lands of science – in particular the atoms and the nebulae – or derived from sensationally minded journalists.

Inevitably, *at its boundaries*, science is ever in a state of flux. But its boundaries extend and, as fresh territory is conquered, areas of considerable stability are established. It is possible to say with some confidence that over a very large area of scientific knowledge neither we nor our progeny will witness great changes. Does anyone suppose that, in days to come, it will be discovered that the heart does not pump blood round the body, that the planets do not go round the sun after all, that Avogadro's Law is false, that benzene does not consist of molecules containing six atoms of carbon apiece arranged in a ring, that chromosomes and genes are irrelevant to heredity, or viruses to disease?

[4] See, for example, Bernard Dixon (Ed.), *Journeys in Belief* 1968. Also standard works on Christian conversions, eg. R. O. Ferm, *The Psychology of Christian Conversion*, 1962.

[5] Karl Heim, *The Transformation of the Scientific World View*, 1953.

Going back in history, it is often startling to note how much good science was known in the past. The fact that the earth is a sphere was common knowledge in the middle ages; ancient Greeks wrote of the running down of the universe in language which might be mistaken as belonging to the modern era;[6] even if the ancient Hebrews did not know how to formulate the inverse square law, they *did* know that there were laws or ordinances that governed the movements of the planets;[7] despite belief in magic the ancient Romans reckoned that it had its limitations for there were things which even magicians could not do (for example, make a river flow backwards[8]); the arguments used by the Stoics in support of natural theology show a good appreciation of the laws of probability and the illustrations used are not unlike those in use today. Added to a considerable volume of biological knowledge of a descriptive character, and much deep psychological insight, the sum total of ancient knowledge was not negligible.

It is evident that the notion that there is no stability in science is false and should be resisted. We should beware lest we attach our religion too firmly to the band wagon of the very latest scientific speculation, or to popular scientific philosophies which cannot be reconciled with established scientific principles, but this said, science may lend support to Christianity, and Christianity to science.

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Thirdly, let us consider the statement that theologians have had to surrender every position taken in the warfare of religion and science.

This view, much favoured by modern atheists who will not allow Andrew White's *History of the Warfare of Science with Theology* to be forgotten, is open to attack on two fronts. Historically, as J. Y. Simpson showed many years ago,[9] the

[6] See A. O. Lovejoy and G. Boas, *Primitivism and Related Ideas in Antiquity*, Baltimore, 1935.

[7] *Jer.* xxxi: 35; xxxiii: 25; *Job* xxxviii: 33.

[8] R. McQ. Grant, *Miracle and Natural Law in Graeco-Roman and Early Christian Thought*, Amsterdam, 1952, p. 57.

extensive material collected by White does not warrant his conclusion. Such warfare as we find, was, in each generation, not primarily between theology and science but between older and younger scientists. Older scientists tended to uphold traditional views dogmatically; younger ones to question them and to achieve new insights. Young Rutherfords in every generation are told that they bring their universities into disrepute. Simpson provides many instances of the kind. Inevitably outsiders, *including theologians*, tend to adopt the views of older well established investigators.

If, despite all, it is necessary to speak of a Victorian battle between science and Christianity, let us speak also of the battles between politics and science, philosophy and science, medicine and science, and law and science. Politicians, philosophers, doctors, lawyers, all, have often seized upon the latest findings of science and used them in support of views which they believed to be correct. If Christians sometimes misapplied science, as when (in 1834) Sir John Hershell set up a telescope at the Cape of Good Hope and showed a local resident a blood red star, only to hear in a sermon a little later that the Bible must be true because Sir John himself had seen the 'very place where wicked people go'[10], it is also true that politicians have seized upon science in support of war, neglect of the poor and sick, and race extermination. A liaison of the latter kind is infinitely more harmful than an occasional unfortunate Christian speculation. But atheist influence is now so strong that these other issues are simply ignored. No one speaks of the warfare between other disciplines and science, or tells politicians, philosophers, doctors and lawyers that they ought not to hang their conclusions on science for fear that today's science will change tomorrow.

In another form this third and last argument tells us that the history of science shows that when Christians link their faith with their science the result is a fiasco: they usually fail to back the winning horse and are left with a discredited theory.

The picture we are asked to visualize is that of the Christian a

[9] J. Y. Simpson, *Landmarks in the Struggle between Science and Religion*, 1925.
[10] A. de Morgan, *A Budget of Paradoxes*, 1872, p. 179.

century or so ago appealing to the doctrine of the fixity of species in support of the biblical doctrine of creation, or to the older geological theories of catastrophism and Neptunism in support of the Genises Flood. But science proved fickle and cruel: it left him stranded.

How representative is this picture? In answer it must be said that it is not at all representative. No one who has studied the relations of science and religion in the Victorian era can doubt that geology and biology account for only a relatively small part of the total picture. Yet when we turn to other fields, it is simply not true that theologians or theologically minded scientists were in the habit of backing the wrong horse. They often backed the right horse, but since no controversy was occasioned the fact is overlooked.

Joule, the physicist, was transported with delight as he reflected on the ways in which energy is apportioned in the, universe and ascribed the arrangement to God; Faraday contrary to the usual view, linked his religion with his science quite closely and found great scientific incentive in looking for evidences of God's care in nature; Prout, the chemist, saw signs of God's hand in many facts of chemistry; Lord Kelvin, Tait, Maxwell and other physicists of the time believed that the science of heat confirmed the truth of the biblical doctrine of creation; Babbage thought the computer he had invented might provide a model of the way God had ordained the occurrence of miracles; Boole the mathematician, was fascinated by the psychology of thinking and argued cogently that it made materialism untenable. Many nineteenth century excursions into theology were highly productive in the scientific field. Prout's *Bridgewater Treatise* written to draw attention to God's handiwork in nature is now a classic in the history of chemistry. To Faraday and more especially Maxwell, it seemed quite wrong to suppose that God would have created the universe for the most part out of nothing at all (mere empty space), a reflection that led to the study of the properties of space and so to the prediction of wireless waves. Much more might be said along the same lines.[11]

[11] A documented manuscript on the subject is in preparation. See also *Faith and Thought*, 1967, *96* (i), 3.

Except in the case of geology, and evolutionary biology where clashes of personalities were involved, there is little in the nineteenth century science and religion relationship to suggest that the theologically minded people who took up definite views in science were later forced to retract. A case might, indeed, be made the other way. For example, Christians of a century ago often pointed to the remarkable property of water in expanding when it freezes as an example of Providence, while contemporary atheists retorted that as molten bismuth behaves likewise and yet occupies no obvious niche in nature, it was illogical to invoke God. Today all would agree that the properties of water are not less but a great deal more wonderful than earlier Christians had supposed.[12] Our wonder at the design to be found in nature has increased immeasurably with the passage of time. Christian anticipations of the way that science would go have proved on the whole more often right than wrong.[13] Moreover, as we have noted, Christian involvement in science led in many instances to direct and wonderful advances in science itself.

Perhaps when the whole story has been told, it will transpire that the struggle of Christianity with science will turn out in large measure to be the product of Andrew White's fertile imagination, and that positions taken up in science as a result of theological interest did not have to be abandoned unduly often.

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Thus objections to a close liaison between theology and science prove unconvincing on examination. How then, we ask, should they co-operate?

In this connection the parallel with ethics is instructive. Humanists tell us that kindness, compassion and sympathy do

[12] For discussions of teleology in chemistry see L. J. Henderson, *The Fitness of the Environment*, N.Y. 1931: R. E. D. Clark, *The Universe, Plan or Accident*, 1961; A. E. Needham, *The Uniqueness of Biological Materials*, 1965; C. F. A. Pantin, *The Relations between the Sciences* (Tarner Lectures), 1968.

[13] R. E. D. Clark, *The Christian Stake in Science*, 1967.

not need external justification. In a sense they are right but there are times in the lives of all of us, and for some people these are not rare but common, when the intuition that we *ought* to recognize right and follow it proves woefully inadequate. The voice which says, 'This is the way, walk ye in it' becomes a whisper; hope of immediate pleasure or worldly gain seems far more relevant than conscience. It is then that we desperately need a second standard: the love of God, the law of God, the hope of reward, even the threat of punishment (an unworthy motive to be sure, but vastly better than none at all). If we sin persistently, conscience becomes weak or distorted, or may disappear. On the other hand if, in moments of peril, the second standard keeps us on the narrow road, conscience will reassert itself in due course. Much of the tragedy of our world today lies in the failure to realize that two standards are necessary.

