JOURNAL OF THE TRANSACTIONS

OF

THE VICTORIA INSTITUTE

VOL. LXXXII

1950

JOURNAL OF

THE TRANSACTIONS

OF

The Victoria Institute

OR

Philosophical Society of Great Britain

VOL. LXXXII

1950

LONDON:

PUBLISHED BY
THE INSTITUTE, 12, QUEEN ANNE'S GATE, WESTMINSTER, S.W.1

HARRISON AND SONS, LTD.,
PRINTERS TO HIS MAJESTY THE KING,
44–47, ST. MARTIN'S LANE, LONDON, W.C.2.

CONTENTS

***** The object of the Institute being to investigate, it must not be held to endorse the various views expressed either in the papers or in the discussions.**

VICTORIA INSTITUTE.

REPORT OF THE COUNCIL FOR THE YEAR 1949.

READ AT THE

ANNUAL GENERAL MEETING, MAY 22ND, 1950.

1. *Progress of the Institute.*

In presenting the Eighty-third Annual Report, the Council desires to express humble thanks to God for the continuation of the work of the Institute, and to thank all those who have contributed papers during the 1949 Session.

It is gratifying to note that, in addition to the Presidential Address, two papers were circulated and six read at ordinary meetings, compared with two circulated and three read in the previous Session. There was also an increase in the members attending the meetings, and discussion of the papers was well maintained.

Thanks are due to the untiring labours of the Honorary Secretary, Mr. E. J. G. Titterington, and the Assistant Secretary, Mr. T. I. Wilson.

The Institute is growing old but not senile, and it is beginning to show evidences of rejuvenation which hold out good hope for its future prosperity.

2. *Meetings.*

The first two papers of the Session were circulated to subscribers and discussed by written communication. Six Ordinary Meetings were then held in addition to the Annual General Meeting and Presidential Address.

(*Papers circulated.*)

"The Nature and Interpretation of New Testament Ethics," by P. W. PETTY, Esq., B.A.

"Personality," by R. T. LOVELOCK, Esq., A.M.I.E.E.

(*Papers circulated and read.*)

"Spanish Myscicism," by E. H. TRENCHARD, Esq., B.A.

Kenneth G. Grubb, Esq., C.M.G., in the Chair.

"The Origin of Life," by R. J. C. HARRIS, Esq., A.R.C.S., B.Sc., Ph.D.

Prof. R. O. Kapp, B.Sc., M.I.E.E., in the Chair.

"Puritan Origins in Science," by C. E. A. TURNER, Esq., M.Sc.

Rev. C. T. Cook in the Chair.

"Spiritual Factors in Mental Disorder," by ERNEST WHITE, Esq., M.B., B.S.

J. Armstrong Harris, Esq., M.B., B.Ch., in the Chair.

"The Decalogue and Psychological Well-being, its Present Day Significance and Value to Mankind," by REV. J. STAFFORD WRIGHT, M.A. (GUNNING PRIZE ESSAY).

E. Wellisch, Esq., M.D., D.P.M., in the Chair.

"The Christian and the Marxist Views of History," by REV. GORDON J. M. PEARCE, M.A.

Rev. F. Cowley, B.A., B.D., Ph.D., in the Chair.

"Presidential Address"—"Jesus Christ or Karl Marx." by Sir FREDERIC G. KENYON, G.B.E., K.C.B., D.Litt., LL.D., F.B.A.

Ernest White, Esq., M.B., B.S., in the Chair.

3. *Council and Officers.*

The following is a list of the Council and Officers for the year 1949 :—

President.

Sir Frederic G. Kenyon, G.B.E., K.C.B., D.Litt., LL.D., F.B.A.

Vice-Presidents.

The Lord Bishop of Worcester (The Rt. Rev. W. Wilson Cash, D.S.O., O.B.E., D.D.).
Professor A. Rendle Short, M.D., B.S., B.Sc., F.R.C.S.
The Rev. Principal H. S. Curr, M.A., B.D., B.Litt., Ph.D.

Trustees.

Wilson E. Leslie, Esq.
Ernest White, Esq., M.B., B.S.
E. J. G. Titterington, Esq., M.B.E., M.A.

Council.

(*In Order of Original Election.*)

Douglas Dewar, Esq., B.A., F.Z.S.
Lieut-Col. L. M. Davies, M.A., Ph.D., D.Sc., F.G.S., F.R.S.E.
Wilson E. Leslie, Esq.
Percy O. Ruoff, Esq.
Robert E. D. Clark, Esq., M.A., Ph.D.
Rev. C. T. Cook.
Ernest White, Esq., M.B., B.S. (Chairman of Council).
Rev. J. Stafford Wright, M.A.
E. J. G. Titterington Esq., M.B.E., M.A.
Lieut-Col. W. E. Shewell-Cooper, M.B.E., N.D.H., F.L.S., F.R.S.A.
R. E. Ford, Esq.
R. J. C. Harris, Esq., A.R.C.S., B.Sc., Ph.D.

Honorary Officers.

Wilson E. Leslie, Esq., *Treasurer.*
R. E. D. Clark, M.A., Ph.D., *Editor.*
E. J. G. Titterington, Esq., M.B.E., M.A., *Secretary.*

Auditors.

Messrs. Luff, Smith & Co., *Incorporated Accountants.*

Assistant Secretary.

Theodore I. Wilson, Esq.

4. *Election of Officers.*

In accordance with the Rules the following Members of the Council retire by rotation : P. O. Ruoff, Esq. ; R. E. D. Clark, Esq., M.A., Ph.D. ; Wilson E. Leslie, Esq. ; and Lt.-Col. L. Merson Davies, M.A., Ph.D., D.Sc., F.G.S., F.R.S.E., of whom the first three offer (and are nominated by the Council) for re-election.

The Auditors, Messrs. Luff, Smith & Co., Incorporated Accountants, offer, and are nominated by the Council for re-election as Auditors for the ensuing year, at a fee of five guineas.

5. *Obituary.*

The Council regrets to announce the following deaths :—

Newman Watts, Esq., F.R.G.S., M.R.S.L., Miss M. L. H. Taylor, Albert Hiorth, Esq., C.E., The Ven. Archdeacon W. S. Moule, M.A., Rev., Hugh C. C. McCullough, H.C.F., Rev. A. E. Hughes, M.A., Ian N. W. Mackie, Esq. (reported missing in 1941).

6. *New Fellows, Members and Associates.*

The following are the names of new Fellow, Members and Associates elected in 1949 :—

FELLOWS : A. Sheridan Atkinson, Esq., B.S. ; F. D. Bacon, Esq. ; Chas. Lee Feinberg, Esq., M.A., Th.M., Th.D., Ph.D. ; Douglas Geary, Esq., F.N.S., M.R.S.L. ; A. M. Gillespie, Esq., O.B.E., M.D., D.T.M., F.R.C.P. ; Pastor H. G. Goddard ; Rev. H. Harries ; Rev. F. H. Harris ; R. J. C. Harris, Esq., A.R.C.S., B.Sc., Ph.D., A.R.I.C. ; P. T. Heath, Esq. ; R. T. Hewlett, Esq. ; F. L. Hogg, Esq., M.Brit.I.R.E., A.M.I.E.E. ; Rev. P. R. Joshua, D.D. ; C. M. Lambert, Esq. ; Rev. Herbert J. Lockyer, D.D. ; Rev. R. J. McConnell ; Brian E. McCormick, Esq. ; Rev. H. McKerlie ; Rev. R. R. Neill, M.A. ; H. W. Pearce, Esq., F.C.S. ; Capt. A. L. Perry, M.B.E., M.C. ; M. G. Polson, Esq. ; H. K. Airy Shaw, Esq., F.L.S. ; E. H. Trenchard, Esq., B.A., A.C.P. (on transfer from Member) ; L. F. Tucker, Esq. ; W. Wagland, Esq., M.R.C.S., L.R.C.P. ; J. F. Wallace, Esq., L.L.B. ; Miss M. E. Waters, B.Sc.

MEMBERS : H. B. Bancks, Esq. ; J. S. Barling, Esq. ; R. A. Beckett, Esq., M.A. ; A. H. Boulton, Esq., LL.B. ; Rev. I. F. H. Carr-Gregg, M.A., F.R.A.S. ; Rev. W. E. Dalling (on transfer from Fellow) ; F. W. Davy, Esq., M.A. ; Rev. A. D. Ehlert, A.B., Th.M., D.D. ; H. R. Ford, Esq., M.R.C.S., L.R.C.P. ; Rev. G. I. Francis ; D. I. Frost, Esq., B.Sc. (on transfer from Associate) ; A. V. K. Gilbey, Esq. ; Rev. G. H. Heaslett, B.A. ; Rev. K. M. Holdaway ; D. M. Hum, Esq., B.Sc., A.R.C.S. ; Rev. C. C. D. Jeffrey ; Gordon Judd, Esq. ; V. G. Levett, Esq. ; Ch. C. Luck, Esq. ; D. W. Lyon, Esq., L.R.C.P. & S., L.R.F.P.S. ; Rev. Donald MacLean ; Rev. A. V. Maddick, B.A., Th.B., L. Th. ; M. F. Maton, Esq., M.I.M.E., A.M.I.P.E., M.Inst.Metals ; G. R. Morgan, Esq., B.A. ; H. J. Orr-Ewing, Esq., M.C., M.D., B.S., F.R.C.P. (on transfer from Fellow) ; Herbert Owen, Esq. ; Prof. F. Pack, Ph.D. ; D. A. Penny, Esq. (on transfer from Associate) ; Rev. Gordon J. Thomas ; N. F. S. Thompson, Esq. ; Rev. C. M. Titterton. M.A., B.D. ; Miss Nellie M. Wyard ; Rev. F. Wood, L.Th.

ASSOCIATES : A. J. Liddon, Esq., B.A. ; F. G. Nevell, Esq. ; K. D. Ramsbottom, Esq. ; R. M. Reed, Esq. ; R. Schram, Esq. ; Rev. H. P. Scott (on transfer from Member) ; J. D. T. Thompson, Esq. ; J. P. White, Esq. ; S. J. Wooldridge, Esq.

7. *Membership.*

Life Fellows	24
Annual Fellows	155
Life Members	31
Annual Members	263
Associates	73
Library Associates	51
Total Nominal Membership	597

8. *Donations.*

Conway A. Ross, Esq., £1 1*s.*; Mrs. Scott Challice, 5*s.*; Brig.-General H. Biddulph, £1 1*s.*; Charles J. Young, Esq., 11*s.*; Dr. Ernest White, £1 1*s.*; A. S. Deeks, Esq., £1 1*s.*; A. J. S. Preece. Esq., £1 1*s.*; A. H. Gregson, Esq., 9*s.*; C. C. Luck, Esq.,, £1 11*s.* 6*d.*; H. H. Goodwin, Esq., 19*s.*; S. P. Cully, Esq., 6*s.*; W. E. Filmer, Esq., £10; Rev. Principal H. S. Curr, £2 2*s.*; Dr. B. P. Sutherland, £1 16*s.*; Miscellaneous, 13*s.* 6*d.* Total, £23 18*s.*

ERNEST WHITE,
Chairman.

BALANCE SHEET AS AT 31st DECEMBER, 1949.

LIABILITIES.

1948 £		£ s. d.	£ s. d.	£ s. d.
10	Subscriptions in Advance		10 0 0	
	Annual Subscriptions, estimated Life Subscriptions :—			
	As at 1st January, 1949	650 0 0		
	Add Receipts during year	54 3 0		
		704 3 0		
650	*Deduct* Amount written off....	30 0 0	674 3 0	
660				684 3 0
	Sundry Creditors :—			
12	Expenses		47 5 6	
	Publication "Transactions":—			
	Reserve as at 1st January, 1949	450 0 0		
	Deduct Cost of 1947 Volume issued during year ...	241 10 0		
		208 10 0		
450	*Add* Further Reserve to cover 1948 and 1949 Volumes	316 10 0	525 0 0	
462				572 5 6
	Sundry Funds—Capital :—			
508	"Gunning" Trust Prize Fund		508 0 0	
200	"Langhorne Orchard Prize Fund		200 0 0	
220	"Schofield" Memorial Fund		220 0 0	
400	"Craig" Memorial Trust Fund		400 0 0	
1,328				1,328 0 0

ASSETS.

1948 £		£ s. d.	£ s. d.	£ s. d.
	Accumulated Fund :—			
414	Deficit as at 1st January, 1949....	502 13 8		
	Add Amount written off Equipment	24 8 0		
	,, Excess of Expenditure over Income			
89	for the year	73 1 7		
503				600 3 3
	Library, Furniture and Equipment, not valued			—
	Typewriter purchased during the year....	24 8 0		
	Deduct Amount written off to Accumulated Fund	24 8 0		
200	Subscriptions in Arrears, estimated to produce			200 0 0
	Cash :—			
468	At Bank	496 1 7		
10	In Hand	2 10 7		
478				498 12 2
	Sundry Funds—Investments, at Cost :—			
	"Gunning" Trust Prize Fund :—			
508	£673, 3½ per cent. Conversion Stock....	508 0 0		
	"Langhorne Orchard" Trust Prize Fund :—			
200	£258 18*s.*, 3½ per cent. Conversion Stock	200 0 0		
	"Schofield" Memorial Fund :—			
220	£378 14*s.* 6*d.*, 2½ per cent. Consolidated Stock	220 0 0		
	"Craig" Memorial Fund :—			
400	£376 7*s.* 4*d.*, 3½ per cent. War Stock....	400 0 0		
1,328				1,328 0 0

	SUNDRY FUNDS—REVENUE :—							SUNDRY FUNDS—INTEREST :—			
	"GUNNING" TRUST PRIZE FUND as at 1st January, 1949	111	1	3				44 Cash at Bank	44	0	1
	Add Interest received	23	11	1				89 Income Tax Repayment Claim....	108	5	8
		134	12	4				133 (Subject to Agreement with the Inland Revenue)			
111	*Deduct* Prize awarded	40	0	0							
					94	12	4				
	"LANGHORNE ORCHARD" TRUST PRIZE FUND as at 1st January, 1949	43	10	2							
43	*Add* Interest received	9	1	11							
					52	12	1				
	"SCHOFIELD" MEMORIAL FUND as at 1st January, 1949	37	17	4							
38	*Add* Interest received	9	10	11	47	8	3				
								194	12	8	
192											
£2,642								£2,779	1	2	£2,642

£2,779 1 2

We report to the subscribers to the Victoria Institute that we have audited the foregoing Balance Sheet dated 31st December, 1949, and have obtained all the information and explanations we have required. We have verified the cash balances and investments. The arrears of subscriptions have been estimated by the Secretary to produce the sum shown on the Balance Sheet, but we have been unable to verify this valuation. The amount appearing under Life Subscriptions should in our opinion be the subject of an actuarial valuation as at the accounting date. Subject to the foregoing, in our opinion the Balance Sheet is properly drawn up so as to exhibit a true and correct view of the affairs of the Institute according to the best of our information and the explanations given to us and as shown by the books of the Institute.

Drayton House,
Gordon Street, London, W.C.1.
3rd May, 1950.

(Signed) LUFF, SMITH & CO.,
Incorporated Accountants.

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST DECEMBER, 1949.

EXPENDITURE.

1948 £		£ s. d.	£ s. d.
84	To Rent, Lighting, Heating, Cleaning and Hire of Lecture Rooms		104 12 6
100	„ Assistant Secretary's Salary	183 6 8	
100	„ „ „ Expenses	100 0 0	
5	„ „ „ National Insurance	10 4 2	293 10 10
45	„ Postage		57 12 9
5	„ Audit Fee		7 7 0
31	„ Sundry Expenses		22 11 3
161	„ Printing and Stationery	288 15 10	
350	*Add* Reserve for Publication of "Transactions"	316 10 0	605 5 10
£881			£1,091 0 2

INCOME.

1948 £		£ s. d.	£ s. d.
	By Annual Subscriptions :—		
258	Fellows	399 11 5	
307	Members	373 7 5	
73	Associates	66 14 11	
638			839 13 9
	„ Life Subscriptions :—		
30	Proportion for the year		30 0 0
85	„ Sale of Publications		111 3 6
26	„ Donations		23 18 0
13	„ Interest from "Craig" Memorial Fund		13 3 4
792			1,017 18 7
89	„ Excess of Expenditure over Income		73 1 7
£881			£1,091 0 2

THE ANNUAL GENERAL MEETING

OF THE

VICTORIA INSTITUTE

WAS HELD AT THE CAXTON HALL, WESTMINSTER, S.W.1, ON MAY 22ND, 1950.

THE PRESIDENT, SIR FREDERIC KENYON, G.B.E., K.C.B., D.Litt., LL.D., F.B.A., IN THE CHAIR.

The Minutes of the Annual Meeting held on May 23rd, 1949, were read, confirmed and signed.

The Report of the Council and Statement of Accounts for 1949, having been circulated, were taken as read.

The Chairman then called on GORDON E. BARNES, Esq., to move, and A. V. GILBEY, Esq., to second, the *First Resolution*, as follows :—

> " That the Report and Statement of Accounts for the year 1949, presented by the Council, be received and adopted."

There being no comments or amendments, the Resolution was put to the Meeting and carried unanimously.

F. F. STUNT, Esq., Honorary Treasurer, then asked permission to make a Statement, in which he outlined the financial position of the Institute, and made certain suggestions with a view to increasing the income and effecting economies in the expenditure.