Perception (or awareness as Lord Brain prefers to call it[14]) affords another parallel. Many modern philosophers[15] now recognize that when we see an object we may know in two distinct ways that it is there; by a direct intuitive awareness mediated through the senses and by a process of reasoning which enables us to interpret signals received through our sense organs. In the psychological field the difference between them has been focused by Michotte's experiments on the direct perception of casuality in the outer world which is in contrast to the casuality which we suppose to exist as a result of a reasoning process.[16]

These two kinds of perception are subject to alternation: normal perception is direct and intuitive, but when feelings of unreality are uppermost (culminating, perhaps, in an unreality or derealisation syndrome) we fall back on reason. We always use reason, in addition, to test the validity of direct perception which, like reason, may fail to provide us with the right answer, the possibility of illusion being familiar to us all. Once again a

[14] In J. R. Smythies (Ed.) *Brain and Mind*, 1965; *Science and Man*, 1966.

[15] See, for example, G. M. Wyburn, R. W. Pickford and R. J. Hirst, *Human Senses and Perception*, 1964.

[16] R. C. Oldfield, *The Perception of Causality*. For a translation of A. Michotte's paper see M. D. Vernon (Ed.), *Experiments in Visual Perception*, 1966, pp. 235 ff.

two-fold standard is necessary: confidence is strong when intuition and reason work together.

These examples afford close parallels with science and religion. The Christian may know intuitively that he trusts the Word of God but his intuition falters at times. By reason the door is kept open for faith to return and when it does return, now supported by reason, it is stronger than before.[17]

The Bible abounds with instances of the way reason steps in when faith is dim. 'My God, my God, why hast thou forsaken me?' is followed by reasoned argument: 'In thee our fathers trusted . . . and thou didst deliver them . . . thou art he who took me from the womb . . . (Ps. xxii). When the Prodigal Son had lost all hope he reasoned to himself; 'How many of my father's servants have bread enough and to spare, but I perish here with hunger.'

What, then, is the upshot of this discussion? Surely it is this; that we should link our religion with our science as closely as we are able – just as we link other interests with science. Sometimes, no doubt, we shall make mistakes; our science or our biblical exegesis will be at fault. Sometimes the passage of time may show that arguments we have used in support of the Christian faith are wrong, yet if we have used them in all honesty may they not be profitable in their time? Does it matter if a generation yet unborn (or even those in ten years' time) will sometimes have cause to smile at what we said and wrote? Do *we* Christians of today feel that our side has been let down because Christians who lived centuries ago preached sermons about red stars, or mistook crystals formed from the ashes of plants for a resurrection of the plants and saw in such chemical experiments an enactment of the final resurrection? Of course mistakes will be made. But do those who take a different view of science and Christianity forget that mistakes are *equally*

[17] *Jn. V:* 46–54 affords an illustration. The official 'believed the word that Jesus had spoken to him.' Nevertheless, on rteurning home, he decided to apply a simple scientific test to his intuition that the healing of his son was our Lord's doing. He ascertained the time at which the boy began to recover, and learned that it was at the same time as Jesus had said to him, 'Your son will live'. This greatly confirmed his faith: 'he himself believed and all his household.'

easily made in exegesis? Man can misunderstand the Bible as easily as he can misunderstand nature: he can link his faith to false interpretation as easily as to bad science. By parallel reasoning to that which is now being offered in many quarters it would be wrong to preach from the Bible because this might imply a double standard between the Word and our interpretation of the Word, or because we might interpret it wrongly and interpretations are a shifting sand which may change tomorrow. Arguments against linking science with Christianity are arguments which may be turned against *all* preaching, all witnessing, all constructive thinking in the Christian field.

LEWIS A. DRUMMOND, PH.D.

God's Existance and Nature

I do not propose to raise another polemic against the radical theology which holds that God is dead. That exercise shall be left to others. Suffice it simply to say that I start with the presupposition that God *is*. Now if this position can be maintained, which I hold can be done, it is of vital interest that we come to at least some conclusion concerning the essential nature of the God that is. For if God does live, the fact of his being will permeate and affect virtually every facet of experience. Thus the theme of the essence of God's nature is the consideration of this paper.

Following the lead of Professor C. A. Campbell, it appears vital to posit as fundamental the concept that the basic nature of God's being is 'supra-rational', i.e., in his essence God cannot be exhausted on rational grounds alone. Several lines of experience seem to point in this primary direction.

I. The Argument from Religious Experience

Probably all would agree that religious experience is a state of mind, meaning by the term 'mind' the essence of the self or personhood. But what kind of a state of mind is the religious experience? First, it must obviously be an attitude of worship. One would hardly have a genuine religious experience apart from its being a worship experience. Secondly, an element of belief seems likewise indispensable. There must be some sort of 'content' attributed to the object of worship, and it would seem clear that the minimum of that content includes at least a being who is deemed worthy of worship. Thus we can conclude that religion is primarily belief in a worshipful being. Now it follows that if the object of worship is worthy of worship, certain attributes must be true of that being. Perhaps these basic characteristics can be delineated as follows:

(a) The Worshipful Being must be a supernatural Being.

All genuine religious experience has a certain element of mystery surrounding the worshipful object. As Campbell puts it, the worshipful's 'mode of being and functioning is not "intelligible" to us in the way in which we suppose that familiar processes in things and persons are "intelligible" '.[1] In Professor H. D. Lewis' words, 'the element of mystery in religion is thus essentially irreducible'.[2] Therefore all true religion has its 'mystery' aspect.

(b) The Worshipful Being must be of Transcendent Value.

This surely follows because religious worship implies adoration, and adoration is something of an emotion that only can be evoked by that which is felt to possess transcendent value. Of course, this fact automatically excludes from the ranks of true religion some of the 'cults' and a number of primitive religions in that they seek only to curry the favour of the gods, and so long as this rather mean motive is the basis of worship, these gods can hardly be seen as possessing transcendent worth. Actually, such worship is much closer to magic than to genuine religion.

Finally,

(c) The Worshipful Being must possess Transcendent Power.

This principle is maintained on the basis that true worship is permeated with a sense of awe, and the objective correlate of awe is power, i.e., power that is mysterious and overwhelming. Now it would seem clear that the power of the worshipful must be recognized as not *merely* mysterious, for to inspire genuine awe, the power of the worshipful must be power of transcendent value. This further implies that the worshipful, endued with transcendent or 'numinous' power and value, must be free from any imperfection; God must be perfect. Now if God be perfect, he must then be *infinite* and *one*. For finitude clearly implies limitation and therefore some deficiency in power; and a plurality of perfect beings is self-contradictory.

It can now be concluded that the worshipful Being must be

[1] C. A. Campbell, *On Selfhood and Godhood*, (London, George Allen and Unwin Ltd.), p. 240.

[2] H. D. Lewis, 'Religion and Enthusiasm', *Prospect for Theology*, Edited by F. G. Healey (James Nisbet and Co. Ltd.), p. 39.

endued with 'Mystery', 'Power', 'Value' – in all essentials Otto's *mysterium tremendum et fascinans. . . .*[3] And it seems there are no other *essential* qualities that need be ascribed to the generic object of religious belief and experience. God is one, perfect Being, endued with overwhelming 'holiness', i.e., the acme of mystery, power and value.

Now Rudolph Otto[4] contends that when we ascribe the term 'holiness' to the worshipful Being, we must be very careful not to understand the concept on human rational grounds. There is something more in the apprehension of the Divine than can be expressed rationally. This 'something more' Otto calls the 'numinous', and this non-rational, religious, 'numinous' experience is adequately described in the previously quoted phrase, viz, the *mysterium tremendium et fascinans.*

Otto then goes on into some detail and tells us first that the 'mysterium' aspect of the religious experience indicates that one is in contact with something 'wholly other', i.e., something 'whose kind and character are incommensurable with our own, and before which we therefore recoil in a wonder that strikes us chill and numb'.[5] Now the content of this 'mysterium' aspect of the experience is furnished by the *tremendum et fascinans* concept. He states that the 'tremendum' has three elements, viz: (1) the numen is grasped as awe-inspiring and (2) as overwhelming in might and majesty and (3) as super-abounding in living energy and urgency. The *fascinans*, is described as a blissful rapure by the mysterious enchantment and allure of the numen. It is now quite clear that this is a non-rational strand in Otto's basic idea of the Holy, and because a better term does not seem to be found, it is contended that religious experience compels us to postulate a God whose essential nature is 'supra-rational'.[6]

Obviously, religious experience is foundational to postu-

[3] Campbell, *op. cit.*, p. 297.