Dr. WHITE was then called upon to move, and Rev. J. STAFFORD WRIGHT to second, the *Second Resolution*, as follows :—

> " That the President, Sir Frederic G. Kenyon, G.B.E., K.C.B., D.Litt., LL.D., F.B.A. ; Vice-Presidents, Professor A. Rendle Short, M.B., B.S., B.Sc., F.R.C.S., and the Reverend Principal H. S. Curr, M.A., B.D., B.Litt., Ph.D. ; and the Honorary Secretary, E. J. G. Titterington, Esq., M.B.E., M.A., be, and hereby are, re-elected to their offices. Also that the election of Francis F. Stunt, Esq., LL.B., Honorary Treasurer, be, and hereby is, confirmed, and that F. F. Bruce, Esq., M.A., be, and hereby is, elected Honorary Editor of Transactions."

There were no comments or amendments, and the motion, being put to the Meeting, was carried unanimously.

Mr. E. J. G. TITTERINGTON was then called upon to move, and Mr. J. W. PURDUE to second, the *Third Resolution*, viz. :—

> "That P. O. Ruoff, Esq., R. E. D. Clark, Esq., M.A., Ph.D., and Wilson E. Leslie, Esq., retiring members of the Council be, and hereby are, re-elected. Also that the election of Francis F. Stunt, Esq., LL.B., and W. E. Filmer, Esq., B.A., co-opted to fill vacancies on the Council, be, and hereby are, confirmed."

There being no comments or amendments, the Resolution was put to the Meeting, and carried unanimously.

Mr. P. O. RUOFF was then called upon to propose, and Mr. A. P. CLARKE to second, the *Fourth Resolution*, viz. :—

> "That Messrs. Luff, Smith & Co., Incorporated Accountants, be and hereby are re-elected Auditors at the fee of seven guineas, and that they be thanked for their past services."

There were no comments or amendments, and the Resolution, being put to the Meeting, was carried unanimously.

The Chairman of the Council, Dr. E. White, then made a statement about the Langhorne Orchard Prize, which had been won by Francis I. Andersen, B.Sc., of Melbourne University, Australia, for his Essay on "The Modern Conception of the Universe and the Conception of God."

The Schofield Prize for the ensuing year was next mentioned, the subject, already announced, being "The Place of Miracle in Modern Thought and Knowledge."

There being no further business, the Meeting terminated with a hearty vote of thanks to the Chairman for presiding.

886TH ORDINARY GENERAL MEETING

HELD IN THE LECTURE HALL, NATIONAL SOCIETY FOR RELIGIOUS EDUCATION, 69, GREAT PETER STREET, S.W.1, ON MONDAY, 16TH JANUARY, 1950.

J. MCINTYRE, ESQ., B.A., IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed and signed.

The subject for the Schofield Prize Essay for 1951 was announced, *viz.*, "The Place of Miracle in Modern Thought and Knowledge."

The following elections were announced:—J. W. Purdue, Esq., Fellow; F. F. Bruce, Esq., M.A., Fellow (on transfer from Member); W. E. Filmer, Esq., B.A., Fellow (on transfer from Member); J. R. Campion, Esq., A.P.A., N.Z., Member; Donald Brookes, Esq., Associate.

The CHAIRMAN then called on D. J. Wiseman, Esq., O.B.E., B.A., to read his paper entitled "Some Recent Trends in Biblical Archæology."

SOME RECENT TRENDS IN BIBLICAL ARCHAEOLOGY

BY D. J. WISEMAN, O.B.E., B.A.

SYNOPSIS

This paper presents some of the recent information, obtained from documents recovered from sites in Syria and N. Iraq, which bears on the Patriarchal Age. Evidence is given for a lower dating for Ḥammurabi of Babylon and the consequent need for settling the early Genesis narratives in their new (early 2nd millennium) background on the basis of the texts from Nuzi, Mari and from unpublished texts from Aṭšāna. A new text from the latter site is presented to show the true nature of the Ḫabiru settlers in Canaan in the 16th century, and from Mari to show how these same people were active even earlier throughout the area. A recently published text is examined to show an instance of the way recent researches have corroborated some historical statements in the O.T. referring to Jehoiachin.

Throughout the paper references are made to the most recent developments which add to our knowledge of the races, laws, customs and language of Biblical times. The need for a synthesis of the mass of material slowly becoming available in this field is emphasised, and some suggested answers are given to problems raised by recent discoveries (e.g., The Hurrians and the O.T.).

IT is the aim of this Paper to supplement the archaeological information given by our President in 1941 and by my father in 1943. Excluding the recently discovered "Dead Sea" scrolls, which are the subject of a separate Paper during this session, an attempt is made to survey the outstanding Near Eastern archaeological finds made in recent years, and to evaluate

some of the interpretations which are currently being put forward concerning these discoveries.

From 1936 until last year the archaeological expeditions from Western countries have concentrated their main efforts upon excavations in Syria and N.W. Mesopotamia. Until the outbreak of war continuous excavations were carried out at Tell Ḥariri (Mari), Ras-es-Shamra (Ugarit) and Tell Aṭšāna (Alalaḫ). The latter site near Aleppo has also been excavated by Sir Leonard Woolley annually from 1946 until this last October. During the lull in active excavations necessitated by the war scholars have been primarily engaged in evaluating the numerous written documents—the cuneiform tablets—which each of these sites has yielded. Publication of the archives from Nuzi (S.W. of Kirkuk) found from 1925 onwards, and a re-examination of the Tell El-Amarna letters, the Boghazkoi tablets and of tablets found in Palestine have resulted in a great advance in our knowledge of the history of these areas and especially of Syria. This has been enhanced by the remarkable coincidence of the written evidence from all these sites, which in the main falls within the second millennium B.C. As will be seen during a more detailed analysis of some of this evidence it concentrates our attention largely upon two periods, the First Dynasty of Babylon (now dated *c.* 1830–1550 B.C.) and what we may call the Pre-Amarna Age, i.e., the 14th–15th centuries B.C. It will be observed that this information covers a period which is of great importance to Bible Students and previously known only from the Amarna texts and a few isolated references in so far as the extra-Biblical history of Palestine and Syria are concerned.

One of the first effects of the decipherment of this new material, which comprises more than 30,000 tablets, has been a substantial lowering of the date for the First Dynasty of Babylon and for the well-known king Ḫammurabi. From the 5,000 letters from the royal archives of Zimri-lim, who was king of Mari until it was captured and destroyed by Ḫammurabi of Babylon in his 32nd year, there is ample evidence for the contiguity with Šamši-Adad I of Assyria. From other records we know that this king, who reigned 33 years, was still alive in Ḫammurabi's tenth year and his son and viceroy Yasmaḫ-Adad appears in the Mari letters. In 1942 Poebel began publishing the Assyrian King-list found at Khorsabad in 1932–3 and established Šamši-Adad I as 1726–1694 B.C. (with a limited margin of error due to a break in the text covering two short and little-known reigns).

By cross reference from stratigraphic, ceramic and other evidence (including the Ammi-zaduqa Venus astronomical calculations) Sidney Smith[1] arrived at 1792–1750 B.C. as the date for Ḥammurabi. Later, in 1942, Albright (and Cornelius independently) dated him 1728–1686 B.C. From the Mari and Egyptian references Albright has found a useful check on this dating from a synchronous mention of a Yantin-ḥamu of Byblos *c.* 1730 B.C. This new dating for the 1st Dynasty of Babylon (*c.* 1830–1550 B.C.) accords well with the general history, since it places the Hyksos expansion in the later part of the 17th and the Hittite and Kassite periods in the 16th century and thus eliminates the gap between the Amorite First Dynasty at Babylon and the Kassite supremacy which, despite a considerable number of documents from the main cities throughout these centuries, had never been explained. It was indeed this unexplained "gap" in the written and cultural life of Babylon that had long caused uncertainty over the hitherto generally accepted date for the renowned Ḥammurabi period (i.e. 2123–2081 B.C.).

I have gone into this new dating in some detail, since most have equated Abraham with Ḥammurabi at this early dating. They have largely relied upon a supposed identification of Ḥammurabi with Amraphel of Genesis xiv. Philologically this has always been doubtful, and even if possible there would be uncertainty as to which of the three Ḥammurabis known from the Mari, Alalaḫ and Ugarit texts, was in question. The name of Chedorlaomer does not appear on the British Museum Spartoli tablet as was at first thought, and nothing is known at present of activity by the other kings of the confederation in the Jordan area. This has led to a re-examination of the whole subject. Glueck's survey of the Jordan valley (which still needs detailed support by systematic excavation) has shown that it is unlikely that the places mentioned in the Genesis narrative were inhabited after 1800 B.C. Coupled with background evidence from Nuzi and suggested equations of the names of Tidal with the Hittite Tudhaliaš I and Arioch with the Hurrian named Ariwuku,[2] son of Zimri-Lim of Mari, there is a growing tendency to place Abraham himself at the beginning of the Middle Bronze Age (2000–1500 B.C.). Another point in favour of this that it would give support to a long held theory which has connected the

[1] *Alalaḫ and Chronology* (1940), by Sidney Smith.
[2] *King Ḥammurabi in the Setting of his Time.* F. Böhl.

migration of Terah with a movement westwards at the end of the third dynasty of Ur. The worship of the moon-god Sin at Ur, at Mari, on the route to another centre Haran, and among the Hurrian population of Alalaḫ in the 18th century (the ideographic writing for the moon-god Kusuḫ is the same as for Sin and is an obvious borrowing from the Sumerian) goes to strengthen this idea.

A stronger argument for this dating of the Patriarchal age might be found in the many parallels to Patriarchal customs which have been observed in the Nuzi texts. It must, however, be emphasised that no direct reference to any Biblical person has been proved in non-Biblical texts of this period, though the growing list of proper names gives adequate corroboration for the types and forms of Biblical names in this period. The Nuzi texts give us a good idea of Hurrian daily life at about 1500 B.C. From the Aṭšāna tablets it is clear that these people (probably the Horites of the O.T.) had penetrated N. Syria by the 18th century and were well established there by 1500 B.C. Hurrian names in the Amarna tablets and also in the Shechem and Taanach tablets show that the Biblical account of the "Horite" element in the land is correct. For this reason it is a fair comparison to correlate the Hurrian customs of Nuzi with Genesis xii–xxxvi. It was customary for childless folk at Nuzi to adopt a son both to serve them during life and provide for them at death. This would be the case with Abraham's first heir Eliezer (Gen. xv, 2–3). If there was a child born after the adoption the adoptee yielded his rights to the real heir. This is the legal meaning of Genesis xv, 4. When Sarah provided Abraham with a substitute slave, Hagar, to provide him with children she would seem to be conforming to the practice of the time. One Nuzi contract details how "if Gilimninu (the bride) will not bear children, Gilimninu shall take a woman of Lululand (a slave) as a wife for Shennima (the bridegroom) . . . Gilimninu shall not send the handmaid's offspring away". Abraham may have felt that in driving away Hagar he was breaking the contemporary law until God gave him a special assurance to do so (Gen. xxi, 12). Among the Nuzi contracts are several dealing with inheritance. In one a certain "Kurpaza has taken three sheep to Tupkitilla in exchange for his inheritance share" (cf. Esau and Jacob, Gen. xxv, 31–34) If the *teraphim* of Gen. xxxi, 19, 30–35 are "household-gods" then there is a remarkable parallel with a contract which

indicates that the possession of the household gods constituted the right to the chief inheritance and honour in the family. It was a common Hurrian practice for a man to become a slave on the condition that his owner provided him with a wife. So too Jacob worked for his brides among the Aramaean tribe of Laban. The important place in law of an oral blessing such as those given by Isaac and Jacob is confirmed by one tablet at least, where an oral blessing is upheld in a Nuzi lawcourt. Among other practices reflected in this group of tablets are a form of levirate marriage comparable to the Hebrew custom, the right of a daughter to inherit property where there is no male issue, and a form of sale-adoption such as may be seen in Exodus xxi, 7–11. It must, however, be continually kept in mind that the Old Testament and these documents imply a very mixed population throughout Syria and Palestine at this period. In addition to the Horites (Hurrians) there were the Hittites, Canaanites and Aramaeans, not to mention the Biblical Kenites, Perizzites and other groups of which we still await some detailed evidence from archaeological research. This very mixed population, which is revealed by excavation at the sites we are discussing, is an additional pointer to the probable correlation of the pre-Israelite occupation of Canaan with these sources. Until more is known from Palestinian excavation itself it would be unwise to attempt to make too firm a definition of the influence of any one of these races upon Biblical narratives. Attempts are being made at present to see a Hurrian influence in even the earliest parts of Genesis, and to claim for this group that they carried the earlier Babylonian accounts of Creation and the Flood to the Hebrews. Not only do we still know comparatively little about the Hurrian language, but even their exact relationship with other peoples, and especially the Subartu Hittites, Mitanni and Hanigalbat peoples in Syria, known from contemporary records, is by no means clear. Moreover A. Heidel in his detailed comparisons of the Hebrew and Babylonian accounts of these two events has concluded, "We still do not know how the Biblical and Babylonian narratives of the Deluge are related historically. The available evidence proves nothing beyond the point that there is a genetic relationship between the Genesis and Babylonian versions. The skeleton is the same in both cases, but the flesh and blood and, above all, the animating spirit are different. It is here that we meet the most far reaching divergences between the Hebrew and Mesopotamian stories".

(*The Gilgamesh Epic and O.T. Parallels* (1945), p. 268.[1]) We can however confidently expect help from current Hurrian studies in seeking to explain personal names in that part of the Old Testament contemporary with their power in Syria. I would cite Anah, Aholibamah, Alian, Ajah, Dishon and Ezer in Genesis xxxvi, 'Anath and Shamgar (Judges iii, 31), To'i (2 Samuel viii, 9f.), 'Age' (2 Samuel xxiii, 11), Eli-ḫipa (2 Samuel xxiii, 32) which can be both paralleled and explained from existing Hurrian personal names as examples. The time may not be far off when chapters of the Pentateuch can be more exactly equated with their historical background through this means.

The Ras Shamra tablets, as is now well known, are of considerable importance for the study of the Old Testament, as they give a clear picture of the type of Canaanite religion which may have prevailed further south in the period of the Judges. It should however be noted that there is still some difference of opinion in the interpretation of these texts in detail, and that there is no support for the view that the names of Terah, the Palestinian Negeb and other Biblical persons and places occur in the texts. These tablets are proving very useful for the historical study of the Hebrew language. From this source too we may then expect further help in the present efforts to relate the Biblical narratives to our new appreciation of the Near Eastern History in the second Millennium.

The discoveries at Aṭšāna are, however, not well known. For a period after 1750 B.C. this city was under the control of Ḫammurabi and Iarimlim, kings of Iamhad with their capital at Aleppo. Later the Hittites controlled the area, which formed part of a small kingdom of Mukish. From this period comes an inscribed statue of a king Idrimi whom I would date shortly after 1450 B.C. Part of the historical account of his reign I translate:—"There was a revolt in the city of Aleppo, my inheritance, so that we fled to the city of Emar where my mother's relatives were, and dwelt in that city. My brothers who were older than me stayed with me. But since none of them thought on the things that he once pondered I said 'Whoever has an inheritance, let him hold it fast, and whoever has not let him join the men of Emar.' I left with my horse, chariot and attendant and, crossing the desert, went in among the Sutu warriors. I passed the night with them in my covered chariot

[1] Cf. also *The Babylonian Genesis*. A. Heidel. Chicago, 1942.

and on the next day departed and went to the land of Canaan. In Canaan I stayed in Ammia. But in Ammia there were men of Aleppo, the lands of Mukish(he) and Ni', and warriors of the land of Ama'u dwelling. They saw me, and behold, I was the son of their lord so they banded against me. Accordingly I led all my companions away and for seven years I dwelt among the 'Apiru warriors. I explained (lit. made clear (the omens of)) the birds, I examined (the intestines of) lambs (for omen purposes). . . ." The long inscription goes on to tell how he later made a sea-borne invasion of Mukishhe, which we must therefore place on the Syrian coast North of Ugarit, and having made a treaty with Paratarna, overlord of the area, became king in Alalaḫ. After detailing an expedition against the Hittites who appeared to dominate the coastal area to the North-west of his realm, Idrimi recounts how he ordered his internal affairs and paid attention to what was probably a minority group in his realm. " The Sutu whose dwellings were within my territory I caused to abide in content, those who had no settled abode I caused to abide in one." From this and other Aṭšāna references it is clear that at this time the Ḫabiru[1] were a settled community in Canaan with a distinct tribal area, the Sutu being similar folk but still in a semi-bedouin state. From this it appears too that nearly fifty years before the Israelites entered Canaan a group of Ḫabiru were occupying a zone approximately that later taken by Asher (Joshua xix, 24–31) and Zebulun (Genesis xlix, 13, etc.). We can see how Syria and N. Palestine at this time consisted of city areas between which various groups of people from the eastern desert entered to find a semi-permanent dwelling-place or pasturage. This evidence forbids the identification of the Ḫabiru, as has been done recently, with either a class of slave, prisoner of war or even with a social group, although of course individuals might be found among any group or in any country at, and before, this time. The location of Ammia can be ascertained from references to it in the Amarna letters, and Emar was situated on the desert fringe in N.E. Syria in the area bounded by the Orontes Lebanon and Damascus known as Amurru, the home of the Amorites at this time. It is interesting to note that Idrimi's move southward avoiding the inhabited localities shows the possibility of such a move to areas even further south by a coalition like that recorded

[1] Ḫabiru, Ḫapiru and 'Apiru are alternative readings of the same name.

in Genesis xiv. The location of Amurru is of interest to Bible students as it incorporates the area of Aram to which references are made in early cuneiform literature. At varying times the Assyrian kings waged war against the nomad folk in this zone and speak of their contact with Aramaean tribes there. Tiglath Pileser I (*c.* 1100 B.C.) names one of these tribes as Aḫlamê, and later Sargon II (722–705 B.C.) differentiates between fifty Aramaean tribes. From the Semitic names of these tribes Moritz has considered that they must be Arabs. The Sutu mentioned in the above inscription are referred to as nomads as early as the First Dynasty of Egypt and as Sutiu by the Akkadians in 2700 B.C. The increasing knowledge of tribal activity in this desert area gives us fresh insight into the " wandering Aramaean " who was the father of the Hebrew race (Deut. xxvi, 5). We know from Genesis xix, 30–38 that Moab and Ammon were also an Aramaean people by descent from Lot. Again Glueck's researches indicate that the Hebrew Aramaeans must have moved into Palestine before the desert border area ceased to be inhabited for some centuries after 1800 B.C. When combined, all these lines of evidence would indicate that incursions of tribes from the desert to take up residence in Palestine were as common in the Patriarchal and early Israelite times as they have been until more recently.