[4] In his volume *Das Heilige.*

[5] Campbell, *op. cit.*, p. 331.

[6] The problem of using rational terms to talk about a super-rational God is a problem that falls outside of the scope and space of this admittably limited paper. The reader is referred to C. A. Campbells' arguments in *On Selfhood and Godhood.*

lating the concept of a supra-rational God, but there are other areas of experience as well that point in the same direction, not the least of which is:

II. The Argument from Cognition

It is contended by the Bradlian school of idealism that the basic unit of thought, i.e., judgement, is by its very nature self-contradictory. Now if this can be maintained, it is patently clear that a perfect Being could never be explained in purely rational terms. But can the idealist position be legitimately held? The argument runs as follows. The Bradlian idealist[7] raises first the question: what is the criterion of intellectual satisfaction? In answer, surely all would agree that the criterion is found to be 'non-contradiction'. In other words, the intellect will not accept as 'the real' any content which contradicts itself. Anything self-contradictory is not *ultimately* real, and the idealist claims that the cognitive judgment – the basic unit of thought – is internally self-contradictory. Thus it follows that rational thought cannot actually express ultimate Reality. But *is* the cognitive judgment really self-contradictory? Does this not seem absurd? In defence of the position it is first argued that the essence of all thinking is the assertion of unity in diversity. Neither unity nor diversity can be eliminated in predication. Unless there is unity the terms simply fall apart. Again, unless there is genuine diversity there is no movement of thought at all. Thinking cannot be expressed in the formula 'A is A'. Therefore, as thinking must unite differences, the formula 'A is B' (for example 'the chair is red') is suggested as the only way to express rational cognition.

Is 'A is B' any improvement over 'A is A', however? To some extent so, but there are still grave difficulties. It seems obvious that, strictly speaking, 'B', so long as it is different from 'A' is 'not-A'. So the formula actually reads 'A is not-A', and it is evident that this not only asserts it annuls at the same time. This is simple self-contradiction. Consequently, the uniting of

[7] Idealism is not to be as summarily consigned to the grave as some of the more modern 'linguistic' thinkers should like to do, see my article on 'Idealism Still Speaks' in Vol. 97, No. 2 of this journal, Winter 1968.

differences, which is the goal of all cognition, cannot be expressed as 'A is B'.

It may be objected, however, that in predication we assert simply that 'A has B', e.g., 'the chair *has* redness', not *is* redness. However, 'A has B' is surely the same as saying 'A is such-as-to-have-B'. Now we dare not say that 'such-as-to-have B' is synonymous with 'A', for we will have our old problem of the tautology again. 'Such-as-to-have-B' must be different from 'A' if we are to have any movement of thought. Therefore, let 'such-as-to-have-B' be called 'C'. The new formula now reads, 'A is C'. No one would say that this restatement is any improvement over 'A is B'. Self-contradiction still prevails and thus, formally speaking, cognition is self-contradictory.

How then can thought combine differents? We surely cognize in everyday life. The answer rests in the principle that the differences must be seen as elements of a 'system' where the system is conceived as a whole of mutually implicatory parts. If the differents are seen as diverse expressions of a system, thought is not repulsed. In this kind of a system, identity and diversity are but obverse sides of the same fact. Although 'A' and 'B' are differents, their very nature is derived from the identity of which they are but expressions.

Thought thus proceeds towards its goal under the constraint of such a system. It is the union of differents as connected expressions of a system that becomes the goal of the whole intellectual process. Therefore, the proper formula for predication is neither 'A is B' nor 'A has B'. Genuine cognition is expressed as 'Xa is Xb,' ('X' representing the system that expressing itself as 'A' must also necessarily express itself as 'B'). This is why the intellect cannot unite bare differences or rest in a metaphysical dualism. There must be a system to make judgment feasible. This alone satisfies the intellect.

But here is where the problem begins to bristle with difficulties. As Campbell expresses it: '. . . Although such a unity is the inherent demand of the intellect, and thus needful for the assurance of apprehending ultimate reality, it is a unity that is not obtainable by the intellect. . . . For . . . the route which the intellect takes, and must take, in its effort to realize its ideal is one which never can by reason of its intrinsic character, lead to

the desired goal of mutually implicatory system or unity in difference-which never can, therefore, yield us apprehension of the real'.[8] The issue seems to be that the intellect is faced with the knotty problem as to how the ground itself is connected with the differences it attempts to combine. Consequently, a 'deeper ground' is necessitated, but the same problem emerges again and again, *ad infinitum*. In simple terms, we can just keep on asking indefinitely 'why?' to every proposition. The reason is that the intellect demands a self-consistency that can be found only in a system where the ground is *internal* to the differents it connects, but the only thing the intellect can achieve is a ground that always remains at least partially *external* to the entities it unites.

What then is the conclusion of this line of argumentation? The route the intellect *must* travel, a route that necessitates the assumption of relations, can never lead to its goal of a perfect, self-implied Whole. Thus it is a path that can *never* lead to *ultimate* Reality. Therefore, it must be that 'Reality owns a character which transcends thought – a character for which since a label is convenient we may term "super-rational".[9]'

Now we can deduce that if the philosopher's ultimate Reality, is supra-rational, this gives us more than a clue that this must be God's nature. Moreover, it clearly follows that if God is infinite and perfect, he cannot be a 'thinking' God as we rationally understand the term. To say God rationalizes as we do immediately implies, according to idealism's arguments, that there is limitation, indeed defect, in God, and this obviously cannot be if God is ultimate and perfect. Hence we conclude that one is forced to posit a supra-rational character for God's essential nature.

III. The Argument from Conation

The 'will of God' is a phrase often used in religious language. Yet, surely it cannot be taken in a literal sense, for it seems self-evident that 'will', as we understand it, implies defect.

[8] C. A. Campbell, *Scepticism and Construction* (London, George Allen and Unwin Ltd.), p. 14–15.
[9] *Ibid.*, p. 20.

Is it not true that any conative action suggests a state not yet existing that is considered better than the state presently existing? Thus imperfection in the conative subject is implied in every willed action.

Now this problem is particularly pressing when one speaks of God's Will, especially in creation. To say that creation is a result of divine will implies that there was a time when the world did not exist, a time, therefore, when God felt a 'lack' in his being. But this is obviously incompatible with a God of utter perfection, and to retort that God created the time order along with the world is merely to shift the problem from one point to another. This is the issue Augustine failed to see in his attempt to deal with the quandary. Thus God cannot be said to 'will' anything, that is, as far as we can grasp the term on mere rational grounds.

Yet there is real meaning and content to the phrase 'the will of God'. Religious life is quite meaningless apart from it. How can the dilemma be solved? The only answer seems to be that we project the idea of a supra-rational God wherein the will of God is understood in a symbolic way[10] of God's actions in the time-space order. Thus we conclude that to understand God's activity in any satisfying way that is in line with what we claim him to be, we are forced to declare him as supra-rational.

In the light of the foregoing arguments it seems reasonably conclusive that we can now quite confidently assert the concept of a supra-rational God. I may go so far as to say we are compelled to take such a stance.

Moreover, it may even be found that such a position can perhaps shed light on some of the more detailed theological problems of Christianity. For example, the problems of the Trinity, the person of Jesus Christ as both Son of God and Son of Man, perhaps even the perplexing dualism of God's sovereignty and man's free will can find some help towards solution in the idea of a supra-rational God. Suffice it to say in conclusion that I hold that only a supra-rational God can

[10]There are those who declare that a symbolic theology is really no theology at all. Space precludes a defence of a symbolic theology, but the reader is again referred to C. A. Campbell's work *On Selfhood and Godhood.*

satisfy the difficult problems of a purely rational theism, and more, the only One who can satisfy the deepest longings of the human personality to know Ultimacy.

J. K. HOWARD, M.B., CH.B., B.D.

The Concept of the Soul in Psychology and Religion

SYNOPSIS

The study commences by querying the validity for either psychology or religion of the concept of the soul. Traditional religious concepts have always given a prominent place to man's soul as a distinct entity. It is argued that this idea derives from Platonic philosophy and historical evidence is adduced to support this contention.

The Christian religious viewpoint must be founded upon the biblical data and these do not provide any grounds for the traditional 'dipartite' or 'tripartite' views of man. On the contrary, it is argued, the Bible sees man as a unity, a single personality. Similarly modern psychology begins with the 'person.' Modern views of the personality are discussed and it is maintained that the overwhelming concensus of opinion sees personality as dependent upon bodily integrity, particularly that of the central nervous system.

It is argued that for both religion and psychology the only valid view of man is as a unified and integrated personality. The practical implications of this are very briefly discussed.

The late C. E. M. Joad was renowned for his insistence upon the need for adequate definition, and it is a commonplace of human experience that much of the misunderstanding that may arise between one person and another does so as a result of imprecision in language and a lack of mutually accepted definitions of terms. It might, therefore, with reason, be argued that a discussion of the concept of the soul in psychology and religion should begin with a definition of what we are to understand by 'soul'. Such a course of action, however, would be to 'put the cart before the horse'. It is a manifest impossibility to arrive at a meaningful definition without possessing all the relevant data. Furthermore, we must ask ourselves whether the concept of 'the soul' as a distinct entity possesses either validity or meaning. In order to reach a decision it is essential for us to examine the psychological and religious

views of man's constitution. It should be added at this juncture that, for the purposes of the present study, the term 'religion' will be taken to mean 'the Christian religion'.

From the biological standpoint there is nothing by which we can *quantitatively* distinguish man from the other animals. While there may be differences in degree, there is no absolute difference in biological terms between man and, say, the higher apes. On the other hand the Judaeo-Christian tradition affirms that man stands as distinct from the rest of the animal creation. The biblical record states that man was created in 'the image of God'. Does this then imply that man has some sort of spiritual 'extra' – a 'soul'? The traditional religious viewpoint would almost certainly reply in the affirmative. It is, however, our conviction that this viewpoint is defective and misleading, and it will be part of the purpose of this study to argue that the concept of a 'soul' cannot be considered as meaningful for either psychology or religion and should thus be discarded. Before any misunderstanding can arise, let it be stated clearly that we affirm man's distinction from the rest of the animal world. Man alone, as far as we can tell, is capable of making value-judgments and man alone is the one that the biblical record presents as being able to co-operate as a willing agent in the purposes of God. Further, it was through a Man that God chose to redeem His creation.

Before proceeding further with our argument, however, it is essential that we look briefly at the traditional religious concept of the soul.

Traditional Statements concerning the Soul

It is surely axiomatic that the Bible is to be considered as the foundation for the Christian faith. The Christian viewpoint and the formulations of Christian doctrine should owe their origin to the biblical data, irrespective of the precise terminology we may use in our statements. The question we must face at the outset is whether the traditional statements of the doctrine of man are derived from the biblical data or whether they owe their conception to categories of thought which are essentially unbiblical. It is our conviction that the latter is the case.

In seeking to establish this contention we shall begin with a reference to Plato's *Phaedo*. This is an imaginary report of a discussion Socrates is supposed to have held in his condemned cell. In the course of the discussion we have propounded the essence of the Greek view of the soul. It is conceived as being immortal, immaterial and like the divine.[1] O. Cullmann summarises the viewpoint as he writes, the 'body is only an outer garment which, as long as we live, prevents our soul from moving freely and from living in conformity to its proper eternal essence . . . (Death) looses the chains, since it leads the soul out of the prison of the body'.[2] This conception was to be developed later by the Neoplatonists, especially Plotinus and Proclus, into a more cohesive form. Almost inevitably, Christian thought was greatly influenced by this viewpoint as it moved further from its Palestinian roots into the Hellenistic world.[3]

The systematic formulation of these ideas into Christian doctrine came with Augustine of Hippo. His view of the soul was thoroughly Platonic. It was an immaterial and indestructible substance which ruled the body. It was to be considered the mirror of the divine nature corresponding in its faculties to the Trinity itself.[4] Augustine's writings were to exert a profound influence upon the development of Christian thought down to, and beyond Thomas Aquinas and the development of mediaeval Aristotelianism. Aquinas himself, although renowned for introducing a system which harmonized Christian thinking with Aristotle, was nonetheless also influenced by Neoplatonic concepts. His view of the soul differed from that of Augustine in many respects, especially in considering the soul as united with matter to produce the 'form' of the body, yet he still thinks of it as occupying an intermediate position between

[1] See especially *Phaedo* 78E ff. Note also *Republic* 10. 608C ff., *Timaeus* 90A ff. For Aristotle the soul was not so much a separate entity as the formal cause of the living body. See further C. S. W. Taylor, 'Forms as Causes in the *Phaedo*', *Mind* (1969), LXXVIII. pp. 309 ff.

[2] O. Cullmann, *Immortality of the Soul or Resurrection of the Dead* (London, 1958), pp. 19 f.

[3] See further, C. Bigg, *The Christian Platonists of Alexandria* (Oxford, 1968).

[4] This is especially developed in *De qualitate animae*. A good introduction to the period is G. Leff, *Medieval Thought; St. Augustine to Ockham* (London, 1958).

purely material and purely spiritual. Man's understanding is the demonstration of the soul in his system and is evidence of its spiritual nature and its immortality.[5]

Not surprisingly the Reformation theologians, in view of their cultural and intellectual background, did not move from these basic presuppositions in regard to the soul. They formulated their 'doctrine of man' in the traditional categories of a christianized Greek philosophy. Calvin, for example, speaks of the soul as 'an immortal, yet created essence . . . an incorporeal substance'.[6] Calvin represents a return to Augustinian thought rather than the Aristotelian concepts of the schoolmen, but the basic categories remain the same.[7] In each case, in fact, it is apparent that the understanding of the soul of man was based upon metaphysical speculation rather than observed or recorded data. While certain shifts of emphasis occurred through the years the governing presuppositions remained unaltered.

What is surprising is to find that these viewpoints are still held by a large number of modern theologians. Two writers will illustrate this point. L. Berkhof develops a theory of 'realistic dualism' to explain the relation between soul and body and writes, 'body and soul are distinct substances, which do interact, though their mode of interaction escapes human scrutiny and remains a mystery to us . . . from the continued conscious existence and activity of the soul after death it appears that it can also work without the body'.[8] It is important to note the assumptions that are made here. In the first place the 'soul' is a distinct *substance*, capable of being separated from the body and of surviving death. This is but a restatement of Platonism. Furthermore, he refuses to admit that the nature of the 'soul' and its relationship to the body are matters for investigation.

[5] *Summa Theol.* I. 75. 6. For futher details of Aquinas and his thought see, F. C. Copleston, *Aquinas* (London, 1955).

[6] *Institutes*, I. 15.

[7] John Marsh *The Fulness of Time* (London, 1952), is probably right in asserting that 'it would seem to be as characteristic for the reformed theologian to follow Plato as for the catholic to be Aristotelian.' p. 17.

[8] L. Berkhof, *Systematic Theology* (Grand Rapids, 1941), pp. 191 ff.

The second example is a writer well known in evangelical circles of Christian thought. Erich Sauer considers man to be 'a trinity in unity, and his invisible inner being consists of two substances to be clearly distinguished'. These two substances are 'soul' and 'spirit' and he goes on, 'the soul is the connecting link . . . a "body" for the spirit, even as it is itself enclosed by the body as its own material frame'.[9] Once again we are confronted by the Platonic conception of 'soul' as a distinct substance, but Sauer adds the further thought that the body is the 'frame' for the soul. This is little removed from the idea of the body as a prison from which the soul is released at death. Space precludes mention of other modern writers who adopt the position we have outlined and which may be considered as the traditional conception of the soul.[10]

It is true that many theologians today have abandoned these traditional formulations and categories of thought, recognising their unbiblical origin; they are, nonetheless, deeply rooted in religious thought. Furthermore, it is this metaphysical approach which is generally viewed as the Christian understanding of man. It is an essentially speculative concept, and, while it may be considered *a* religious view of man, we contend that it is not the *Christian* view of man. It is this traditional concept which is, rightly we judge, viewed as highly suspect by physiological psychologists and is one of the factors leading them to voice their strong criticisms of 'religion' for indulging in metaphysical speculation which bears no relation to observed realities.