Similar evidence is found by examining the tablets from the Amorite stronghold at Mari across the desert in the Middle Euphrates area. From the correspondence found there we find that the interests of these people were directed westwards towards Syria. These tablets are approximately contemporary with the First Dynasty of Babylon and with the earlier levels at Aṭšāna (which was however under Hurrian influence). Again we find the Mari people contending endlessly with the desert folk. Mashum writes to the King of Mari that Iapaḫ-Adad has occupied the city of Zallul (on the Euphrates bank) with a force of 2,000 Ḫabiru, thus showing that like their fellows in the west the Ḫabiru were wont to come in from the pastural areas and settle into towns. Frequent allusion is also made in these letters to the Benjaminites or *marē iamini*. These cannot be the tribe mentioned in the Old Testament for the texts are dated early in the second millennium. This tribe operated under a dawidûm, or chief (cf. Hebrew dawid) and are mentioned with another tribe the *mare šim'al*, " sons of the left (north) ", and the Ḫabiru. It has been pointed out that the Biblical Benjaminites, " the

sons of the right (south)" were the southern branch of the descendants of Rachel.

One illustration from a new Mari text must suffice us here to show the unusually frank nature of this literature, and to illustrate something of the religious background also revealed by these texts. Professor Albright in *From Stone Age to Christianity* (1940) considers the language of the Mari texts "virtually identical" with that spoken by the Hebrew patriarchs, who would be surrounded by a culture which is "a mixture of Hurrian and Amorite elements on a Sumero-Accadian foundation" (pp. 112, 180). This Mari text concerns a revelation given by the Amorite god Dagan at his temple at Terqa near Mari, reported in a letter from Itur-Asdu to king Zimrilim:—"On the same day that I sent this tablet to my lord, Malik-Dagan, an inhabitant of Sakka, arrived here and spoke to me as follows: 'In a dream which I had I proposed to come to Mari. At Terqa, which I had just entered, I went into the temple of Dagan and bowed before him. While I prostrated myself Dagan spoke saying "Is it well with the troops of Zimrilim who have gone against the sheiks of the Benjaminites?" I answered "The reports are not good". Just before going out he said to me, "Why do the messengers of Zimrilim not come to me regularly to place a full report of his doings before me? If he had done so I would have delivered the sheiks of the Benjaminites into the hands of Zimrilim. Now, go, I send you to address Zimrilim in the following terms: 'Send me your messengers and tell me of your affairs in detail, then I will lead the sheiks of the Benjaminites captive (lit. with the fisherman's harpoon), and set them (as servants) before thee.'" This is what the man saw in his dream and thus he has told me' . . . ."

In addition to such texts of a political and religious character many texts of an economic nature from Mari still await publication. When this has been done we shall be able to make a comparison with recently issued economic texts from the Third Dynasty of Ur and the published business documents of the Hammurabi period. Then at last an economic history of the ancient Near East in patriarchal times can be written. It is enough here to emphasise by the foregoing examples the tremendous strides made in the last five years in our knowledge of the background to the Patriarchal narratives of Genesis. This is one of the main contributions that archaeology can make towards our understanding of the Scriptures.

A number of other recent developments in our knowledge can now be mentioned, although it is as yet too early to be able to assess the full part that they may play in Bible study. Discoveries of two new codes of law from Babylonia put the famous Hammurabi Code in a new perspective. In 1947 F. R. Steele published new fragments of a Code of Laws which prove beyond doubt that the credit for this development in the history of civilisation belongs not to Hammurabi but possibly to his predecessor by more than a century, Lipit-Ishtar of Isin. Hammurabi apparently remodelled or borrowed from this earlier Sumerian law-book when he compiled his new code as an aid to the administration of his expanding territory with its mixture of Sumerian and Semitic peoples. In the same year an older code of laws drawn up by Bilalama, king of Eshnunna, *c.* 1920 B.C., was found during an Iraq Government excavation at Tell Harmal. Since a number of the provisions in each of these three groups of laws from Babylonia cover the same field as the Old Testament legislation, some significant comparisons may be made. It is interesting that the law concerning the goring ox (Exodus xxii. 28f.) in each of these codes is in almost identical wording.

Another encouraging feature of recent discoveries has been the light thrown upon the written language and geography of Palestine over a considerable period of time. Excavations down to tablet-bearing strata in Palestine have been few, and few palaces or well-to-do houses of the Late Bronze Age have been excavated. Inscribed material from Tell el-Hesi, Gezer, Megiddo, Jericho and Shechem have been added over the course of years to the Taanach tablets found in the only well-preserved Canaanite palace so far uncovered. It is evident that clay tablets were commonly used for writing in Palestine as in Syria, in the fifteenth and fourteenth centuries. A recently published tablet in which a teacher writes to a man in Shechem about 1400 B.C. adds to the names of the period known from the Amarna tablets,[1] and from earlier Egyptian execration texts, some at least a century before the Exodus, which are paralleled in the Hurrian names at Atšāna at about the same period. In 1947 the discovery of the longest extant Phoenician inscription was made near Karatepe in Cilicia. Some long royal inscriptions of Azitawadd who ruled a territory in the plain of Adana were

[1] *Melanges Syriens offerts à M. R. Dussaud*, ii. (1939), pp. 923–935.

written in Phoenician and Hittite hieroglyphs. These inscriptions will therefore form the equivalent of the Rosetta stone or Behistun inscription, since by providing a long bilingual text they are already enabling scholars to read the Hittite hieroglyphic texts, and thus eventually will produce more information to aid in the compilation of the history of Syria and Asia Minor and of the dialects spoken there. But the Phoenician text helps us in another direction. Variously dated by scholars in the ninth (C. H. Gordon) or eighth century (Marcus and Gelb) the implication is that the Phoenician language was used for Cilician literature until displaced by Aramaic as witnessed by the *Bar rkb* text of the early eighth century. There are other recensions of the main Azitawadd text so that Gordon is right in claiming that " the time is ripe for a comparative study of the literature from Canaan. The Old Testament, Ugaritic tablets and the N.W. Semitic inscriptions illuminate one another."

Lest it be thought that archaeology has only contributed to our knowledge of the background of the Bible, one instance is cited to show how the Bible narrative is directly substantiated at one point by recently acquired information. It is typical of the kind of evidence which might turn up at any time in view of the large number of unpublished cuneiform texts that exist today. Of course the reason for this present state of publication is primarily a lack of trained scholars, coupled with financial and other considerations, not the least being the lack of adequate dictionaries. So fast and in such quantity has new information come to us, that there will for some time be a considerable lag between excavation and the final publication, where texts are found in any quantity. In 1939 E. F. Weidner published some fragments of Neo-Babylonian tablets found by Koldewey before 1918 in a vaulted basement below the palace near the Ishtar gate at Babylon. They form part of the administrative records of the Nebuchadnezzar II's tenth to thirty-fifth years, i.e., 595/4–570/69 B.C. Comparison shows that these fragments are parallel accounts of the issue of oil and barley rations to foreign prisoners and inscribed at varying dates. One tablet (VAT 16283) bears a date—13th year of Nebuchadnezzar, i.e., 593 B.C. Three of the tablets show " $\frac{1}{2}$ PI (of oil given to) Jehoiachin King of Judah ; $2\frac{1}{2}$ sila to 5 sons of the king of Judah in the custody (hand) of Qana'ma, 4 sila to 8 Judeans, $\frac{1}{2}$ sila each." From these facts we can safely conclude that we have a cuneiform account of an event referred to in 2 Kings

xxiv, 6–15; xxv, 27–30. "And Jehoiachin, the King of Judah went out to the King of Babylon, he, and his mother, and his servants, and his princes, and his officers: and the king of Babylon (Nebuchadnezzar) took him in the eighth year of his reign." We now have direct confirmation of the imprisonment of the Judean king and followers which took place five years before the tablets were written. There can be no doubt of the readings of the Biblical names of Jehoiachin and Judah since they are written in three different syllabic spellings, one of which confirms the reading of this name in the form *ywchn* found on a seal at Tell Beit Mirsim in Palestine.[1] Although the royal ration (approximately 15 litres) seems excessive when compared with that given the lesser individuals it probably includes the ration of the king's immediate entourage. There is certainly no ground for considering that the king was yet treated with the special favour he was to receive at the hands of Nebuchadnezzar's successor Awel-Marduk (Jeremiah lii, 21). There are a number of unpublished economic texts of the latter king, and we may yet find further evidence of the situation of these captives in his day. The term "sons of the king of Judah" may be used to denote a general family relationship, as in earlier cuneiform texts, or even the "princes" of 2 Kings, xxiv, 12. It is, however, not impossible that by 593 B.C. the king, aged twenty-three, might now have five sons of his own born in captivity. These tablets accord with Jeremiah lii, 32 by showing that other royal captives were held at Babylon at the same time. Another striking feature in these lists is the number of craftsmen and foreigners who receive rations. The lists include the sons of Aga' and three sailors of Askelon; at least 190 sailors and 126 other persons from Sidon; 8 carpenters from Byblos and 3 from Arvad. Other individuals named include a Judean Ur-Milki, Gadi-'ilu (the same name as the Gaddiel of Numbers, xiii, 10); Shalamyama (cf. Shelumiel of Numbers i, 6); and Samakuyama (Semachiah of I Chron., xxvi, 7, a name already attested in the Lachish ostraca). In addition to the Philistines and Phoenicians, persons from Elam, Media, Persia, Egypt, Lydia and some unidentified places are listed. The conquest of these countries by the Babylonians had been foretold by Jeremiah.

The outlook for archaeological studies relating to the Bible

[1] W. F. Allbright. Journal of Biblical Literature. 51, p. 81.

is very bright. The long-needed synthesis of the small details which go to make up our knowledge of the Palestine of Bible days has recently been produced by Albright, and excavation continues in that land under Israeli supervision. In Iraq the native department of Antiquities is carrying out surveys and actual excavation, and once more Western scholars are at work in that field. Last year an American expedition recommenced a long-term dig at Nippur, the Sumerian site which has contributed more than any other to our knowledge of Sumerian literature. The tablets found at Nippur as long ago as the beginning of this century which have been translated during the last five years force us to see in many a Sumerian epic the forerunner of the more well-known Babylonian versions of the 18th century like the Gilgamish epic. The original development of many of this class of cuneiform parallel to the earliest Old Testament stories must therefore be sought in a period long before Abraham. Excavations in the Tablet Hill section of Nippur this year may well extend both our knowledge of this literature and of the history of the place. From N. Iraq a new account of the annals of Shalmaneser III, the opponent of Ahab and overlord of Jehu, has been discovered, while excavations at Layard's favourite site at Nimrud (the Biblical Calah) have been recommenced. Already some economic tablets from the reign of the little-known Shalmaneser IV have been recovered, and no one can prejudge what might be the success of further scientific excavation in this mound which contains the palaces of those Assyrian kings whom God used as His instrument to punish His sinning people. With all this archaeological activity revealing so much detail relative to Bible times it is more than ever interesting to note that while many problems are being raised, and many more are awaiting solution, no *fact* found has contradicted the Word of God. As this paper has so inadequately sought to show, some opinions and suggestions based on archaeological finds which a few would seek to present as facts must be discarded in the light of the latest evidence.

Discussion.

The Chairman (J. McIntyre, Esq.) said : I am sure that you would wish me to express our joint thanks to Mr. Wiseman both for the general survey he has so ably given of recent trends in Biblical archaeology and also for indications he has given of possible solutions to the problems which recent discoveries have raised.

It is well to emphasise, perhaps, that an attempt has been made to present a comprehensive view of the subject, which means, firstly, that much detail is of necessity omitted and secondly that a repetition of certain facts already known is unavoidable. On the first point I would only say that the need for further detailed study of the problems raised will be apparent, and on the second, that although Mr. Wiseman has referred to facts already known, yet this is the first occasion, to my knowledge, on which any extensive reference has been made to the unpublished Atšana texts in relation to Old Testament history and teaching. Many of you probably share my hope that before long Mr. Wiseman may be able to treat this subject more fully.

I am glad that Mr. Wiseman has given a warning against the danger of drawing too firm conclusions even from this new evidence to which he has directed our attention. I think that zeal for Biblical truth should not be allowed to obscure our scientific judgment of accessible facts, for nothing is more calculated to bring the Bible into disrepute than well-meaning attempts to prove its truth on the basis of evidence which may be manifestly doubtful. The warning against what has been called " Pan-Hurrianism " is therefore justified.

A final general question presents itself to me, and it is this : " What practical steps are interested persons in this country taking in the field of Near Eastern archaeology from which we may yet hope for fresh light on the Bible ? " The present difficulties in the way of further excavations will be well-known to most of you, but in spite of this, it is gratifying to learn that the British School in Iraq, which is of fairly recent foundation, will shortly be engaged in a fresh " dig " at Nimrud, under the expert guidance of Professor Mallowan.

This project is, I may say, of interest to the British Museum, for our connections with that site date back to 1846 when the Trustees assumed from Sir Stratford Canning, the British Minister in Constantinople, the financial responsibility for Sir Henry Layard's work, and later, for the work of his successors. There is every hope of this well-known site yielding still further information, not only of the Assyrian period itself but also of earlier times, for there is evidence that Kalḫu was an important settlement long before the

days of Shalmaneser. A few remains of the 2nd millennium were found previously and fresh discoveries of this period may have much to teach us.

The interest of the Museum in this season's work at Nimrud is being expressed in a practical way by the attachment of a member of the Museum staff to the expedition as epigraphist, and I think you will be both interested and gratified to learn that the officer chosen is Mr. Wiseman.[1]

Mr. L. D. FORD said: I notice that the present tendency in archaeology is to be swamped with undigested evidence. Evidence of what? That the life history of the ancients was as full and accidental as ours is, and the further we hunt for direct corroboration of Biblical incidents the less likely we are to find them, among the ever-growing mass of unidentifiable events of two millenniums past. And so it should be. Fifty years ago every discovery of the past was pushed into a confirmation of some Biblical event. Now we are swamped with it, and with the hundreds of thousands of undeciphered tablets we must at least suspend judgment, and when they are deciphered we shall be overwhelmed with a mass of unrelated items that will want more than a Solomon to put them together. For the believer, the Bible speaks God's voice to man, and there will always be a sharp cleavage between the man who has faith and the man who has not.

The Rev. J. STAFFORD WRIGHT said: The reference on page 4 to Tupkitilla is evidently to the Tupkitilla family records that cover a period of some 150 years. The late Dr. Chiera of Chicago writes about them in his book, *They Wrote on Clay*. They were found buried under the floor in the corner of one of the rooms, and give a vivid picture of the rise and fall of the family during this period. This is of special interest in considering the question of the authorship and compilation of Genesis. I personally believe that Moses compiled Genesis from written family records that were brought by Abraham from Ur, preserved and added to by Isaac,

[1] [An account of this 1950 expedition has been contributed to the *Illustrated London News* of July 22 and 29, 1950, by Professor Mallowan. In his preamble Professor Mallowan pays tribute, among other collaborators, to "Mr. D. J. Wiseman, O.B.E., of the Egyptian and Assyrian Antiquities Department of the British Museum, who undertook the decipherment of all the inscriptions and has contributed the information provided about them in this article."—ED.]

Jacob, and probably Judah and Reuben, and taken down into Egypt. If important families in the ancient world did preserve their family records, it is likely that the family who were conscious that they were being specially set aside by God, took steps to hand on the story of what God was doing for them.

Would Mr. Wiseman say what connection, if any, there is between Dagan (on page 9) and the god Dagon ?

Mr. TITTERINGTON asked whether Mr. Wiseman could say what were the affinities of the Hittite and Hurrian languages ; to what families do they belong ?

AUTHOR'S REPLY.

Mr. Ford can be assured that much is now being done by scholars to prepare the needed syntheses of the recently increased archæological evidence relating to various branches of study. My last paragraph indicated the commencement of this trend with regard to all the evidence available concerning Palestine. Other volumes correlating all that is known about the mathematics, music, law, botany and mythology of the Sumerians, Babylonians, and also Egyptians, have been published recently, but are outside the scope of this paper. Increasing specialisation will indeed make it harder for an overall appreciation of a particular phase of ancient civilisation to be made by any one scholar, but this is true of all branches of science to-day. The need for a general appreciation in the realm of Biblical archaeology has been partly met by Millar Burrows' *What Mean these Stones,*? but still challenges Christian scholars in this country. It is not therefore strictly accurate, I submit, to refer to this new archæological material as " undigested evidence." The totally unpublished tablets (to be numbered in thousands) deal mainly with economic and similar matters. These have had to wait their turn for publication after the more immediately important texts such as the historical, religious and lexicographical tablets. The number of " undeciphered " tablets is believed to be very small.

There is no certain classification yet made of the Hurrian language. It is suggested that it may bear possible affinities with some Caucasian dialects, but it cannot be related to Hittite which, in the main, is one of the Indo-European group of languages.

I am glad that Mr. Stafford Wright has drawn attention to an interesting point of literary history from the Nuzi tablets. The Hebrew Dagon and Accadian Dagan refer to the same god. This god, with his symbolic ear of corn, was much worshipped in Syria and in the central Euphrates valley (Mari) from the early second millennium B.C. onwards.

887TH ORDINARY GENERAL MEETING

HELD IN THE LECTURE HALL, NATIONAL SOCIETY FOR RELIGIOUS EDUCATION, 69, GREAT PETER STREET, S.W.1, ON MONDAY, 30TH JANUARY, 1950.

REV. D. MARTYN LLOYD-JONES, M.D., M.R.C.P., IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed and signed.

The following elections were announced:—R. T. Hewlett, Esq., Fellow; Rev. John Harries, Fellow; J. F. Wallace, Esq., LL.B., Fellow; C. M. Lambert, Esq., Fellow; Rev. Herbert H. J. Lockyer, D.D., Fellow; A. Sheridan Atkinson, Esq., B.Sc., Fellow; H. W. Pearce, Esq., F.C.A., Fellow; Rev. H. McKerlie, Fellow; Rev. Peter R. Joshua, D.D., Fellow; Rev. Robert J. McConnell, Fellow; Capt. A. L. Perry, Fellow; Miss Nellie M. Wyard, Member; A. H. Boulton, Esq., LL.B., Member; Charles C. Luck, Esq., Member; Gordon Judd, Esq., Member; Noel F. S. Thompson, Esq., Member; Geraint R. Morgan, Esq., B.A., Member; H. R. Ford, Esq., M.R.C.S., L.R.C.P, Member; H. J. Orr-Ewing, M.C., M.D., B.S., F.R.C.P., Member (on transfer from Fellow); A. D. Ehlert, Esq., Member; F. W. Davy, Esq., M.A., Member; Rev. Ivor F. H. Carr-Gregg, M.A., F.R.A.S., F.R.G.S., Member; H. B. Bancks, Esq., Member; Victor G. Levett, Esq., Member; Rev. C. H. Titterton, M.A., B.D., Member; David M. Hum, Esq., B.Sc., A.R.C.S., Member; Professor Frank Pack, Ph.D., Member; Rev. W. E. Dalling, M.A., Member (on transfer from Fellow); J. D. T. Thompson, Esq., B.A., Associate; S. S. Wooldridge, Esq., Associate; A. J. Liddon, Esq., B.A., Associate; R. H. Reid, Esq., Associate; Rev. H. P. Scott, Associate (on transfer from Member); Kenneth D. Ramsbottom, Esq., Associate; John Ponsford White, Esq., Associate; Temple University, Philadelphia, U.S.A., Library Associate.

The CHAIRMAN then called on the Rev. Philip E. Hughes, M.A., B.D., to read his paper entitled "Platonism and the New Testament."

PLATONISM AND THE NEW TESTAMENT.

By THE REV. PHILIP E. HUGHES, M.A., B.D.

SYNOPSIS.

I. The attitude of Christians towards Plato, generally acknowledged as supreme among philosophers, at first followed the view that Plato was indebted to the Old Testament for whatever was good and valuable in his doctrines. Later St. Augustine suggested that the truths of Platonism were an expression of the common grace which God bestows upon all men. Clement of Alexandria saw the two streams of the Jewish law and Greek philosophy leading up to and meeting in Christ.

II. Some account is given of the mingling of Jewish and Platonic thought in the apocryphal book *The Wisdom of Solomon* and in the system of Philo—both of them prior to the New Testament.

III. The main Platonic doctrines relative to the theme of the paper are surveyed and some account is given of the figure and character of Socrates.

IV. Christianity is proposed as the corrective and completion of Platonism, the chief error of which lies in its dualistic view of God and matter as eternally co-existent and irreconcilable. The removal of this error and the turning of the Platonic system to Christ as Redeemer, God-Incarnate, leads to a right perspective and a real harmony.

AMONGST the great philosophers of the pre-Christian world and, indeed, of any age, Plato must be adjudged *facile princeps*—"that unique man," to quote the homage of his illustrious pupil Aristotle, "whose name is not to come from the lips of the wicked; for theirs is not the right to praise him who first revealed clearly by word and by deed that he who is virtuous is happy. Alas," exclaims the Stagyrite, "not one of us can equal him."[1] In the ranks of Christendom it is the voice of no less a person than Augustine which declares that "among the disciples of Socrates, Plato was the one who shone with a glory which far excelled that of the others, and who not unjustly eclipsed them all"; and, further, that "he is justly preferred to all the other philosophers of the Gentiles."[2] Calvin, too, though he complains that Augustine is "excessively addicted to the philosophy of Plato,"[3] yet acknowledges that Plato enjoyed a degree of enlightenment which is not equalled by any other philosopher.[4]

Apart, however, from any general estimate of Plato's supremacy in the hierarchy of philosophy, it has been felt by many even from the early days of our era that the system of Plato presents numerous points of affinity with the revealed truth of Christianity. "None come nearer to us," says Augustine, speaking for the Christians, "than the Platonists," and especially is this so inasmuch as they "have recognized the true God as the author

---

[1] Aristotle, *Fragm.* 623: a free rendering, practically as given by F. Copleston, *A History of Philosophy* (Vol. 1, 1946), p. 261.

[2] *Civ. Dei* viii, 4.

[3] But see Augustine's disclaimer in *Civ. Dei* ii, 14: "We for our part, indeed, reckon Plato neither a god nor a demigod; we would not even compare him to any of God's holy angels, nor to the truth-speaking prophets, nor to any of the apostles or martyrs of Christ, nay, not to any faithful Christian man."

[4] *v. Comm. in Jn.*, i, 3; *Comm. in I Jn.*, ii, 3, 4. *Instt.* I, xv, 6.

of all things, the source of the light of truth, and the bountiful bestower of all blessedness."[1] Two centuries previously Irenaeus had remarked that Plato proved himself to be more religious than Marcion and his followers, " since he allowed that the same God was both just and good, having power over all things, and Himself executing judgment."[2]

This measure of affinity between the Platonic and Christian systems called for some explanation in the field of Christian apologetics, for during the first four centuries it was frequently urged by the opponents of Christianity that the noblest Christian sentiments had been more ably and clearly expressed by pagan philosophers at an earlier date, and especially by Plato. Thus the heathen Celsus assailed Christianity in the second century A.D. on the ground that Christ and His Apostles borrowed much of their teaching from Plato, whose writings they understood imperfectly and even perverted. To this charge Origen retorted that the alleged borrowings from Plato could without difficulty be matched with passages from the writings of the Old Testament, which are much older than those of Plato.[3] Even at the conclusion of the fourth century (396 A.D.) Augustine in one of his letters expresses a desire to see certain books composed by Ambrose " with much care and at great length against some most ignorant and pretentious men, who affirm that our Lord was instructed by the writings of Plato."[4] These books, unfortunately, are no longer extant ; but Augustine evidently obtained his desire and perused them, for elsewhere he says that, when confronted with the calumnious assertion urged by Plato's admirers to the effect that " our Lord Jesus Christ had learnt from the books of Plato all those sayings of His, which they are compelled to praise," the illustrious Bishop of Milan " discovered, through his investigations into profane history, that Plato had made a journey into Egypt at the time when Jeremiah the prophet was there " : accordingly Ambrose concluded that the Greek philosopher had been initiated by Jeremiah into the wisdom of the Old Testament, and had thus been able to express views which were not out of harmony with those of Christianity.[5]

In propounding this solution Ambrose is, of course, guilty of a

---

[1] *Civ. Dei.*, viii, 5.
[2] *Adv. Haer.*, III, xxv, 5.
[3] *v. Con. Cels.*, v, 65, vi, 12–19, vii, 27–35.
[4] Letter XXXI, To Paulinus and Therasia.
[5] *Christ. Doct.*, ii, 28.

serious anachronism, since Jeremiah was antecedent to Plato by some 200 years, and consequently, even if Plato ever journeyed to Egypt, which in itself is debatable,[1], there is no possibility of his having met the Hebrew prophet in that country. In course of time Augustine came to realize the untenability of this theory and discarded it. "Certain partakers with us in the grace of Christ," he says, "are surprised when they hear and read that Plato had conceptions concerning God, in which they recognize considerable agreement with the truth of our religion. Some have concluded from this, that when he went to Egypt he had heard the prophet Jeremiah, or, whilst travelling in the same country, had read the prophetic Scriptures; and I myself also have expressed this opinion in certain of my writings. But a careful calculation of dates contained in chronological history shows that Plato was born about 100 years after the time in which Jeremiah prophesied."[2] Augustine further points out in this recantation that the Greek version of the Old Testament Scriptures was not commenced until some 70 years after Plato's death. "Therefore," he concludes, "on that journey of his Plato could neither have seen Jeremiah, who had died so long before, nor have read those same Scriptures which had not yet been translated into the Greek tongue."[3] However, Augustine feels that Plato, who was so eager a seeker after knowledge, may have "studied those Scriptures through an interpreter, as he did those of the Egyptians"; and, while noticing significant similarities between the Mosaic and the Platonic doctrines, he declares that the consideration which most of all inclines him "almost to assent to the opinion that Plato was not ignorant of those Scriptures" is the revelation of the Divine Name to Moses as "I AM THAT I AM," whereby the truth is conveyed that God is He that truly *is*, "because He is unchangeable, in comparison with whom those things which have been created

---

[1] Gibbon (*Decline and Fall*, ch. xxi) seems to have accepted the story of a visit to Egypt by Plato on the strength of a statement of Cicero's—*Plato Aegyptum peragravit ut a sacerdotibus barbaris numeros et coelestia acciperet*, the reference of which he gives as *De Finibus* v. 25, but which I have been unable to trace. "The Egyptians might still preserve the traditional creed of the Patriarchs," says Gibbon. Dr. Lewis Campbell, however, asserts that for the account of Plato's alleged visit to Egypt and conversation with the priests there we only have a statement of Diogenes Laertius (i.e., some 200 years later than Cicero) which rests upon "more or less uncertain tradition" (Article on *Plato* in *Encycl Brit.*, 11th Edn., 1911).

[2] 150 years would have been a more accurate estimate.

[3] *Civ. Dei*, viii, 11; *cf. Retract.* II, iv, 2.

changeable *are* not,—a truth," he adds, "which Plato vehemently held and most diligently commended."[1]

Ambrose and Augustine were certainly not the first to suggest that Plato had been enriched by an acquaintance with the Old Testament writings. It is a theme that recurs not infrequently in the works of the Christian Apologists and of the Alexandrian School from the second century onwards. Clement, to take an example, apostrophizes the Greek philosopher in the following terms: "Whence, O Plato, is that hint of the truth which you give? . . . You have learned geometry from the Egyptians, astronomy from the Babylonians; the charms of healing you have got from the Thracians; the Assyrians also have taught you many things; but for the laws that are consistent with truth and your sentiments respecting God, you are indebted to the Hebrews."[2] Plato, he affirms, "fanned the spark of the Hebrew philosophy," and "was not unacquainted with David."[3] Clement, indeed, says that the Pythagorean and Platonist philosopher Numenius, who was a contemporary of his, expressly writes: "What is Plato, but Moses speaking in Attic Greek?"—Μωυσῆς ἀττικίζων.[4]

We must not imagine, however, that this opinion which postulated the dependence of Plato, and indeed of the other Greek philosophers, upon the Old Testament Scriptures was limited to the confines of the Christian Church, or even of the Christian era, for it was strongly maintained in the first century A.D. by the Jewish scholars Philo and Josephus; and even before Christ's advent, as early as the second century B.C., we find it expressed clearly by the Alexandrian Hellenistic philosopher Aristobulus, who, besides being pre-Christian in period, was also not even a Jew. Clement, who flourished in

---

[1] *Civ. Dei, ibid.*

[2] *Exhortation to the Heathen* vi.

[3] *Instructor* ii, 1; *cf.* also ii, 10, and *Strom.* i, 15, 19, 25, 29; v, 14.

[4] *Strom.* i, 22. Schürer says (*Hist. Jewish People* II, iii, p. 319) that it is not credible "that Numenius should have used just this expression," and he favours Eusebius's statement that it is an expression only "ascribed to Numenius, viz. by oral tradition"—*v. Praep. Evang.* XI, x, 14. Bigg, however, maintains (*Christian Platonists of Alexandria*, p. 6) that "Clement's language is so clear and positive (Νουμήνιος . . . . ἄντικρυς γράφει) that Schürer cannot be right in doubting whether that philosopher was really the author of the phrase." In view of the fact that Clement and Numenius were contemporaneous, we should be inclined to accept Clement's statement. But anyway, the thing that deserves our attention here is that Plato was at this time referred to as Μωυσῆς ἀττικίζων. Origen calls Numenius "a surpassingly excellent expounder of Plato" (*Con. Cels.* iv, 51).

Alexandria some 300 years later, was not unaware that he had had predecessors in this respect in his own city, for in the same passage from which we have already quoted he makes reference to a work by Aristobulus, addressed to Ptolemy Philometor in which the author asserts that Plato had followed the Mosaic laws and had "manifestly studied all that is said in them"[1]; and in an earlier passage Clement cites Philo and Aristobulus as examples of those who had demonstrated the precedence which the Jewish enjoys over the Greek philosophy.[2] In another place Clement says that Aristobulus composed "abundant books to show that the Peripatetic philosophy was derived from the law of Moses and from the other prophets."[3] It would have been more accurate, as Schürer remarks,[4] had Clement said Greek philosophy in general rather than just the Peripatetic philosophy, since the extant fragments prove that Aristobulus maintained the indebtedness to Moses of Pythagoras, Socrates, Plato, and even the ancient poets Hesiod and Homer. Indeed Aristobulus went so far as to affirm that the Pentateuch had been rendered into Greek, in its essentials at least, many years prior to the appearance of the Septuagint version, and had thus been available to the Greek sages from a very early date[5]—a view which, as we have seen, Augustine was reluctant to abandon.

There is no doubt that Augustine leads us to surer ground when he explains that it is needless to determine whether or not Plato derived his wisdom from the books of the ancients who preceded him, since a more trustworthy solution to the problem is provided by the Apostle Paul when he tells us respecting the heathen that "what may be known concerning God has been manifested among them, since God has manifested it to them; for His invisible things from the creation of the world are clearly

---

[1] *Strom.* i, 22.
[2] *Ibid.* i, 15.
[3] *Ibid.* v. 14.
[4] *Hist. Jewish People*, II, iii, 240.
[5] *Cf.* Clement, *Strom.* i, 22, where, besides citing the statement of Aristobulus that Plato studied and followed the Jewish laws, Clement affirms that "previous to the dominion of Alexander and of the Persians" a translation had been made of the Exodus and of the whole code of laws of the Hebrews—"so that it is perfectly clear that Plato derived a great deal from this source, for he was very learned." *Cf.* also Eusebius, *Praep. Evang.* ix, 6; xiii, 12. Eusebius is, however, in error when he speaks of Aristobulus as having been one of the Seventy who were responsible for the translation of the Old Testament into Greek under Ptolemy Philadelphus (*Hist. Eccl.* vii, 32)—a misconception which probably accounts for a similar mistake by Clement in *Strom.* v, 14, where he says that Aristobulus "lived in the time of Ptolemy Philadelphus."

seen, being understood by those things which have been made, even His eternal power and Godhead."[1] And elsewhere, invoking the support of this same passage of Scripture, Augustine says: "Truly there have been some philosophers of this world who have sought for the Creator by means of the creature; for He can be found by means of the creature."[2] In other words, the truth which appears in the writings of Plato, and of any other heathen philosopher, is an expression of that common grace which God bestows upon all men.

Clement of Alexandria, in fact, sees two streams meeting in the advent of Christ, that of the Jewish Law and that of Greek Philosophy, though in his view the truth of the latter was originally derived from the former as its source, and that which is derivative is inferior to that which is original. "Before the advent of the Lord," he declares, "philosophy was necessary to the Greeks for righteousness." God "is the cause of all good things, of some primarily, as the Old and the New Testaments, and of others secondarily, as philosophy." As the Law was a schoolmaster to bring the Hebrews to Christ, so also philosophy to bring the Hellenic mind. "Philosophy, therefore, was a preparation, paving the way for him who is perfected in Christ."[3] And in another place he enunciates the principle of common grace in the following manner: "The Lord of all is God; and I say the Lord of all absolutely, nothing being left by way of exception." The "spirit of wisdom," spoken of in Exodus xxviii, 3, is "nothing else than Understanding, a faculty of the soul, capable of studying existences, . . . and it extends even to philosophy itself." "Rightly, then," says Clement, "to the Jews belonged the Law, and to the Greeks philosophy, until the Advent."[4]

Origen seems to be even more bold when he affirms that "all who are rational beings are partakers of the Logos, that is, of reason," and when, citing Romans x, 8—"The Logos is nigh thee, even in thy mouth and in thy heart," he says that "the Apostle Paul shows truly that all have a share in Christ," for

---

[1] *Romans* i, 19, 20; Augustine, *Civ. Dei* viii, 12. *Cf.* Augustine's suggestive paraphrase of this same passage, *ibid.* viii, 10—"God has manifested His invisible things to them by those things which are made, *that they might be seen by the understanding—per ea quae facta sunt Deus illis manifestavit intellectu conspicienda invisibilia sua.*"

[2] *Tract. in Joann.* ii, 4.

[3] *Strom.* i, 5.

[4] *Ibid.* v, 14; vi. 17.