In this discussion we purpose to demonstrate that the biblical understanding of the soul is far from these ideas derived from Greek philosophy. Further, we also hope to show that the view derived from the biblical data is in essential agreement with the findings of modern physiological psychology.

[9] E. Sauer, *The Dawn of World Redemption* (ET, London, 1953), pp. 39 ff.

[10] Other recent works which continue to propound the traditional concept of the soul include J. M. Shaw, *Christian Doctrine* (London, 1953), E. L. Mascall, *The Importance of Being Human* (London, 1958), and T. C. Hammond, *In Understanding be Men* (Rev. D. F. Wright, London, 1968). Similar views are stated in the older but still widely recognized and valued works of A. H. Strong, C. Hodge, etc.

The Bible is concerned with the wholeness of man and its basic concepts and assumptions are those of Hebrew thought which stands in marked contrast to that of the Greeks.[11]

The Biblical Concept of the Soul

If the traditional formulations concerning the nature of the soul are judged inadequate and misleading from the standpoint of the Christian religion, it is imperative that an alternative view be propounded. Such a view, as we have already indicated, must be derived from the biblical data. We shall therefore commence our study of the biblical concept of the soul by investigating the data provided respectively by the Old and New Testaments. In a study of this nature it will be impossible to do more than indicate the essentials of our argument and it will not be possible to give any treatment of the possible objections to our thesis. Before proceeding further we should note two features of biblical syntax. The first is the use of synecdoche, a figure of speech in which the part stands for the whole. Secondly, we should also be aware of the use of poetic parallelism, in which two or more phrases standing side by side utilise different words to express the same meaning. These usages will become apparent as the study progresses.

Two words are of especial relevance to our study in the Old Testament. These are *nepeš* and *rûah*, usually translated by 'soul' and 'spirit' respectively in the AV. *Nepeš* is etymologically related to the Akkadian *napistu* meaning 'throat', 'gullet', or 'neck'.[12] It is used in this physical sense in a number of places in the Old Testament. At Psa. cv. 18, for example, we have, 'His feet were hurt with fetters; his neck (*nepeš*) was laid in iron'. Again, at Psa. lix. 1f. we read, 'Save me, O God, for the waters have come up to my neck (*nepeš*); I sink in the deep mire, where there is no standing, I am come into deep waters,

[11] These differences have been carefully worked out by T. Boman, *Hebrew Thought compared with Greek* (ET, London, 1960).

[12] Basic lexicographical data has been derived from L. Kohler and W. Baumgartner, *Lexicon in Veteris Testamenti Libros* (Leiden, 1953), for the Old Testament and W. F. Arndt and F. W. Gingrich, *A Greek-English Lexicon of the New Testament* (Cambridge, 1957), for the New Testament.

where the floods overflow me'. A further usage which is again essentially physical is seen in the relationship expressed between *nepeš* and blood, as at Gen. ix. 4; Lev. xvii. 11; Deut. xii. 33, etc. In this respect the suggestion has been made that this is the way we are to understand *nepeš* at Gen. xxxv. 18 – 'as her *nepeš* was departing . . . she (Rachel) called his name Benoni'. Death from post-partum haemorrhage was tragically common before the days of blood transfusion.

At this juncture we should take note of the fact that an essential feature of Hebrew thought is the idea of movement.[13] The Hebrew conceived his world in dynamic terms and this was naturally applied to the concept of living beings. The basic distinction between the living animal and the dead one was that the living were active, involved in constant movement. The man who was alive showed this by doing things, he worked, when necessary he fought, he ate and drank, he fathered children and so forth. This essential feature of all living things was captured by an extension of the use of *nepeš*. It came to represent the vitality of the individual and in this sense was used of anything that was alive. Thus the animals share this characteristic with man and can be called 'living souls' (Gen. i. 20, 24; ii. 7, 9; Lev. xi. 10, etc.).

A. R. Johnson[14] has conveniently summarized this usage under four headings. The word may speak of the principle of life as at I Kings iii. 11; Gen. xxxvii. 21. It may refer to the physical vitality of an individual as at Num. xi. 6; Lam. ii. 12, etc. Then again it may be used to express affect, a man's emotional vitality as at Psa. xlii. 6; Job. iii. 16. Finally, it may speak of the volitional vitality of the individual, expressive of will and purpose, as at Gen. xxiii. 8; Num. xxi. 5; Deut. xxi. 14; II Kings ix. 15. The intrusion of death into individual existence brings about a cessation of all activity, whether physical, emotional or volitional. The coming of death thus means the loss of vitality, the loss of *nepeš*. Accordingly, we find such

[13] Note T. Boman, *op. cit.* pp. 205 f. 'According to Israelite conception everything is in eternal movement; God and man, nature and the world . . . the Greeks describe reality as *being*, the Hebrews as *movement*.'

[14] A. R. Johnson, *The Vitality of the Individual in the Thought of Ancient Israel* (Cardiff, 1949), pp. 9ff.

expressions as 'all the days that he separates himself to the Lord he shall come at no dead body (*nepeš*)' (Num. vi. 6, see also vi. 11; Lev. xxi. 1; Hag. ii. 13). A dead man is a dead *nepeš*.

When the biblical creation narrative states that, 'the Lord God breathed into his nostrils the breath (*rûah*) of life; and man became a living soul (*nepeš*)' (Gen. ii. 7,) we may conclude from what we have seen of Old Testament usage that there is no thought here of some metaphysical essence. Writes G. A. F. Knight, 'the result of God's action was not a soul within a body, one that could later be extracted from that body and which would then continue to exist apart from that body, when the body finally crumbled into dust. Man is not an amalgam of two separate entities, dust and the breath of life. He is one entity'[15]. The *nepeš* thus becomes the totality of conscious being, or, as we may put it, the personality expressed in the wholeness of vitality at every level of existence. It is for this reason that we find *nepeš* standing in place of the personal pronoun, a fact that will be seen from an examination of the references already provided. In the Old Testament 'soul' is 'not meant as a *tertium quid* between spirit and body, but denotes the totality'.[16] Man's 'soul' is the man himself.

Two other words require brief mention in order to complete our picture of the Old Testament view of man's personality. Closely related to *nepeš* is the word *rûah*, a word which contains the basic idea of air in motion. In a high proportion of cases the word is used in this original sense of wind – 'He commands and raises the stormy winds' (Psa. cvii. 25). The word, however, became related to man's being and was used of the power and vitality of human life. The creation of man, as we have already noted, commenced with the 'breath (*rûah*) of life' being breathed into him. Air, by virtue of its oxygen content, is

[15] G. A. F. Knight, *A Christian Theology of the Old Testament* (London, 1959), p. 34.

[16] W. Eichrodt, *The Theology of the Old Testament* (ET, London, 1967), p. 137. See also E. C. Rust, *Nature and Man in Biblical Thought* (London. 1953), pp. 101 ff. It is surprizing to find a scholar of the calibre of L, Kohler, writing that, 'soul is therefore the (individualized) spirit, delimited by its connexion with a body.' *Old Testament Theology* (ET, London, 1957), p. 145.

essential for the life of all but the more primitive forms of animals and plants. Throughout his life man is dependent upon the air he breathes, but the movement of air in terms of wind and tempest suggests power and energy. Thus, by metonymy, that which man requires for the continuance of his vitality, becomes the vitality of being itself.

Any unusual manifestations of power or energy could be described as having or showing more 'spirit'. This was often used in relation to God given vitality for some special purpose (e.g. Gen. xli. 38, 39, Judges xv. 14, etc.). What is important to note is that in every instance to be filled with 'spirit' implied action. Indeed, one could go so far as to say that to be filled with 'spirit' and not engaged in some activity, not performing some action, is a contradiction in terms.[17] It is also important that we do not personalize this manifestation of God given vitality – the concept of the Holy Spirit as a mode of God's being related to the life of the Church belongs to the post-Easter theology of the New Testament.

In much of Old Testament usage there is little to distinguish *rûah* from *nepeš* (note Isa. xlii. 5, etc.). The word is used to mean 'self' or simply life. Furthermore, the whole animal creation shares with man this 'vital breath' (e.g. Gen. vi. 17). Commonly *rûah* is used to express the vitality of the mind as expressive of the whole personality (Psa. xxxii. 2, lxxviii. 8, etc.) and it may also be used to describe a man's inclinations and desires (e.g. II Chron. xxi. 6; Num. v. 14; Hos. iv. 12, etc.). In none of these usages, however, is it possible to make any absolute distinction between *nepeš* and *rûah*. Both words denote the life within a man and the individual himself in the expressions of his total personality.

A number of physical expressions are also used to denote the totality of man reflected in a particular action, activity or emotion. The word 'flesh' is to be noted particularly, especially the fact that it is never used as something over against *nepeš* or

[17] This conception is carried over into the New Testament. While here the Spirit of God is personalized and related to Christ's life within the Church there is still the implication that activity follows the 'filling of the Spirit' (cf. Acts 2.4, 4.31, 13.9 ff., etc.).

rûah. The flesh is simply the outward form or expression of the *nepeš*. It is the living form of the personality, or, as Eichrodt has put it, 'the necessary expression of our own individual existence, in which the meaning of our life must find expression'.[18] As H. Wheeler Robinson has pointed out,[19] however, it is often used to emphasise the fact that, in comparison to God, man is frail, dependent and incapable. Other words such as 'heart', 'hand'. 'foot', 'mouth', and so on are also used, by the use of synecdoche, to speak of the whole personality (e.g. Job xxiii. 11, etc.).

It is this concept of man that is taken over into the New Testament. While of necessity the vocabulary was Greek rather than Hebrew, the underlying ideas that governed the use of the words was Hebrew rather than Greek. In the writings of Paul, for example, we look in vain for any evidence of Hellenistic dualism. Indeed, as N. P. Williams has pointed out, to ascribe such ideas to Paul is a psychological, ethical and spiritual impossibility.[20] 'No sustained argument is necessary to justify the assumption that ideas found in the Old Testament are fundamental to the understanding of much of St. Paul's teaching'.[21]

As in the Old Testament we are faced in the New with an holistic view of man. The New Testament was written out of a conviction that the coming of Christ had brought about a remarkable and radical transformation of human existence, but this change did not alter man's constitution. Rather, the coming of Christ restores man to the wholeness of being which he had lost as a result of his divorce from God. The action of God in Christ brings to man, for the first time since the Fall,

[18] W. Eichrodt, *op. cit.* p. 149.

[19] H. Wheeler Robinson, *The Christian Doctrine of Man* (Edinburgh, 1911), p. 25.

[20] N. P. Williams, *The Ideas of the Fall and of Original Sin* (London, 1927), p. 149.

[21] R. P. Shedd, *Man in Community* (London, 1958), p. 3. Note also J. Klausner, 'there is nothing in all the teaching of Paul . . . which is not grounded in the Old Testament, or the Apocryphal-Pseudepigraphical and Tannaitic literature of the time' *From Jesus to Paul* (New York, 1944), p. 482.

the possibility of realizing his full potential. In one sense the power of the divine life adds a new dimension to man's being, but in another it brings about that inner harmony of being which allows the total development of personality in relation to God'.[22]

The key word in the New Testament is *psychē* which is generally translated as 'soul'. In some senses it stands as equivalent to the Hebrew *nepeš*. It may simply mean a person's life as at Phil. ii. 30, where Epaphroditus is said to have risked his life (*psychē*) on Paul's behalf (note also Matt. ii. 20; Mark iii. 4; Acts xv. 2v 26, xx. 10 etc.). Again the word may be used to describe man's volitional activity, his vitality of purpose, as at Acts ii. 32, xiv. 12; Phil. i 27; Heb. xii. 3, etc. In these instances the use of *psychē* can hardly be distinguished from the other Greek words used in the New Testament to express purpose and will. Similarly we find *psychē* used to denote emotional activity (e.g. Mark xiv. 34,) and there is one example of particular interest involving both volitional and emotional ideas. At Mark xii. 30 (=Matt. xxii. 37) our Lord outlines man's proper response to God. By the relationships of the words in this verse it is clear that *psychē* in this context refers to the totality of man's being and not to some part of it.

At other times the word is used in place of the personal pronouns when greater emphasis is desired (e.g. Luke i. 46, xii. 19; Acts ii. 41, vii. 14; Rom. xiii. 1, etc.). In many instances, however, man's vitality is expressed by another word, *pneuma*, usually translated 'spirit'. Indeed, this seems to be the more common word in the New Testament and it is not beyond the bounds of possibility that this may have been to avoid the metaphysical overtones of *psychē*. In certain contexts the two words are used with identical meaning (e.g. Luke i. 47). Moreover, *pneuma* may speak of the mind (Acts xix. 21; II Cor. ii. 13), and may be expressive of purpose (Phil. i. 27, where, once again, it is equated with *psychē*). In conjunction with *soma* (body) it denotes the totality of human personality (I Cor. v. 3–5, vii. 34).

[22] This explains the New Testament emphasis on 'peace' as one of the primary results of the divine forgiveness, for peace denotes the wholeness and health of a man. See further at p. 00.

Both the words we have discussed are many-sided and in each case it is the context that gives the clue to the meaning. In this respect it is essential to distinguish when *pneuma* is used of the human personality in its various expressions and when of the Spirit of God which we may view as the transforming life and power of God at work in the human situation and adding, as it were, a totally new dimension to human experience. As such it stands in complete contrast to everything that characterizes this age of sin and death; it is the principle of the life of the age to come. In this sense *pneuma* may stand in contrast to *psychē*. Paul's words make this clear, 'the first man Adam was made a living soul (*psychē*); the last Adam a life-giving spirit (*pneuma*)' (I Cor. xv. 45). By his incorporation into Christ the personality of man takes on an added dimension, that of the incorruptible life of God. This, however, is a somewhat specialized use of the concept. In normal usuage it is impossible to distinguish between *psychē* and *pneuma* as representative of man's personality.

Thus, in both Old and New Testaments we are presented with an holistic concept of man. In terms of biblical psychology, man does not have a 'soul', he is one. He is a living and vital whole. It is possible to distinguish between his activities, but we cannot distinguish between the parts, for they have no independent existence. 'Man is an entity, quite indivisible into his various elements, even though aspects of his personality, such as his appetites, his affections, his moral purposes, may be examined and handled one by one, just as we can look at each side of a coin in turn'.[23] From the biblical point of view the concept of 'the soul' is meaningless and has no validity. The consequences of this approach will occupy us at a later stage of the discussion. We must now turn to consider the psychological concept of the soul.

The Psychological Approach to Personality

In our consideration of the religious concept of the soul it was emphasised that from the standpoint of Christianity our

[23] G. A. F. Knight, *op. cit.* p. 37.

understanding must be based on the biblical data. In this respect we need to remember that the biblical data must be elucidated and the conclusions drawn with the same dispassionate care that would be taken over the analysis of data from any laboratory experiment. In the same way, such care is also demanded from the psychologist in the assessment of his data. Some, especially the representatives of the psychoanalytic schools, have been as prone to speculation as the theologians they so readily criticize. The genuine scientist must, as far as possible, maintain an objective and disciplined outlook, even when the results he obtains and the conclusions he is forced to draw from them appear to be in conflict with previously held theories. For this reason we intend to concentrate upon the views of those psychologists who are most consciously endeavouring to follow the scientific method and base their conclusions upon the empirical data of experiment.

Little attention will be paid to the psychoanalytic schools of Freud and Jung and their followers. Those who follow this approach have allowed a free rein to their speculations, indeed, at times their imaginations! H. J. Eysenck remarked some years ago that psychoanalysis 'is essentially non-scientific and is to be judged in terms of faith and belief, rather than in terms of proof and verification'.[24] Our assessment is not intended as a value judgment; on the other hand it is essential for us to be aware of the subjectivity and intuition upon which psychoanalysis is based. Deliberately and consciously the psychoanalysts have not based their work upon scientific methodology, and whatever value their approach may have, a matter in dispute, it is not to be considered a scientific discipline. Thus it will be given no place in the present discussion.