" Christ is in the heart of all, in respect of His being the Logos or reason, by participating in which they are rational beings."[1] His words, however, must be understood as referring to common, not to special, grace. Cyril of Alexandria, commenting on John i, 9, where the Evangelist states that the Logos " was the true Light, which lighteth every man that cometh into the world," speaks to the same effect: God, he says, " engrafteth in each one that is called into being the seed of wisdom and of Divine knowledge, and implanteth a root of understanding, and so rendereth the living creature rational, showing it to be a partaker of His own nature, and sending into the mind as it were certain luminous vapours of the Unutterable Brightness."[2]

By the commencement of the Christian era the influence of Platonism was widely extended in the Mediterranean world, and its impact, as we have already observed, was not limited to the Gentile nations. The Hellenistic age witnesses the development of a strong hellenizing party amongst the Jews in Palestine itself—a repercussion from the Jewish dispersion in lands where Greek culture and thought were predominant, assisted by the general policy of the country's " foreign " governors of this period which encouraged the establishment of distinctively Greek institutions of culture, recreation, and even dress. Josephus records Aristotle's account, as preserved in a book by his pupil Clearchus, of his meeting in Asia Minor in the middle of the fourth century B.C. with a learned Jew, who " was a Greek not only in language, but in spirit also "—Ἕλληνικὸς ἦν οὐ τῇ διαλέκτῳ μόνον ἀλλὰ καὶ τῇ ψυχῇ, and from whom the great philosopher confessed that he received more information than he gave.[3] This Hellenic Jew is representative of the close confluence of Greek and Hebrew thought which had taken place in certain circles prior to the advent of Christ, and which achieved its high-water mark in the writings of Philo at a time when Christianity was still in its formative stage. We must not overlook the fact, however, that this Hellenic-Jewish movement was only fractional, and had to push its way against the wider and deeper stream of Jewish conservatism which strongly opposed its progress.

An important tributary to the Hellenic-Jewish current was the apocryphal book known as " The Wisdom of Solomon "—

[1] *De Princ.* I, iii, 6; *cf.* II, vii, 2.
[2] *Comm. in Joann.* ch. ix.
[3] *Con. Apion.* i, 22.

a product in all probability of Alexandrian origin which helped to prepare the way for Philo, and which also exercised a strong influence in the Christian Church of the second and third centuries. Wisdom is hypostatised in this work, as in the book of Proverbs, and is supreme amongst the Divine emanations: "Wisdom is more moving than any motion; she passeth and goeth through all things by reason of her pureness; for she is the breath of the power of God, and a pure effluence flowing from the glory of the Almighty . . . She is the brightness of the everlasting light, the unspotted mirror of the power of God, and the image of His goodness."[1] With this passage, which he treats as canonical, Origen links up the Apostolic declarations of Colossians i, 15, and Hebrews i, 3, which set forth Christ as "the image of the invisible God," "the first-born of every creature," and "the brightness of God's glory, the express image of His Person"; and his comment is, "that Wisdom has her existence nowhere else save in Him who is the beginning of all things, and from whom also is derived everything that is wise."[2] The terminology of this apocryphal book would appear to identify Wisdom with "God's all-powerful Word" or Logos[3], for Wisdom too is all-powerful, and effective as the Divine agent of regeneration: "Being but one, she can do all things; and remaining in herself she maketh all things new; and in all ages entering into holy souls, she maketh them friends of God and prophets."[4] She is "privy to the mysteries of the knowledge of God," and by means of her, says the author, "I shall obtain immortality, and leave behind me an everlasting memorial to them that come after me."[5] Such expressions, while strongly reminiscent of Platonic sentiments, are yet not out of harmony with Hebrew thought. The most distinctively Platonic feature of the book is its dualistic view of soul and body. The soul's pre-existence is assumed: a good soul enters "an undefiled body."[6] The body is an encumbrance to the soul; nor is there any hint of its resurrection: "The corruptible body presseth down the soul, and the earthly tabernacle weigheth down the mind that museth upon many things."[7]

---

[1] *Wisd.* vii, 24–26.
[2] *De Princ.* I, ii, 5.
[3] *Wisd.* xviii, 15.
[4] *Ibid.* vii, 27.
[5] *Ibid.* viii, 4, 13.
[6] *Ibid.* viii, 20.
[7] *Ibid.* ix, 15.

It was this soil (to change the metaphor that we have been using) that Philo tilled and developed with such diligent ingenuity. By a process of synthesis and allegorical exegesis he sought to demonstrate that, despite any external appearances to the contrary, an essential harmony existed between the verbally inspired Law of Moses and the doctrines not merely of Plato, but of Pythagoras and Zeno also, and, indeed, that the explanation of this internal harmony was that these philosophers had drawn their wisdom from the pure Mosaic source. It is with the Platonic elements in Philo's system that we are here concerned. Since early times Philo has frequently been spoken of as a Platonist. Thus Jerome, who calls him "the most erudite man among the Jews,"[1] refers to him as "Plato's imitator."[2] There is also the old proverb: "Either Plato is a philonizer, or Philo is a platonizer"—ἢ Πλάτων φιλωνίζει ἢ Φίλων πλατωνίζει.[3] The cosmogony and anthropology of Philo illustrate most distinctively the Platonic aspects of his system. His transcendental doctrine of God as the supreme spiritual Being whose nature is incomprehensible, ineffable, and incommunicable gives rise to his formulation of the dialectal way of negation (the *via negativa* adopted by the Alexandrian theologians of the early Church and later developed by the mediaeval Schoolmen, and in our own day reasserted in the Barthian and Neo-Thomist systems), which he insisted must be followed if we wish to speak at all about Him who is infinite. The material universe alone, as finite and perceptible, may be described; but to attempt to define God, or even to name Him, except metaphorically, is to degrade Him and to be guilty of the greatest impiety.

Thus God and matter are at opposite poles. The degree of this dualism is intensified when Philo adds the Platonic concept of matter as both inherently evil and eternally existent. The creation of the world was, according to him, from matter that was already in existence—matter, however, in a chaotic state: "without form and void."[4] God, who is entirely good and perfect, cannot be regarded as the Creator of matter, which is evil and imperfect. Hence to designate God as the Originator of the world is to designate Him as the author of evil. The statement of Genesis i, 31, "God saw everything that He had

---

[1] *Preface to the Book on Hebrew Names.*
[2] Letter XXII, to Eustochium.
[3] Quoted in Schürer, *Hist. Jewish People*, II, iii, 364.
[4] *Genesis* i, 2.

made, and behold it was very good," is expounded by Philo as referring not to matter, which, being pre-existent, God had not made, but to the reduction of disorder to order, the organization of ἄμορφος ὕλη. Yet even this modified form of creation was not performed directly by God, but mediately, through the agency of "creative and regulative powers" or, to use the Platonic term, "ideas." The intervention of these intermediary beings for the execution of the creative operations preserves the Godhead from any defiling contact whatever with matter. The highest of these powers, the source from which all the others flow, and the sum and quintessence of them all, is the Logos. This Logos is for Philo the archetypal Idea, the Divine Viceregent, the efficient Mediator between the infinite and the finite, the creative Word of God, the Divine Reason everywhere immanent, the soul of the world. Philo even goes so far as to call the Logos the Son, the First-begotten of God, the Second God, and, indeed, God—θεός, however, not ὁ θεός. Yet these can only be regarded as titles of eminence, for any doctrine of hypostatic union or identification with the Godhead would at once invalidate the reason for the existence in the Philonic system of such an intermediate being, which is to relieve God of the contamination resulting from contact with matter in creation or in any other way.

Philo's view of the nature of matter could not fail to colour his doctrine of man, and in the expression of this doctrine, as was the case with the Wisdom of Solomon, the influence of Plato is again clearly to be observed. The body, being composed of corruptible matter, is evil. The souls of men are pre-existent and are, in fact, divine powers or emanations which have descended into and been imprisoned in human bodies. The wise man will strive after liberation from the corporeal senses and passions, and his ultimate ambition is the enjoyment in a disembodied state of the immediate vision of God, which alone is true knowledge and perfection. The unspiritual have no understanding or experience of these things: the attainment of them is progressive, at first through the "powers" of God in a mediate sense, but ultimately by the direct knowledge and intellection of God in Himself.[1]

If we now direct our attention more closely to the doctrines of

[1] Such a multiplicity of references, scattered throughout most of Philo's numerous works, may be adduced for his doctrines briefly set out above, that I have not felt it desirable to reproduce them in a paper of this scope.

Plato himself, we shall see how marked is the relationship to them of these views of Philo. God, according to Plato, is absolutely good, and the cause of all good; in no way is He deficient in beauty or excellence; His nature is entirely free from falsehood and undergoes no change or variation of any kind.[1] His being is "according to sameness, unproduced and not subject to decay, receiving nothing into itself from elsewhere, and itself never entering into any other nature, but invisible and imperceptible by senses, and to be apprehended only by pure intellect."[2] He is "the heavenly Architect,"[3] "the framing Artificer," and "the Creator and Father" of the universe, which has been modelled in accordance with an "eternal pattern."[4] Yet by terminology of this sort we should not understand the creation of matter as such, but the creation of form and design in the universe: God "took everything that was visible and not in a state of rest, but in excessive agitation and disorder, and then reduced it from disorder to order."[5] Yet, again, this formative and regulative operation was not directly performed by God, but was entrusted by Him to the "junior gods," who were charged with "the duty of constructing mortal bodies."[6] These "junior gods" correspond to the "forms" or "ideas," and owe their existence to Him who is the One and the Good, the supreme God; and it is through them, mediately, that the creative operations are accomplished. We are instructed by Aristotle that the Platonic forms "are the cause of the essence of all other things, and the One is the cause of the essence of the forms."[7] The ideas, says Plato, "are perceived by the intellect, not seen by the eye"; the Good is the source of their intelligibility, and it is "from the Good that their being and essence are derived, whereas the Good is not essence, but beyond essence and superior to it both in dignity and power."[8]

In view of these considerations, "to discover the Creator and Father of this universe, as well as His work, is indeed difficult; and, when discovered, it is impossible to reveal Him to mankind at large."[9] The reason for this incommunicability of the Divine

[1] *Repub.* ii, 380–383. *Cf. Hebrews* i, 10–12; *James* i, 17.
[2] *Timaeus* 51, 52.
[3] *Repub.* vii, 530.
[4] *Timaeus* 28–30.
[5] *Ibid.* 30.
[6] *Ibid.* 42, 69.
[7] *Metaphysics* 988
[8] *Repub* vi, 507, 509.
[9] *Timaeus* 28. *Cf. Romans* xi, 33–36.

nature is that it is entirely imperceptible by the ordinary senses; it is "colourless, formless, and intangible, visible only to the intelligence which sits at the helm of the soul,"[1] and thus in no way definable by human predicates. It is by the method of dialectic alone that the eye of the soul may be conducted upwards to the true vision of real existence,[2] and the achievement of this end is by a progressive exercise and concentration of the soul. A person commences this upward journey of the soul with the love of forms that are beautiful, and proceeds thereafter to a contemplation of the beauty which is in souls, as a beauty "more excellent than that which is in form" and unaffected by external appearance, "even though the flower of the form should be withered," with the result that he learns "to esteem little the mere beauty of the outward form." Thence he is conducted to science, or knowledge, "so that he may gaze upon the loveliness of wisdom" and "turn towards the wide ocean of intellectual beauty, . . . until, strengthened and confirmed, he should at length steadily contemplate one science, which is the science of this universal beauty." Thus "those who discipline themselves upon this system . . . ascend through transitory objects which are beautiful towards that which is beauty itself, proceeding as on steps from the lover of one form to that of two, and from that of two to that of all forms which are beautiful, and from beautiful forms to beautiful habits and institutions, and from institutions to beautiful doctrines; until, from the meditation of many doctrines, they arrive at that which is nothing else than the doctrine of the supreme beauty itself, in the knowledge and contemplation of which at length they repose." All other things are beautiful through a participation of this supreme beauty which is "eternal, unproduced, indestructible, subject neither to increase nor decay, not, like other things, partly beautiful and partly deformed, not at one time beautiful and at another time not, . . . but eternally uniform and consistent, and monoeidic with itself, . . . the divine, the original, the supreme, the monoeidic beautiful itself."[3] The knowledge of the absolute Beauty is not other than that of the absolute Good and of the ultimate Unity: it is, in fact, the vision of God.

This noble ascent is possible of attainment to the soul because of all things it is "most like that which is divine, immortal,

[1] *Phaedrus* 247.
[2] *Repub.* 531 ff.
[3] *Symposium* 210–212.

intelligent, uniform, indissoluble, and which always continues in the same state."[1] The soul itself is immortal and imperishable, and so "it is impossible for the soul to perish when death approaches it." "When, therefore, death approaches a man, the mortal part of him dies, but the immortal part escapes safe and uncorrupted, having withdrawn itself from death."[2] In contrast to the soul, however, "the body is most like that which is human, mortal, unintelligent, multiform, dissoluble, and which never continues in the same state."[3] This being so, the true philosopher, the true lover of wisdom, despises the pursuit of material display and ambition, and occupies himself, not about his body, but about his soul: indeed, he "frees his soul as much as he can from communion with the body," for "the soul then reasons best when none of these things disturb it, neither hearing, nor sight, nor pain, nor pleasure of any kind; but it retires as much as possible within itself, taking leave of the body, and, as far as it can, not communicating or being in contact with it, it aims at the discovery of that which is."[4] The body is actually an encumbrance to the soul, and subjects us to innumerable hindrances which prevent us from attaining the unimpeded enjoyment of the divine vision. It is an evil and "as long as we are encumbered with the body, and our soul is contaminated with such an evil, we can never fully attain to what we desire." Thus, "if we are ever to know anything purely, we must be separated from the body, and contemplate the things themselves by the mere soul."[5] It is only at death that the lover of wisdom is released from this encumbrance, and, consequently, "those who pursue philosophy rightly study to die, and to them of all men, death is least formidable." For such men to dread death would be very irrational. In life, then, the philosopher will have only such commerce with the body as is absolutely necessary; he will not be carried away by its passions; and he will endeavour increasingly to purify himself from its defilement, until at death the soul is "delivered as it were from its shackles."[6] Then at length he will be free, no longer "entombed in that which we now drag about with us and call the body," no longer "fettered to it like an oyster to his shell."[7]

---

[1] *Phaedo* 80.
[2] *Ibid.* 105–107.
[3] *Ibid.* 80.
[4] *Ibid.* 64, 65.
[5] *Ibid.* 66.
[6] *Ibid.* 67, 68.
[7] *Phaedrus* 250; *cf. Timaeus* 81.

The soul, moreover, being immortal and uncreated, has existed prior to its imprisonment in the body, and in this previous existence it has enjoyed the vision of absolute truth. It is, in fact, the recollection in his soul of this perfect vision that impels the philosopher to lay aside every carnal consideration in order that he may himself attain to this blissful experience. The soul's prior participation in absolute knowledge is also the fount of man's innate knowledge and intelligence: "our souls existed before they were in human form, separate from bodies, and possessed intelligence."[1] Even the process of learning things is nothing else than a process of reminiscence[2]—"a recollection of those things which in time past our soul beheld when it travelled in the company of the gods, and, looking high over what we now call real, lifted up its head into the region of eternal essence." It is the mind of the philosopher alone that "to the best of its power is ever fixed in memory on that glorious spectacle. . . . . And it is only by the right use of such memories as these, and by ever perfecting himself in perfect mysteries, that a man becomes really perfect." Because, however, such a person "stands aloof from human interests, and is rapt in contemplation of the divine, he is taken to task by the multitude as a man demented, since the multitude fail to see that he is a man inspired by God."[3] "Though every man's soul has by the law of his birth been a spectator of eternal truth," yet "few, few only, are there left with whom the world of memory is duly present," and who have a yearning for a happiness that is past.[4]

The soul, then, which at death departs, "in a pure state, taking nothing of the body with it," departs "to that which resembles itself, the invisible, the divine, immortal and wise," and on its arrival there "its lot is to be happy, free from error, ignorance, fears, wild passions, and all the other evils to which human nature is subject," and it "passes the rest of its time with the gods." But a soul that departs from the body "polluted and impure, as having constantly held communion with the body, and having served and loved it, and been bewitched by it, through desires and pleasures, so as to think that there is nothing real except what is corporeal," will be "stamped with that which is cor-

[1] *Phaedo* 76.
[2] *Ibid.* 72.
[3] *Phaedrus* 249.
[4] *Ibid.* 250.

poreal;" it will be "ponderous and earthly," "weighed down, and drawn again into the visible through dread of the invisible and of Hades." In this state the souls of the wicked "wander about until at length, through the desire of the corporeal nature that accompanies them, they are again united to a body; and they are united, as is probable, to animals having the same habits as they have given themselves up to during life. For instance, those who have given themselves up to gluttony, wantonness, and drinking, and have put no restraint on themselves, will probably be clothed in the form of asses and brutes of that kind. And such as have set great value on injustice, tyranny, and rapine, will be clothed in the species of wolves, hawks and kites."[1] At the top of the scale of bodies which a soul may indwell in accordance with the quality of its former incarnate existence is that of the man, then that of the woman, and then other kinds of bodies in a progression of inferiority.[2] In this variety of changes the soul never ceases from labour until, "having overcome by reason its turbulent and irrational part, ... it at last returns to the first and best disposition of its nature."[3]

This doctrine of metempsychosis, besides involving belief in the value and immortality of the individual soul, also implies the ethical responsibility of each human being. There is no suggestion that the lower animals are to be regarded as morally responsible: the entry of a soul into one of them seems to have a significance which is merely disciplinary as far as the soul is concerned. The soul in man, however, "resembles the combined efficacy of a pair of winged steeds and a charioteer. The charioteer is intellectual reason, and, of the two horses, the one is good and noble-spirited, and is "driven without stroke of the whip by voice and reason alone," whereas the other is bad and clumsy "a friend to all riot and insolence," and "scarce yielding to lash and goad combined." The latter steed has to be tamed and chastened by unremittingly violent treatment until "he follows with humbled steps the guidance of his driver."[4] By this parable Plato illustrates graphically his view of the tripartite nature of the soul. The immortal part of the soul, which corresponds to the driver of the chariot, is situated in the head, the seat of

[1] *Phaedo* 80–82.
[2] *v. Timaeus* 42, 90–92; *Repub.* x, 620.
[3] *Timaeus* 42.
[4] *Phaedrus* 246, 253, 254.

the intellect; the mortal part of the soul is divided into two sections—a higher and spirited section, which is situated in the upper portion of the thorax, and corresponds to the willing steed and a lower and sensuous part, which is situated below the midriff, and corresponds to the rebellious steed.[1] The ethical task of man, then, is to subdue the appetitive part of his nature and to discipline it together with the spirited part, in such a way that they may co-operate without friction under the wise and ennobling direction of that portion of his soul which is immortal. The beauty and health of a man's soul are of far greater importance than the beauty and health of his body, and he who is ruled by intelligence "always appears to adjust the harmony of the body for the sake of the symphony which is in the soul."[2] Such a man will not be moved by what the majority may say about him, but rather by what "he will say who knows what is right and what is wrong, and by the truth itself." "Under no circumstances can wrong-doing be good and beautiful," but always "evil and shameful to the doer." Further "we ought never to return evil for evil and never to harm any man at all, whatever we may suffer at his hands."[3] Thus it is that Plato wishes his ideal republic to be governed by men who are true lovers of wisdom, men who, being themselves ruled by the noblest reason and not by passion, will exercize their governing office, not as something adding honour to their own reputation, but as a thing necessary for the good of the state. These philosopher-statesmen will, in fact, "despise present honours and deem them illiberal and of no value; but they will esteem, above all things, rectitude and the honours derived from it; they will account justice as a thing of all others the greatest and most absolutely necessary, and by ministering to it and advancing it, will thoroughly regulate the constitution of the state."[4]

Yet Plato maintains that "no one is voluntarily bad."[5] The diseases of the soul, of which the greatest are excessive pleasures and pains, result from the habit of the body, and in particular from "a privation of the intellect," that is, either madness or ignorance. "All the vicious are vicious through two most

[1] *Timaeus* 69, 70, 77.
[2] *Repub.* ix, 591.
[3] *Crito* 48. 49.
[4] *Repub.* vii, 540.
[5] *Timaeus* 86; *cf. Repub.* ix, 589.

involuntary causes," namely, weakness of physical constitution and unsuitability of environment and training. "But still," he adds, "it should be our anxious endeavour, as far as we can, by education, studies, and learning, to fly from vice and acquire its contrary, virtue."[1] Plato's reason for this position is his belief in the indefectibility of knowledge: "Knowledge is a noble thing, and able to govern man, and if a man knows good and evil he can never be overcome by anything, so as to do anything else than what knowledge bids him."[2] This view, further, is based on the belief that "no one who either knows or thinks that other things are better than what he is doing, and that they are possible, still continues to do the same, when it is in his power to do the better."[3] Thus Plato holds "that no wise man thinks that any person errs willingly, or willingly commits base and evil actions, but that wise men well know that all those who do base and evil things do them unwillingly."[4]

This estimate of the involuntary nature of vice, however, does not exempt a man from responsibility for his evil-doing, nor does it guarantee that he may expect to go unpunished. It is rather to be understood as teaching the importance of knowledge and wisdom for the best regulation of one's life, and the calamity of ignorance. The wise man will assiduously pursue virtue at all costs; for "what is evil destroys and corrupts everything, and what is good preserves and profits."[5] Righteousness is, indeed, its own best reward, but a righteous man receives prizes and honours from both gods and men, both now and hereafter, whereas unrighteousness never fails to bring retribution in its wake.[6] Our innate sense of justice demands this, "for if death were a deliverance from everything, it would be a great gain for the wicked, when they die, to be delivered at the same time from the body, and from their vices together with the soul: but now, since it appears to be immortal, the soul can have no other refuge from evils, nor safety, except by becoming as good and wise as possible."[7] After death, then, we are to look for a judgment which will separate the righteous from the unrighteous, exalting the former to a heavenly bliss, and punishing the latter

[1] *Timaeus* 87.
[2] *Phaedo* 107.
[3] *Ibid.* 612, 613.
[4] *Repub.* x, 608
[5] *Ibid.* 345.
[6] *Ibid.* 358.
[7] *Protag.* 352.

with the torments of hell (Tartarus), either eternally if their condition is beyond reclaim, or for a prolonged period of time before they return to earth to be reincarnated in another mortal form,[1] when they are further punished "by leading a life suited to that to which they are assimilated."[2] God, of course, "is never in any respect unrighteous, but as righteous as possible, and there is not anything that resembles Him more than the man amongst us who has likewise become as righteous as possible."[3] "On account of these things, then, that man ought to be confident about his soul who during his life has disregarded all the pleasures and ornaments of the body as foreign to his nature, and who, having thought that they do more harm than good, has zealously applied himself to the acquirement of knowledge, and who, having adorned his soul not with a foreign but with its own proper ornament, temperance, justice, fortitude, freedom, and truth, thus waits for his passage to Hades, as one who is ready to depart whenever destiny shall summon him."[4]

In the heathen darkness which preceded the advent of Christ there is one whose figure shines conspicuously, like a morning star in the pagan sky, and whose life was both a most remarkable attempt at a consistent enactment, and also the spring and inspiration, of these lofty principles which have been engaging our attention. The figure was that of Socrates, who outstripped all other personages of the pagan world in nobility of character, penetration of vision, and devotion to conviction. To such an extent does his moral stature compel our admiration, that we do not hesitate to acknowledge the justness, at least in some respects, of the opinion that "the Platonic Socrates, like John the Baptist, was a forerunner of Christ."[5] Socrates lived, indeed, under a constraining sense of Divine vocation and mission, and he devoted his time to the earnest prosecution of his divinely imposed task, namely, to convince people that God alone has wisdom, and that the wisest man is he who, like himself, has learnt that his own wisdom is worth nothing. "Such has been my search and my inquiry in obedience to God," testified this great man, "whenever I found anyone—fellow-citizen or foreigner—who might be considered wise; and if he

[1] *Ibid.* 107, 108; *Repub.* x. 613 ff.
[2] *Theaet.* 177.
[3] *Ibid.* 176.
[4] *Phaedo* 114 115.
[5] The opinion of Marsiglio Ficino, quoted by Neander, *Church History*, i. 25.

did not seem so to me I have borne God witness, and pointed out to him that he was not wise at all. And through this incessant work I have had no leisure for any public action worth mentioning, nor yet for my private affairs, but I live in extreme poverty because of this service of mine to God."[1] In prosecuting this mission Socrates did not fail to stir up much bitter enmity against himself, especially on the part of those whose pretensions to wisdom he exposed as unsubstantial—those who, to use his own description, "think they are somewhat when they are worth nothing;"[2] and in the end his enemies succeeded in arraigning him on a charge of inventing a new theology and corrupting the youth of the state with his doctrines. His shining integrity is finely displayed in his bearing and defence before his accusers. There is one thing, he declares, and one alone, that a man of any worth ought to consider, "and that is whether what he does is right or wrong." "The post that a man has taken up," Socrates tells his Athenian hearers, "because he thought it right himself or because he thought his captain put him there, that post, I believe, he ought to hold in face of every danger, caring no whit for death or any other peril in comparison with disgrace."[3] "I must obey God rather than you," he testifies, "and, while I have life and strength, I will never cease to follow wisdom and urge you forward, explaining to every man of you I meet, speaking as I have always spoken, saying, See here, my friend, you are an Athenian, a citizen of the greatest city in the world, the most famous for wisdom and for power; and are you not ashamed to care for money and money-making and fame and reputation, and not care at all, not make one effort, for truth and understanding and the welfare of your soul?" "It is God's bidding, you must understand that," he expostulates; "and I myself believe no greater blessing has ever come to you or to your city than this service of mine to God."[4] "I am given

[1] *Apol.* 23 (*cf.* 1 *Cor.*, i, 20: "Hath not God made foolish the wisdom of this world?" iii, 19: "The wisdom of this world is foolishness with God." *Acts.* xxvi, 20: "Having obtained help of God, I continue unto this day, witnessing both to great and small").

[2] *Ibid.* 41 (*cf. Gal.* vi, 3: "If a man think himself to be something, when he is nothing, he deceiveth himself").

[3] *Ibid.* 28 (*cf. Matt.* v, 10: "Blessed are they which are persecuted for righteousness' sake, for theirs is the kingdom of heaven").

[4] *Ibid.* 29, 30 (*cf. Acts* v, 29: "We ought to obey God rather than men." *Matt.* xvi, 26: "What is a man profited, if he shall gain the whole world, and lose his own soul? or what shall a man give in exchange for his soul?" *Luke* xii, 15: "A man's life consisteth not in the abundance of the things which he possesseth").

by God to the city," he assures them. Hence his unbending steadfastness of purpose: "I will never consent to injustice at any man's command for fear of death, but would die on the spot rather than give way . . . For death, to put it bluntly, I did not care one straw—but I did care, and to the full, about doing what was wicked and unjust . . . All through my life you will find that this has been my character—never yielding to any man against right and justice . . . trying to persuade every one of you not to think of what he had but rather of what he was, and how he might grow wise and good."[1] "The difficulty," he reminds them, "is not to flee from death, but from guilt: guilt is swifter than death."[2] "Remember," he concludes, after sentence of death has been passed upon him—"remember this at least is true, that no evil can come to a good man in life or death, and that he is not forgotten of God."[3]

"He cares not for mere beauty," said Alcibiades in his encomium of Socrates, "but depises all external possessions more than anyone can imagine, whether it be beauty or wealth or glory, or any other thing for which the multitude felicitates the possessor."[4] The heart of Socrates is enshrined for us in his own prayer: "Grant me to be beautiful in the inner man, and all I have of outer things to be at peace with those within. May I count the wise man only rich; and may my store of gold be such as none but the good can bear."[5] Thus this pre-Christian apostle adhered unflinchingly to his principles and discharged faithfully his mission, even to the death of martyrdom—an event which presents itself as the most calm and moving in pagan

---

[1] *Ibid.* 31–33, 36 (*cf. Acts.* xx, 24–27: "None of these things move me, neither count I my life dear unto myself . . . . Wherefore I take you to record this day, that I am pure from the blood of all men; for I have not shunned to declare unto you all the counsel of God").

[2] *Ibid.* 39 (*cf. Heb.* ix, 27: "It is appointed unto men once to die, but after this the judgment").

[3] *Ibid.* 41 (*cf. Heb.* xiii, 5: "He hath said, I will never leave thee nor forsake thee; so that we may boldly say, The Lord is my helper, and I will not fear what man shall do unto me").

[4] *Symposium* 216 (*cf. Phil.* iii, 7, 8: "What things were gain to me, those I counted loss for Christ; yea, doubtless, and I count all things but loss for the excellency of the knowledge of Christ Jesus my Lord; for whom I have suffered the loss of all things, and do count them but dung, that I may win Christ").

[5] *Phaedrus* 279 (*cf.* 1 *Pet.* iii, 3, 4: "Whose adorning let it not be that outward adorning of plaiting the hair, and of wearing of gold, or of putting on of apparel; but let it be the hidden man of the heart, in that which is not corruptible, even the ornament of a meek and quiet spirit, which is in the sight of God of great price").

history. Who will deny that this man's vocation was indeed of God, and that in life and in death he was an example to the Gentiles of the distance to which the human spirit may travel by following that natural light which is available to man even apart from a special revelation—an illumination which may truly conduct him to recognize the " eternal power and Godhead " of the Supreme Being and the surpassing value of man's immortal soul ?

But it cannot conduct him further than this: the inmost mysteries of the Divine nature and purposes are not open to his gaze, simply for the reason that they are beyond his natural capacity—a capacity, let it be remembered, which, while being finite, is further disabled by the perversion of sin. A revelation from God was necessary if these great secrets were not for ever to be hidden from him; and it was just such a revelation that the Platonic philosophy required to lead it into the fulness of truth. It arrived with the advent of Christ.

Christianity is not, as some theorists seem to see it, an ingenious syncretism of a diversity of elements from a variety of sources, Hebrew, Greek, Egyptian, Oriental. It is unique among religions inasmuch as it is a religion of revelation, and, as revealed, a universal religion, displaying the one God as the universal Creator, exposing the universal sinfulness of the human race, and proclaiming the universal scope of man's redemption in Christ. Thus that there should be points of contact with other religions is not surprising, especially since in heathendom, apart from the light of common grace, there are remnants, though debased and defiled, of the original truth.[1] To regard the use in the New Testament of terms which are characteristic of Hellenic thought and religion as plagiarisms, whether conscious or unconscious, from Greek sources, is to misunderstand the nature of the New Testament, as well as to overlook the practical inevitability of the usage, in any era and amongst any people, of a specific terminology which is fundamental to religious and metaphysical expression. It is one thing to notice Platonic affinities in the writings of the New Testament, but it is quite another thing to judge them as Platonic influences or insinuations.

Of the New Testament authors there are two in particular,

[1] The history of heathenism is condensed for us by St. Paul in that notable passage, *Romans* i, 18–32; *v.* also ii, 14 15.

St. Paul and St. John, whose writings exhibit in places what appear to be affinities with Platonic thought. Neither of these Apostles was likely to have been a stranger to Hellenic terms and concepts, the former owing to his connection with Tarsus where, as the historian Strabo, Paul's contemporary, tells us, the greatest of all the Greek universities was situated,[1] and the latter through his prolonged residence in Ephesus, a nuclear point of both Western and Eastern thought. There can be little doubt that in employing Greek religious and philosophical terms they were perfectly well aware of their connections with Greek thought. Moreover, it is clear from their writings that the object of the Apostles in using such terminology was that its true significance might be seen in its proper perspective, namely, in relation to God's purposes as revealed in the person and work of Christ. This is admirably summed up for us by St. Paul's declaration made at Athens before an audience of philosophically inquisitive Greeks: "Whom ye ignorantly worship, Him declare I unto you."[2]

It is in Christ alone that terms such as σοφία, γνῶσις, λόγος, and τέλειος achieve their full significance. Just as Christ's person is the pivot of human history, so also must it be the focus both of philosophy and of the Old Testament revelation. It is in Christ, as St. Paul tells us, that the two streams, Jewish and Greek, meet and find their consummation: "The Jews require a sign, and the Greeks seek after wisdom," says the Apostle; "but we preach a crucified Christ, . . . unto them which are called, both Jews and Greeks, Christ the power of God and the wisdom of God." The Greek quest for wisdom attains its realization in Christ Jesus, "who of God is made unto us wisdom."[3] The Apostle even makes use of language which could not fail to recall to the minds of his Greek readers at Corinth the terminology of the pagan mysteries—language, however, now employed for the first time in its proper setting: "We speak wisdom among them that are perfect," he writes, "yet not the wisdom of this world; . . . but we speak God's wisdom in a mystery, even the hidden wisdom, which God ordained before the world unto our glory (or, for the sake of our enlightenment—εἰς δόξαν ἡμῶν)"[4]

---

[1] Strabo xiv, p. 673; *v.* Lightfoot, *Biblical Essays*, p. 205.
[2] *Acts* xvii, 23.
[3] 1 *Cor.* i, 22–24, 30.
[4] 1 *Cor.* ii, 6, 7.

This Divine wisdom is by no means within the grasp of the unaided spirit of man; it does not lie within the sphere of common grace. It is the result of revelation by God's Spirit, who alone knows and can reveal those things of God which are entirely hidden from the natural man. That is why St. Paul claimed to speak, "not in words which man's wisdom teacheth, but which the Holy Ghost teacheth." To be instructed in this spiritual wisdom is to possess none other than "the mind of Christ,"[1] for the wisdom of God and the Christ of God, the Logos, "in whom are hid all the treasures of wisdom and knowledge," are identical.[2] Any man, then, who wishes to be τέλειος, perfect, truly an initiate into Divine mysteries, must and can only be so "in Christ"—τέλειος ἐν Χριστῷ[3].

There are "two species of things," says Plato, "the one visible and the other invisible," the visible being perceptible to the senses, but the invisible apprehensible by thought alone, "the invisible always continuing the same, but the visible never the same."[4] The Christian, says St. Paul, applying this truth in a manner not discordant with Platonic thought, centres his attention "not on the things which are visible, but on the things which are invisible; since the things which are visible are temporal, whereas the things which are invisible are eternal."[5] His is, in fact, a heavenly perspective: he yearns after the beatific vision. The glorious goal is the knowledge of the Son of God, which is the only true gnosis, and that perfection whose measure is "the stature of the fulness of Christ."[6] The process of "growing up into Christ" here, the formation of Christ within the Christian, will be crowned hereafter with complete Christ-likeness, indeed, oneness with Him in whom "all

---

[1] 1 *Cor.* ii, 10–16.

[2] *Col.* ii, 3. Plato uses the expression "treasure of wisdom"—Θησαυρὸς σοφίας—in *Philebus* 15.

[3] *Col.* i, 28. *Cf. Phaedrus* 249: "It is only by ever perfecting himself in perfect mysteries, that a man becomes really perfect"—τελέους ἀεὶ τελετὰς τελούμενος τέλεος ὄντως μόνος γίγνεται. Lightfoot comments (on *Col.* i. 28): "The language descriptive of the heathen mysteries is transferred by him (i.e. Paul) to the Christian dispensation, that he may thus more effectively contrast the things signified. The true Gospel also has its mysteries, its hierophants, its initiation: but these are open to all alike. In Christ every believer is τέλειος, for he has been admitted as ἐπόπτης of its most profound, most awful, secrets."