It must be admitted, however, that even where there has

[24] H. J. Eyseneck, *The Uses and Abuses of Psychology* (London, 1953), p. 226. It is surprising how Freudian psychoanalysis seems to dominate religious thinking on psychology. For example R. L. Shinn, *Man: The New Humanism* (London, 1968), in the series 'New Directions in Theology Today', seems unaware of any other form of psychological thinking and E. White, 'A Preface to Biblical Psychology', *Journal of the Transactions of the Victoria Institute* (1951), *LXXXIII*, pp. 51ff. utilizes exclusively these categories of thought.

been a conscious effort to follow genuinely scientific principles much psychological theory tends to be the outcome of inductive rather than deductive thinking. In this respect we need to take into consideration the timely warning sounded by G. S. Klein and his colleagues, that 'the study of personality continues to be a many-faceted field, with diverse conceptions of its subject, and certainly not agreed upon demarcation of the phenomena that should be its proper concern as a distinctive speciality within psychology'.[25]

In spite of the divergences of approach it is apparent that most psychologists are prepared to begin with the 'person'. There is little of that old division into 'mind' and 'body' which bedevilled early psychological theory as much as the closely related concepts of 'soul' and 'body' still bedevil theological thinking. Irrespective of one's psychological outlook, it is generally agreed that a study of personality must arise out of a consideration of the whole human organism. This is the case whether we are concerned with establishing the sources of individual differences or with the integrative functions that go to produce a coherent organism. H. Helson is concerned with the relevant variables that make up individuality and he writes, 'personality is the person in the situation'.[26] In the same way those more concerned with intra-individual integration, that is to say with those processes which make for personal integration demonstrable through specific functions, again take the 'person' as their point of departure and the prime object of analysis, rather than some particular form of behaviour or physiological process in isolation.[27]

Thus the psychologist in his study of personality is concerned with what G. Murphy has called 'the interdependence of a large number of qualitatively distinct attributes in some sort of coherent whole'.[28] Personality may thus be viewed as an

[25] G. S. Klein, H. L. Barr and D. L. Welitzky, 'Personality', in *Annual Review of Psychology* (Palo Alto, 1967), *18*, p. 467.

[26] H. Helson, *Adaptation-Level Theory; An Experimental and Systematic Approach to Behavior* (New York, 1964), p. 541.

[27] See for example J. Loeringer, 'Person and Population as Psychometric Concepts,' in *Psychol. Review* (1965), *72*, pp. 143–155.

[28] G. Murphy, quoted in G. S. Klein, *et al.*, *op. cit.* p. 469.

interlocking of functions and traits, an architectural unity involving the whole person. Moreover this coherent interaction fulfils the function of maintaining identity across a wide range of environmental conditions, thus making the organism to some extent independent of its environment. It should be made clear, however, that in saying this we do not advocate that 'organismal' approach beloved of the psychoanalysts. We simply wish to make it clear that from the beginning the organism is a whole and that this wholeness may be considered as the total personality. The separate parts, such as cognition, memory, affect, may be viewed one by one, but the personality itself cannot be considered in isolation as a 'system' of the body.

It should be noted that this approach involves us in two basic assumptions. In the first instance we assume that man is an 'open-system'. That is to say he is capable of entering into transactions with surrounding energy resources. Secondly it is assumed that man, in common with other living systems, will always tend to preserve his identity, both in spite of and because of these energy transactions. In other words the 'person' as a coherent whole possesses two distinct attributes. He has the ability to relate in a variety of ways to his environment and at the same time relate to himself, preserving himself as an independent unit separate from the environment. These tendencies will tend to produce tension and, partially at least, we may see their outworking in the phenomena of 'socialization' on the one hand, and 'individuation', the 'self-concept', on the other.[29]

It is thus assumed that the human organism possesses a genuine degree of self-regulation, and further, this is considered explicable, ultimately, in physiological terms. The integrative functions of the organism are to be described in terms of inborn behavioural tendencies, imprinted genetic patterns and the response patterns of the central nervous system. It might well be asked whether these somewhat mechanistic terms are adequate to describe such a complex picture as human personality. Some psychologists have preferred to see personality in

[29] See further C. R. Rogers, 'Towards a Science of the Person', in *Behaviorism and Phenomenology* (ed. T. W. Wann). (Chicago, 1964), pp. 109–140.

terms of value concepts and describe behaviour as that which endows human action with meaning. Such concepts however, are matters of belief not verification. They may be true but they cannot be proved. G. W. Allport states the heart of the problem succinctly as he writes, the 'theoretical issue is not the truth or falsity of any particular formulation for some particular occasion. The question is rather where do the primary dynamics of human life lie? Shall we say that our patient suffers from a biochemical intolerance, or from an intolerable loss of self-respect? Both statements may be true; but to science it seems more objective. less animistic and mystical, to attack the problem at the biochemical level where cause and effect are easier to perceive'.[30] The problem with all value-orientated judgments and categories is quite simply that they are unable to provide us with any experimentally testable hypothesis.

Clearly much of our approach will be conditioned by individual preference, but in this respect it needs to be remembered that if psychology is to be considered as a science then it must be prepared to be governed by the same objectivity and discipline that mark the more exact sciences. The scientist must be governed by the results of experiment and observation his conclusions must be based on these alone. He is concerned with the answer to the question 'how?' and not that of the ultimate 'why?' of existence. On this basis the problem of personality is to be answered in terms of physiology and biochemistry and not in the realms of metaphysical speculation. Reverting to Allport's example, biochemical intolerance can be measured and, in principle at least, corrected. On the other hand a loss of self-respect, while a genuine entity in terms of intra- and inter-personal relationships, is merely a descriptive term to describe the outward effects of the underlying physiological abnormality. The theologian or philosopher is entitled to use the categories of value-judgments, the scientist is not.

The psychologist thus has to interpret personality in terms of the physiological mechanisms of the body. Recent work in a number of fields, much of it popular knowledge, has made it

[30] G. W. Allport, 'The Fruits of Eclecticism – Bitter or Sweet?' *Acta Psychol* (1964), *23*, pp. 27–44.

apparent that the expression of personality is intimately connected with the central nervous system. The behavioural changes which the manipulations of neurosurgery can induce, the increasing knowledge of the pharmacology of such substances as the mono-amine oxidase inhibitors, lysergic acid derivatives, the amphetamines, and tryptamine derivatives, all of which are capable of producing changes in personality and behaviour, make it abundantly clear that in personality we are dealing with something which is biochemical in its origin. Further, the personality breakdowns which occur in such conditions as schizophrenia are due, fundamentally, to biochemical abnormalities and disturbances of neuro-cellular metabolism. This is seen again in other pathological conditions where the primary fault may lie in genetically determined enzyme deficiences, disjunction of the nuclear genetic material, vitamin deficiencies or toxic substances acting on the brain, but where the result is seen in personality disturbances.

The widening frontiers of neurophysiology have revealed the complex system organization which relates the cortical and autonomic arousal systems and the inter-relationships of cortical and sub-cortical units. Not that these functions can be considered in isolation; each system is dependent upon the integrity of the body as a whole and the correct inter-working of all its functions. The personality may be unequivocally related to this interworking. The integrity of the personality is to be considered dependent upon the proper functioning of the central nervous system at all levels. Viewing the available evidence N. Sanford writes, 'it is only to the activities of the brain, the conserver of experience and the integrator of processes, that we may ascribe the *organization* that is the most essential feature of the personality'.[31] H. J. Eysenck is even more explicit. His conception of the personality is explicitly linked to the overall functioning of the central nervous system and its processing of information.[32] Starting at neural levels he

[31] N. Sanford, 'Personality, Its Place in Psychology', in *Psychology: The Study of a Science* (ed. S. Koch). (New York, 1963), p. 554.

[32] H. J. Eysenck, 'The Biological Basis of Personality', in *Nature* (1963), *199*, pp. 1031–34. See also his earlier work *The Structure of Human Personality* (London, 1953).

postulates a genetically determined cortical and autonomic response to stimuli out of which the structure of the total response of the organism develops, in terms of conditioned behaviour. The concept of conditioned responses is of vital importance to our understanding of the development of human behaviour and the structure of personality.[33] The practical importance will occupy us at a later stage of the discussion.