[4] *Phaedo* 79.

[5] 2 *Cor.* iv, 18.

[6] *Eph.* iv, 13.

fulness dwells."[1] To see God, is to know everything. "We know," says St. John, "that when He shall appear, we shall be like Him, for we shall see Him as He is." "Now we see through a glass darkly," says St. Paul, "but then face to face; now I know in part, but then I shall know even as also I am known."[2] This is not merely the knowledge of sight: it is the knowledge of assimilation.

While we acknowledge the numerous similarities that are to be noticed between the Platonic system and New Testament teaching, yet it is essential that we should not blind ourselves to the fact that the differences between them are great and fundamental. The cardinal Christian doctrines of Creation *de nihilo*, the Fall, the Incarnation, the Atonement, and the Trinity, are, in fact, alien to Plato's philosophy. This is said not so much in condemnation of Plato as of those who seem to be eager to precognize him as a sort of fully-fledged Christian; for we have already seen that doctrines such as those just mentioned are beyond the scope of the natural man, and therefore we must not hope to find them developed in any pagan philosophy. The Platonic and the Christian ethic are practically identical, as is adequately demonstrated by the quotations already given, but the Platonic doctrine that the knowledge of what is right and good is sufficient to ensure its performance follows from no accurate estimate of the vitiation through sin of the human heart and will. This is evidenced, not only by the steady degeneration of the Greek race from the time of Plato onwards, and by the ethical failure of the Hebrews despite the fact that they were entrusted with the very law of God, and so could not possibly plead the excuse of ignorance, but also by the common experience of the human heart, so tellingly depicted by the Apostle: "What I would, that I do not; but what I hate, that I do . . . For the good that I would I do not; but the evil which I would not, that I do."[3] Liberation from this bondage to the law of sin, and from its ensuing condemnation, is to be experienced only through faith in Christ, the Redeemer, from sin. A heart and will renewed by the power of God are essential if man is to fulfil the law of God. But Plato quite fails to recognize the inability by which man is bound because

---

[1] *Eph.* iv, 15; *Gal.* iv, 19; *Col.* i, 19.
[2] 1 *John* iii, 2; 1 *Cor.* xiii, 12.
[3] *Rom.* vii, 15, 19.

of his sin, and consequently he fails to envisage the necessity for atonement and reconciliation and the new birth. It is true that in one passage of almost prophetic penetration the philosopher declares that the just man, when stripped of everything but his justice, "will be scourged, tortured, fettered, have his eyes burnt out, and, lastly, suffer all manner of evils and be crucified"[1]—a prediction so nearly fulfilled in the sufferings and death of Christ, the only entirely just man, that Clement of Alexandria feels that Plato, in writing these words, "all but predicted the economy of salvation."[2] This is true as regards the manner of Christ's death, but in no sense as regards its meaning—a distinction that it is important to urge here.

There have been some, indeed, who have thought that they could discern in Plato's theology a trinitarian concept comprising the three elements God, the Ideas, and the World-Spirit, or, alternatively, τὸ ἀγαθόν, νοῦς, and ψύχη. But to read into concepts of this nature the doctrine of the Trinity which affirms the essential hypostatic union of three Persons in the one Godhead is fair neither to Christianity nor to Platonism.[3] The Philonic terminology more nearly approaches the Christian, sometimes almost startlingly so, but here, too, as we have seen, it is vain to seek a trinitarian doctrine, since such a doctrine would bring God into direct contact with matter—a sentiment strenuously rejected by both Platonism and Philonism.

The New Testament, on the contrary, teaches that the perceptible material world was brought into being, *not* from preexisting phenomena, but by a Divine fiat *de nihilo*;[4] and, furthermore, that all things, both in heaven and in earth, both visible and invisible, were created by the Son of God, who is Himself before all things.[5] St. John also speaks explicitly to the same effect: "In the beginning was the Logos, and the Logos was with God, and the Logos was God; the same was in the beginning with God: all things were made by Him, and apart from Him was not anything made that was made."[6] In these passages the Apostles employ language which has a Platonic

[1] *Repub.* ii, 361. *Cf. John* viii. 40: "Now ye seek to kill me, a man that hath told you the truth."
[2] *Strom.* v. 14.
[3] *Cf.* Plato, *Epinomis* 986; *Epist.* ii, 312; Athenagoras, *Plea* xxiii; Clement Alex., *Strom.* v, 14; Theodoret, *De Affec.* ii, 750; Plotinus, *IV Ennead* iv, 16.
[4] *Heb.* xi, 3—μὴ ἐκ φαινομένων τὸ βλεπόμενον γεγονέναι.
[5] *Col.* i, 16, 17.
[6] *John* i, 1–3.

or Philonic ring about it, but in such a way as to correct Platonic and Philonic errors. The Logos may be called Θεός by John, but in a context which makes His oneness with ὁ Θεός indisputable. He may be, according to St. Paul, "the image of the invisible God" and "begotten before all creation,[1] but eternally so, and not in any wise temporally so. The world may have been organized by a Divine word so that chaos was replaced by cosmos,[2], yet the matter on which this operation was performed was also brought into being by the same supreme agency. He who was "in the beginning" and "before all things" must also Himself be the originator of all things: He is, in fact, as the New Testament declares, "the Beginning."[3] Had Plato but applied his famous argument for the immortality of the soul with equal strictness to his doctrine of matter, as Thomas Aquinas did 1,500 years later,[4] he would have abandoned his view of matter as eternally pre-existent: "A beginning," he wrote, "is uncreated; for everything that is created must be created from a beginning, but a beginning itself from nothing whatever: for if a beginning were created from anything it would not be a beginning. Again, since it is uncreated, it must also of necessity be indestructible . . . . else must all the universe and all creation collapse and come to a standstill."[5]

It is the Platonic dualism between God and matter, as constituting two co-eternal entities, which is at the root of the opposition which exists between the Platonic and the Christian systems. Scripture teaches that man, body and soul, was originally created perfect, as the crown of the whole material creation which God saw to be "very good," and that through sin he fell from his original happy state and his human nature was perverted and corrupted. For Plato, however, it is matter as such that is inherently evil, and the only fall that appears to be deducible from his philosophy is the "fall" of the soul into

---

[1] *Col.* i. 15.

[2] *Cf. Heb.* xi, 3—κατηρτίσθαι τοὺς αἰῶνας ῥήματι Θεοῦ, "the universe was reduced to order by God's word." Whether this was in accordance with some archetypal idea or form is not stated. But any idea of the eternity of matter is immediately excluded, as we have seen, by the next clause of this verse, which affirms the creation of matter *de nihilo*.

[3] *Rev.* i, 8.

[4] *Summa Theol.*, Part 1, Q. 2, Art. 3.

[5] *Phaedrus* 245; *cf. Repub.* x, 608–610.

the "dungeon of the body.[1] So, also, the basic Christian doctrines of the Incarnation, of God in Christ enduring physical suffering and death, and of bodily resurrection from the dead, are as entirely repugnant to the Platonic system as they are of the essence of the Christian system; for the union of the Divine nature with human nature, a harmony between spirit and matter, is unthinkable to the Platonist for whom matter and spirit are irreconcilably antagonized. Not only Philonism, but the Docetic and Gnostic heresies of the early Christian centuries imitated Plato in postulating this fundamentally erroneous dualism. The prologue to St. John's Gospel, however, sets before us the true perspective, declaring that the Logos, who is God, and the Creator of all things, also "became flesh and dwelt in our midst."[2] And it is further evident that the Johannine Epistles, as well as portions of St. Paul's were expressly intended to rebut the heresies of Docetism and incipient Gnosticism, which were but a form of Platonism, thinly disguised under a Christian veneer, and decorated with embellishments from a variety of other cults.

To sum up: the points of affinity between Platonism and New Testament Christianity are remarkable, but the points of disparity are even more so. Yet these latter revolve, in the main, around one chief error of the Platonic system, namely, the dualistic concept of God and matter as co-eternal and as mutually exclusive. The removal of this fundamental error would seem to open the way for the Platonist to move on straight to the heart of Christian truth. For Platonism points the ethic of Christianity, without the dynamic of Christianity: it discerns the infinite value of the human soul, without knowing the means of its salvation: it acknowledges the supremacy and perfection of God, without being able to shake off the clinging bogey of meaningless matter: and its desire penetrates even to the glorious reward of the just, the ineffable beatific vision of God, while still awaiting

[1] This Platonic doctrine was reproduced, *via* Philo, in Christian garb by Origen in the third century, the souls of men being identified with the fallen angels, who are punished by the degradation of having to inhabit human bodies, until through this discipline all will ultimately be restored. It is interesting also to find that Augustine, although he repudiates Plato's doctrine of learning by reminiscence of the soul (*De Trin.* xii, 15), propounds, somewhat tentatively, it is true, a theory of reminiscence in order to explain man's innate knowledge of a better and happier state—a memory, he suggests, of the bliss which he enjoyed before the fall. Such a suggestion seems not inconsistent with the traducianist views which Augustine held. *Confessions* x. 20, 21.

[2] *John* i, 1–3, 14.

the Good News that Jesus Christ is " the way, the truth, and the life," and that " no man comes to the Father, but by Him."[1] The New Testament shows that Plato's ideal republic (πολιτεία) will actually be realized in the " new heavens and new earth, wherein dwelleth righteousness," in the new Jerusalem, " a city which hath foundations, whose builder and maker is God,"[2] —a consummation the possibility of which Plato seemed to envisage when he wrote: " The state which we have now established exists only in our reasoning, and has, I think, no existence on earth. However, it is probable, that there is a model of it in heaven."[3] And elsewhere he declares: " We are plants, not of earth, but of heaven; "[4] to which the Apostle responds: " Our republic—πολίτεια—is in heaven; from whence also we look for a Saviour, the Lord Jesus Christ, who shall fashion anew the body of our humiliation, that it may be conformed to the body of His glory, according to the working whereby He is able even to subject all things unto Himself "[5]—a quotation which may fittingly conclude our investigation into the subject of Platonism and the New Testament.

DISCUSSION:

The Rev. Dr. D. MARTYN LLOYD-JONES (Chairman) said that the subject of this paper was very important at the present day, in view of the current controversy regarding the Barthian theology. The material point of the paper is contained in Section IV of the Synopsis. We need to beware of philosophy masquerading as theology, and to keep clear in our minds the relation between philosophy and theology.

The author appeared to show too great a tendency to say that Philosophy had been a schoolmaster to bring the Greeks to Christ, as the Law had been in the case of the Jews. Thus, on page 25 he refers to the view of Clement of Alexandria of two streams meeting in the advent of Christ, that of the Jewish Law and that of Greek Philosophy. The Law is unique, and the two are not parallel. So again on page 37 where Socrates is compared to John the Baptist: John the Baptist was unique, and any glimmering of truth on the

[1] *John* xiv, 6.
[2] 2 *Pet.* iii, 13; *Rev.* xxi, 1–7; *Heb.* xi, 10.
[3] *Repub.* ix, 592.
[4] *Timaeus* 90.
[5] *Phil.* iii, 20, 21.

part of Socrates is not to be compared with the uniqueness of the New Testament. On page 39 Socrates is called " this pre-Christian Apostle." The next paragraph is reminiscent of the Roman Catholic view of revelation as a supplement to reason.

On page 41 the author speaks of the two streams, Jewish and Greek, meeting in Christ, and quotes St. Paul: " The Jews require a sign, and the Greeks seek after wisdom." The attitude of Jew and Greek is a contrast, not a continuation. There is a complete contrast between the Hebrew and the Greek outlook; the Hebrew, concrete, " materialistic "; the Greek, abstract, " ideal."

In his final paragraph, Mr. Hughes speaks of " the removal of this fundamental error (dualism)." As there is need of the new birth, it is not quite so simple as that.

Mr. F. W. CHALLIS said:

I endorse the chairman's tribute to the painstaking labour of the lecturer, but I feel the *contrast* (rather than *similarity*) between Platonism and the New Testament needs much stronger emphasis. Not approximation, but a gulf between them—and nothing in Nature to bridge it. Christianity cannot possibly be proposed as a " completion " of Platonism. Platonism could never " evolve " into the Gospel. Grace *came down*. *Incarnation* is what the Gospel insists on in the stark reality of it (incomprehensible to the Platonic mind with its view of matter as evil and the human body a " dungeon," instead of the New Testament conception of the body as the organ of the Divine Obedience). Jesus Christ came in *flesh*: this is the touchstone of the Apostle John who, so far from losing himself in a world of " ideas," keeps his feet firmly on the ground. Also, contrast the philosophic coterie in Athens with the Gospel-preaching Apostles. According to Plato φιλόσοφον . . πλῆθος ἀδύνατον εἶναι (*Republic* 494*a*). Plato's theory of Ideas has no Gospel for the masses. Contrast: " the common people heard Him gladly."

WRITTEN COMMUNICATIONS:

Mr. R. T. LOVELOCK wrote:

May I please thank the Rev. P. E. Hughes for an extremely interesting paper in which the religious and moral attitude of Plato has been admirably summed up. From a much more limited know-

ledge of Plato than he possesses, I would judge him correct in placing the major difference between Plato and Jesus in the antithesis between "dualism" and "humanity" (using this latter term reverently and with reticence, of the manifestation through our Lord). On the other hand his emphasis on the importance of Plato's ethic, in which that philosopher is likened to John the Baptist as a "forerunner," is open to serious question.

In the ancient world, dualism, or the idea that the body was essentially incapable of good, inevitably led to decline in personal morals through a sense of "helplessness" induced by the theory. Jesus demonstrated that the true function of the body was to be subject to God in holiness, and that if the personality was cleansed through the saving power of His sacrifice, the gift of a glorified body in resurrection would eventually perpetuate that for which the life had been spent. The essential difference between the two outlooks, as it is reflected in the personal life of the body distinct from that of the mind, is well contrasted by the teaching of St. Paul in 1 Cor. vi, 10-20 and that of Plato in the *Symposium*. Reference is made in the paper to the statement in Romans that the invisible things of God have been clearly manifested from the beginning, but it is in this particular context that St. Paul instances the teaching of the *Symposium* as a perversion of true religion particularly abhorrent to God; it is for this reason that the eulogies here poured upon Plato would seem to be out of place from the viewpoint of Christian personal morality, however great he may have been intellectually.

The modern tendency to place so much importance on intellectual prowess is itself tending to produce a modern dualism—by looking on a man's ideas as separate from his actions, the tendency is to think of the animal nature as something to be 'excused' as unalterable; and in our own day we can see a regress along the path which undermined Greek civilisation. If we attempt to correct the balance by realising that personal service to God is the essential prerequisite to which God can add, we rate that patriarchs with a more elementary mental equipment than Plato were nearer to the God revealed through Jesus than was any citizen of Athens. In this connection it should be noted that the quotation in the paper from 1 Corinthians implies that the Greek philosophy led men to see in

Jesus the power of God; in the context not quoted we are told that to the natural Greek the whole lesson of the cross was foolishness, and we remember that it was in Athens that men laughed to scorn the idea of life through death.

We must not, of course, forget that much of the detailed agreement between Plato and Christianity is in the "theoretical" fabric of theology: this latter was the building of second-century theorists upon the foundation of the New Testament, and although it is essentially moulded upon the Bible, its form was determined to some extent by the fact that it was the product of men trained in the system of Plato. To disentangle entirely the two relationships is no easy task, and the solution is bound to be controversial in many points.

Mr. TITTERINGTON wrote: The outstanding impression I have derived from this paper is of the yawning gulf between Pagan philosophy at its best, and the Bible. Plato's doctrine of the inherent evil of matter would have made the Incarnation impossible. This doctrine also, with his further doctrine of "ideas" and "junior Gods," not to speak of metempsychosis, puts Platonism firmly into the pattern of Pagan philosophy generally. Where Platonic thought did crop up was not in the teaching of the Apostles, or anywhere in the New Testament, but in that first great opponent of the Christian faith—the Gnostic heresy. This did not of course prevent the New Testament writers from making use of words and concepts familiar in Greek philosophy, but in doing so they gave the words and concepts an altogether new content. This is what Bible translators do today; they have to make use of the inadequate language of the people for whom the translation is required, but in doing so they enrich the language by adding a new content to the words they are using.

There is however one remarkable thing about Plato—that steeped as he was in the debased and degrading mythology of Greece, he yet had the conception of God as a God of righteousness. That is, so far as any human conception of righteousness can extend; the righteousness of God as revealed in Scripture is, of course, on a different level entirely, almost of a different kind. But there is one question I should like to ask Mr. Hughes: is there any evidence whether Plato ever contemplated God as possessing personality?

AUTHOR'S REPLY.