From the standpoint of scientific psychology it is possible to say that the coherent whole which we term personality is dependent upon the integrity and proper functioning of the central nervous system. This in itself cannot be considered an isolated entity for it is bound up with all parts of the organism's functioning – the body's systems do not work in isolation. Personality and bodily identity are thus inseparable. It is not a case of 'mind' and 'body', but rather of a unified, integrated, functioning person, the architectural unity of a single personality.[34] Once again we would assert that the concept of 'the soul' as something distinct within man can have no meaning. From the psychological point of view, as from the Christian, man is a unity.

Some Conclusions

If our argument thus far has carried any weight it will be apparent that the concept of 'soul' as some immaterial and immortal part of man should be abandoned. The data provided by psychology on the one hand and religion on the other, although approaching the problem from widely differing standpoints, both point to the inescapable conclusion that man is an indivisible entity. For this reason it may well be that we should abandon the use of the word 'soul' altogether since it

[33] See further H. J. Eysenck, 'Conditioning and Personality', in *Brit. J. Psychol.* (1962), *53*, pp. 299–305 and, 'Principles and Methods of Personality Description, Classification and Diagnosis', in *Brit. J. Psychol.* (1964), *55*, pp. 284–294.

[34] A philosophical, as distinct from purely psychological, case has been convincingly made out for the inseparability of personality and bodily identity by B. A. O. Williams, 'Personal Identity and Individuation', in *Essays in Philosophical Psychology* (ed. D. A. Gustafson). (London, 1967), pp. 324–345.

will be impossible at this stage to rid it of the Platonic overtones it has carried for so long. Our study leads us to affirm that the concept of 'the soul' has no place in religion or psychology. Psychologists would be unanimous in discarding the word since it belongs to the realm of metaphysics and not to the realm of observable phenomena and scientific investigation. Equally, from the standpoint of the Christian religion, the idea of the 'soul' as a distinctive entity must be rejected as unbiblical and belonging to the speculative world of Greek philosophy. We would emphasise with O. Cullmann that 'the teaching of the great philosophers Socrates and Plato can in no way be brought into consonance with the New Testament'.[35]

In place of these fragmentary concepts we put forward the view of man as a living being, a vital organism, expressing this vitality of his existence through his personality. The personality thus becomes the expression of his being. It is the observed and observable phenomena of the total life displayed through inter-personal relationships.[36] Such a view of personality leads us to a further important concept, that personality can only be developed in terms of community, in terms of 'I-thou' relationships. From the religious point of view this will mean not only the adequate development of horizontal, inter-personal relationships, but, and primarily, the development of a correct vertical relationship between man and God. Much of our psychiatric practice is concerned with the breakdown of personality under conditions of stress. Such breakdowns interfere with the development of those normal relationships which belong to the proper outworking of personality and are essential for the maintenance of its integrity.

It is at this point that there is a close contact between religion and psychology. The biblical emphasis is consistently upon the wholeness of being which belongs to the fully integrated person. This wholeness is commonly expressed in the

[35] O. Cullmann, *op. cit.* p. 60.

[36] As a full definition this may be inadequate and we are forced to admit with W. L. Carrington, that 'there is no simple and yet adequate definition' of personality (*Psychology, Religion and Human Need* (London, 1957), p. 40.

word 'peace' which to the Hebrew mind meant far more than merely the absence of strife. In Greek thought, as in modern Western, peace was viewed as a state, but in biblical thought peace denotes 'well being' in every department of life. The essential feature of the Christian gospel is that the coming of Christ has brought peace to man in its fullest aspect. The reality of this peace denotes the present fact of the new creation and the restoration of the whole man; it is God's salvation. The biblical emphasis is upon the fact that man astray from God can never know true harmony of being – 'there is no peace, saith my God, to the wicked' (Isa. lvii. 21). On the other hand God's healing is extended to the humble and contrite, restoring the fullness of their being (Isa. lvii. 15–19). This God-given wholeness of personality is evidenced in the 'fruit of the Spirit' (Gal. v. 22f.), traits which every competent psychologist would recognize as belonging to genuine maturity in the development of personality.

The Christian would maintain that such wholeness and maturity belong only to the one whose life has been invaded by the power of the risen Christ. The Lord Himself said that He had come 'that they might have life, and that they might have it more abundantly' (John x. 10). This is the fulness of life that comes from a personality correctly orientated at all levels. On this view it will be seen that 'redemption must be accomplished as a bodily event'.[37] Just as the intolerable burden of guilt affects every part of life, so the reality of liberation through Christ affects the totality of the personality. Psychiatric methods by themselves do not remove the deep seated sickness of man, what D. M. Baillie has called the 'moral-failure complex'.[38] The liberation of man's total being belongs to the realm of divine action.

The fact that man's redemption is a bodily event bears with

[37] W. Eichrodt, *op. cit.* p. 149. He goes on to emphasize that the conquest of death is to be envisaged 'not in the impossible form of the immortality of a spiritual portion of man, but only in a new mode of existence for him as a whole' (p. 156).

[38] D. M. Baillie, *God Was in Christ* (London, 1961), p. 164. His whole section on 'The Need for Divine Forgiveness' (pp. 160–166) is worthy of careful attention.

it the corollary that any future state must be peopled by real beings and not incorporeal spirits. From the psychological point of view the personality is dependent upon the full function of the total organism, it has no existence in its own right as an immaterial substance. The same holds true from the biblical point of view, but to this is added an additional fact. 'The hope of the *new corporeality* is grounded in the bodily resurrection of Jesus'[39], a fact that the New Testament makes abundantly clear (Rom. viii. 11; I Cor. xv. 20–22, etc.). Christ has conquered death and has introduced into life the new dimension of incorruptibility (II Tim. i.10). This is already at work in the being of him who is 'in Christ' and the process will be brought to fruition at the Day of His Coming. There is not space to develop this and in particular how the personality can exist after death. The clue may well lie in Paul's expression, 'them also which sleep through (*dia*=by the agency of) Jesus' (I Thess. iv. 14). By the agency of Christ the transfer of being from one plane of existence to another is accomplished. The exact nature of this intermediate state must be a matter of speculation and thus unverifiable. Without prolonging the discussion we would suggest that in some way it involves the preservation of personality within the corporate personality of the body of Christ.[40]

Finally, we must touch upon the subject of conditioning. If our psychological viewpoint is correct, the development of conditioned responses is of prime importance in the formation of the total personality.[41] In one sense this is seen in the development of conscience. This regulatory mechanism is dependent for its origin upon the initiation of conditioned responses to certain 'value-situations' and in particular those

[39] W. Künneth, *The Theology of the Resurrection* (ET, London, 1951), p. 287.

[40] W. Künneth, *op. cit.* pp. 270–276, rightly emphasizes the theological importance of the 'intermediate state.' See further the discussions of O. Cullmann, *op. cit.* pp. 48–57 and E. Stauffer, *New Testament Theology* (ET, London, 1955), pp. 210–213.

[41] The dangers of conditioning are well illustrated by H. J. Eysenck, 'The Technology of Consent', in *New Scientist* (1969, *42*, 655, pp. 688–690. W. Sargant's *Battle for the Mind* (London, 1959), is probably still the best popular introduction to the subject.

developed in childhood. For this reason an uninformed conscience is an unreliable guide, in spite of the advice of Jiminy Cricket. The biblical writers were well aware of the value of conditioning, as one writer puts it, 'Train up a child in the way he should go; and when he is old he will not depart from it' (Prov. xxii. 6). Total freedom of choice is an impossibility, there are too many factors impinging upon us. The anarchists dream would lead to the destruction of genuine personality. The Christian responsibility, both from religious and psychological standpoints, is to ensure the correct conditioning of their children which will lead to the full maturity of personality in relation to Christ.

Inevitably much has been omitted from our discussion and lack of space has necessitated dogmatism without proof. Nonetheless, if our approach has been valid it will produce a more realistic awareness of the truth and the hope that underlies our credal affirmation, 'I believe . . . in the resurrection of the body and the life everlasting. Amen.'