I am grateful to the chairman and others who have expressed criticism as well as appreciation of my paper. For a paper of this nature not to have evoked critical discussion would have been disappointing. In response to the points brought forward during the discussion, I should like to make it quite clear that I fully grant the uniqueness of the Jewish Law as opposed to the philosopy of the Greeks. Yet, to be fair, we must recognise that the Socratic-Platonic philosophy does give evidence of and witness to God, the immortality of the soul, and the responsibility of man ; and this, as I see it, is in line with the Scriptural statements of Psalms xix, 1-3, cxxxix, 14, and Romans i, 19, 20 and ii, 14, 15, which indicate the ability, and indeed the responsibility, even of fallen man in this connection. Fallen man is still fallen *man*, in possession of those faculties which are characteristically human—the faculties, namely, of intuition, reasoning, and judgment. The total depravation which his faculties are sometimes spoken of as having suffered through the fall, is not total intensively, but extensively. The exercise of these faculties can lead to an apprehension of truth, but the perspective of unredeemed man is so distorted that such an apprehension will never be free from an admixture of error. A good illustration of this is seen in the Platonic belief in the immortality of the soul, with which is mixed the belief in the eternity of matter. To this factor of the depravity of fallen man's perception must be added the further factor of the inevitable finitude of man's perception. These considerations are sufficient to show that if man is to have an ultimate and sure knowledge of metaphysical truth it can only be by revelation, and that revelation is in a category totally different from that of ratiocination. Thus (by way of reply to Mr. Titterington's question) Plato conceives of the unity, the goodness, the beauty, and the justness of God, but he does not appear to have viewed God as a personal Being. It is only the revealed Christian doctrine of the Trinity that can assure us of this truth.

Likewise I fully grant the uniqueness of John the Baptist and the Christian Apostles as opposed to the person of Socrates. Yet the appearance of Socrates in the pagan world is a phenomenon that cannot be overlooked, and we should be prepared to consider sympathetically his own deep conviction that he was a messenger of God to the people of his day.

When, in the Synopsis, I propose Christianity as the " completion " of Platonism, I do so simply in the sense that it is only in the Christian setting that those elements of Platonism which are true and valuable can be given their full content and be seen in their proper perspective. Any such " adjustment " of Platonism to Christianity would, of course, be of a radical nature in view of the radical divergencies between the two systems. I hoped that my paper had made this sufficiently plain, where I have stressed that, despite similarities, the differences are " great and fundamental " and that the points of affinity are less remarkable than the points of disparity.

I readily admit that, viewing my paper as a whole, it may be judged that too little space has been apportioned to the statement of the Christian position, and I should have welcomed the opportunity of setting it out at greater length. But this is a disability which I found it difficult to avoid in a paper of this nature, and I felt it desirable in the circumstances to give a somewhat full statement of the Platonic position before a Society which is professedly Christian, and therefore well able to draw and develop the necessary comparisons between Platonism and Christianity. Even as it is, there are many things on the Platonic side which I very much desired to include for the sake of completeness, but which limitations of space made it necessary to omit.

I would ask members to allow due weight to what I have explicitly, though more briefly, stated when endeavouring to compare critically Christianity and Platonism—for instance, when I say that " Plato quite fails to recognise the inability by which man is bound because of his sin, and consequently he fails to envisage the necessity for atonement and reconciliation and the new birth." It seems to me that what is now needed to complete the picture is a fuller statement of the Christian position, particularly concerning its view of man as fallen, as redeemable, and as redeemed, which would involve the consideration of the doctrines of incarnation and resurrection, and would show that the effect of Christ's atonement operates not only upon men as individuals, but upon mankind as a race—that men are redeemed *as men*, not merely, as in the Platonic system, as disembodied souls which as such have ceased to be truly human.

888TH ORDINARY GENERAL MEETING

HELD IN THE LECTURE HALL, NATIONAL SOCIETY FOR RELIGIOUS EDUCATION, 69, GREAT PETER STREET, S.W.1, ON MONDAY, 13TH FEBRUARY, 1950.

ERNEST WHITE, ESQ., M.B., B.S., IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed and signed.

The CHAIRMAN then called on E. J. G. Titterington, Esq., M.B.E., M.A., to read his paper entitled "The Early History of the Victoria Institute."

THE EARLY HISTORY OF THE VICTORIA INSTITUTE.

By E. J. G. TITTERINGTON, M.B.E., M.A.

SYNOPSIS.

This Paper contains a historical sketch of the origin of the Victoria Institute, together with an account of the principles on which it was founded. An attempt is made to assess the background of the thought of the age, and the state of development of physical science. It is shown how the Institute set about the task it had undertaken. Some reflections are made on the Institute's task in the changed circumstances of the present day.

THE years surrounding 1860 were years of ferment. Movements, of various character, were coming into being, which were to exert a profound influence in years to come. A common feature of these movements was that they often made a direct challenge to the Christian faith, and to the integrity of the Word of God. In the intellectual field there was an intense interest in the problems of natural science—a spirit of enquiry was abroad. Not that there was anything subversive in that; but the new discoveries, and more, the new hypotheses and speculations in the field of science furnished a weapon ready to the hand of those who wished to discredit the Scriptures, of which they were not slow to take advantage. Other movements were delivering their assaults from outside the Christian community, but the advocates of the new intellectual movement found powerful allies within the Church itself, and thus seemed at the time the more dangerous. Indeed, it is largely due to the undermining of the Christian faith from within that the assaults from without have had their measure of success.

The Origin of Species made its appearance in 1859, and Lyell's *Antiquity of Man* in 1863—books which immediately led to much discussion, but it was a long time before their full significance could be appreciated, and it was not always in the ranks of the Church that they found their chief critics. What caused more concern to Christians was the attack which was being made upon the Scriptures by Bishop Colenso and others, as they laboured with tongue and pen to declare their disbelief in much that Christians held dear, much as another bishop is doing to-day, but Bishop Colenso had many more followers. He was certainly not backward in declaring his faith (or the lack of it)—" The elementary truths of geological science flatly contradict the accounts of the Creation and the Deluge," and, " I have done my best to secure that the simple facts revealed by modern science . . . shall not be kept back from the heathen with whom my lot has been cast in the district of Natal."

But the real storm broke in 1861, with the publication of a volume under the title *Essays and Reviews*. This volume contained seven essays of very uneven quality, but all tinged in a greater or less degree with what to-day we term " modernism." The first essay, *The Education of the World*, was from the pen of Dr. Frederick Temple, and the last, on *The Interpretation of Scripture*, by Dr. Benjamin Jowett, and it was probably to these two great names that the volume owed much of its success. These two essays however were comparatively moderate in tone, and Dr. Jowett, though saying some things with which most of us would doubtless differ, gave some very much-needed advice which is as valuable to day as it was then. But it was rather the contributions of two of the lesser lights that provoked the storm—*On the Study of the Evidences of Christianity*, by Professor Baden-Powell, and *The Mosaic Cosmogony*, by C. W. Goodwin.

The volume had an astonishing success, running through at least eight editions in the year in which it appeared. Reading it to-day, one is surprised that it should have caused such a stir; if it first saw the light in our time it would probably have provoked some discussion in the popular press, some criticism and protest from the religious journals, and then have been quietly forgotten. But in 1861 its effect was electric. It seemed as though men's minds were moving in that direction and the ground was prepared for it. It was symptomatic of the thought of the age and, in its turn, helped forward that thought in the direction in which it was already moving.

These attacks on the credibility of the Scriptures, culminating in *Essays and Reviews*, provoked a strong and healthy reaction, one of the fruits of which was the issue in 1871 of the *Speaker's Commentary*.

Another outcome was the Victoria Institute.

The Institute owes its existence mainly, if not almost entirely, to one man, whose name ought always to be held by us in high honour—James Reddie, who became its first Secretary. After his death, he was referred to as the " Founder " of the Institute. It was due to his energy, his untiring zeal, his power to secure the co-operation of other men of influence, that the Institute came into existence. It was James Reddie who drew up its constitution and laid down the principles that should govern its activities ; and it is upon the lines laid down so long ago that the Institute carries on its work to-day.

Of James Reddie himself little can be discovered. He was an honorary member of the Dialectical Society of Edinburgh University, and there is a hint that he had at one time held some public office. We can learn more from the work he left behind him—*si monumentum requiris, circumspice.* How any one man could have performed all he did was a marvel. Whilst responsible for all the work that normally pertains to the office of Secretary, he found time to contribute several Papers of merit to the Society ; he intervened constantly, and with effect, in the discussions ; and he acted as Editor of the Journal—a much larger task than it is to-day, when papers were not only more numerous, but much more lengthy, and the discussions, which were reported verbatim, seemed to have no time limit. He lived to see the Institute established firmly on its feet, and died rather suddenly of heart disease in the early part of 1871. His health had not been good for some time and he had retired from the active secretaryship on February 1st preceding, though he continued to act as Honorary Secretary jointly with his successor until his death. The last Paper he contributed to the Institute was read on June 6th, 1870, and he continued to occupy the Chair at the meetings from time to time, the last occasion being on March 20th, 1871. A fortnight later he was dead, and on April 3rd a Special Meeting of the Council passed a Resolution in the following terms :

" The Council desire to record its deep sense of the loss which the Institute has sustained in the death of its late Honorary Secretary, Mr. James Reddie, and at the same time to express

the great honour with which it feels sure his name will ever be associated in its annals, not only as the Founder of the Institute, but as one who, uniting many literary and scientific attainments with untiring energy and zeal, proved eminently successful in contributing to its popularity and prosperity."[1] The Annual Address for the year was delivered by the Rev. Prebendary W. J. Irons, D.D. (the tradition that this should invariably be delivered by the President is a comparatively modern innovation), and in this address he paid the following tribute to Mr. Reddie :

" I had known our friend at least half his life ; and I can surely say—nor ought I to withhold it here, though elsewhere the Press has rightly honoured him as a public servant of high mark—but I feel bound to say, that so much fearlessness in truth, so much scorn of artifice, and inborn abhorrence of wrong, so much purity, rectitude and confidence in God, I have rarely known, as in James Reddie."[2]

So much for the man ; now for his work. The thought of a Christian Philosophical Society came to him as no sudden flash. To quote again from Dr. Irons' Address : " I well remember how, with that clearness and originality which distinguished him, he urged to me in private, long before he pressed it on the public, the need there would certainly be of a philosophical union among all ' who name the Name of Christ,' our common Lord, to confront the devastating literature which, in new and various forms, ultimately denies that Name."

The birthday of the Institute has always been regarded as May 24th, 1865—the birthday of Queen Victoria. Not that the Institute came into existence on that day ; all that happened was the issue to the Press, and to certain persons individually, of a Circular[3] inviting those interested to come together to form such a Society. The objects of the proposed Institution were defined in the following terms :

" It will be the business of the new Philosophical Institution to recognise no human science as ' established,' but to examine philosophically and freely, all that has passed as science, or is put forward as science, by individuals or in other societies ; whilst its members, having accepted Christianity as the revealed truth of God, will defend that truth against all mere human theories by subjecting them to the most rigid tests and criticisms."

[1] *Trans. V.I.* vi, p. 201.
[2] *Ibid.*, p. 285.
[3] *Trans. V.I.* i, p. 30.

Such was the response to this Circular that already by June 4th a second Circular was sent out, with an invitation to a preliminary meeting to be held on June 16th to consult together as to the bases upon which the new Society should be founded. This meeting was presided over by the Earl of Shaftesbury. Certain resolutions were passed and referred to a small sub-committee, who reported on June 22nd. The Objects and Terms of Membership of the Society were agreed upon, and in July a further Circular was issued inviting applications for membership.

The next important step was the issue in September of a somewhat lengthy document by Mr. Reddie, entitled "Scientia Scientiarum,"[1] in which he set out the objects and principles of the Society *seriatim*. The title of the document is explained as follows: "The Science of Sciences, in fact, is the proper co-relation of all the various sciences into one grand and consistent philosophy, which will be the interpretation of the nature of things as ordained by the one true God; and it does not require to be argued that each science should at least be consistent with itself. True lovers of Science, and all lovers of Truth, must surely unite in one desire to harmonise the conflicting elements of human speculations; and the members of the Victoria Institute may reasonably hope, that when this is done it will be found, that the highest human wisdom will be in accordance with the Wisdom of the One God, Who has created all things very good."

This document is of importance, because it lays down in detail the principles by which the Institute has been governed throughout its existence. It is too long to quote in full, but far too important to dismiss with a brief notice.

After referring to the supposed contradictions of Religion and Science put forward in *Essays and Reviews*, and promulgated by Bishop Colenso and others, the author cites a "Declaration of Students of the Natural and Physical Sciences," signed by upwards of 700 gentlemen, the greater number being members of the learned professions and fellows of scientific societies, which shows that those who were engaged in the defence of the Scriptures against attacks made upon them in the name of Science could count on powerful support from the ranks of Science itself. This Declaration opens with the words: "We, the undersigned Students of the Natural Sciences, desire to

[1] Reproduced in *Trans. V.I.* i, p. 5ff

express our sincere regret, that researches into scientific truth are perverted by some in our own times into occasion for casting doubt upon the Truth and Authenticity of the Holy Scriptures. We conceive that it is impossible for the Word of God, as written in God's book of nature, and God's Word written in Holy Scripture, to contradict one another, however much they may appear to differ."[1]

Then, referring to the first "Object" as given in the Institute's Constitution, there is a footnote: "One or two gentlemen who have otherwise and generally approved of the objects of the Victoria Institute, and one at least who has joined it, consider that this "Object" is somewhat too negative in its scope. They would have preferred that the primary object of the Society should have been to show positively how scientific discoveries illustrate and corroborate the truths of Revelation. Of course, it by no means follows that this view may not yet prevail in the Society. But it should be kept in mind that the Victoria Institute, as a matter of fact, originated as a defence movement. The first work, therefore, it has set its members and associates, is the investigation of the alleged facts and so-called science which Dr. Colenso, Dr. Temple, and others have publicly declared to be in opposition to Scripture statements."[2]

The conflict was shown to be, not between Religion and Science as such, but between those who regarded the Scriptures as infallible and those who regarded Science as the ultimate basis of truth. It was a question of the mental attitude with which the problems were approached. "It is simply a fact that they do distrust science, and do not mistrust the Scriptures; and, therefore, they are in a manner bound to see whether their distrust of science can be fully justified or not. Besides, it can be a matter of little moment whether they expect to find one result or another, so that their investigations are really 'full and impartial,' as they profess they shall be. But some might fairly retort—in fact, the objection has been made—that the admitted preconceptions thus entertained may interfere with the impartiality of such investigations. The members of the Victoria Institute cannot, of course, dispute the probable truth of that general proposition. But they may claim it as an argument equally applicable to those who differ with them, and

[1] *Trans. V.I.* i, p. 6.
[2] *Ibid.*, p. 9.

on the other side assume that science is always right, and who are therefore ready, with the writers of the *Essays and Reviews*, or Dr. Colenso, or with sceptics generally, to set aside Scripture, or force upon it new 'interpretations'."[1]

Proceeding to deal with the second of the Society's "Objects," the author shows how difficult it was then, as now, to secure an impartial hearing for views contrary to those generally held. "If the arguments and disproofs even already put forward by individuals were brought together and well weighed, the public would be astonished to find how much there was to be said against the acceptance of what some persons boast of as scientific truth. And, it may be admitted, they tacitly allege that opinions and facts and arguments which happen to be against the predominant opinions of the leading scientific men, have scarcely a fair chance of a hearing in the existing scientific societies, and, at least, that they lose all influence as against theories which happen to have the sanction of some man, or men, of high scientific reputation."[2] Truly, things have not changed much in eighty-five years!

The author then goes on to show that attempts to reconcile Religion and Science had not always been particularly happy. "Very numerous attempts were made by Hugh Miller and other eminent writers, to reconcile the Scriptural statements with every fresh scientific discovery or supposed discovery in geology. But, unfortunately, in all these efforts, the 'science' of the day was always apparently adopted with too much readiness, as if *it* required no probable essential correction, while Scripture alone was constantly tampered with, in order to get it to mean something different from what its plain language had previously seemed to imply. 'Science,' it may be said, was allowed to pass uncriticised, while Scripture was ever being subjected to fresh and far-fetched interpretations. . . . It would really have been to the credit of scientific men if they had applied to 'science' somewhat of that vigilance to detect its possible errors, its contradictions, and fallacies, which has been freely enough and too exclusively exercised in our day upon the statements of the Scriptures, by those who have accepted without the least examination and with an almost absolute credulity, often at second hand, all that has been passing for science upon the authority of a few names of great scientific repute."[3]

---

[1] *Ibid.*, p. 9.
[2] *Ibid.*, p. 10.
[3] *Ibid.*, p. 23.

We then have the trenchant remark: "We have speculations enough and theories in addition, but they are rash and ill-considered, because the sciences have been too much separated, and the great majority have devoted their minds to the details of some narrow speciality."

We give one more quotation, referring to the third "Object": "(This) Object assumes, no doubt, a fundamental principle—the existence of the all-wise God. It therefore precludes the advocacy of atheistic theories in the Society. . . . It does so, simply because its members and associates, as indeed the great mass of the scientific and unscientific, of the literate and illiterate alike, in this country, have no manner of doubt whatever of the truth so assumed. . . . That constitutes a major proposition, which must necessarily override and *ipso facto* overthrow all opposite and conflicting hypotheses. To teach that truth, and establish it, pertains to the ministers of religion, and, therefore, it is excluded as a question to be investigated, from the objects of the Victoria Institute. So are all purely religious or theological propositions. Science, in all its branches and ramifications, is what the Society will be properly occupied with."[1]

What Mr. Reddie had said in *Scientia Scientiarum* was stressed again by the Rev. Walter Mitchell, M.A., the first Chairman of the Council, in his Inaugural Address to the Society:[2] "As Christians, as honest believers in the Bible as a record of revealed truth, we know that, in the history both of modern philosophy and modern science, avowed Christians have taken no mean or insignificant place. I will go further, and say, that Christians have held the highest place as discoverers of the laws of nature, interpreters of the phenomena of nature, and careful and honest observers of those facts upon which science is based. We have derived our faith in revealed religion neither from cold philosophical thought nor from the feeble deductions of science, but from the highest source of all truth—the revelation of God to mankind. We regard this faith as His gift, the gift of the Spirit of Truth; and, when we know how distinguished Christians, who have held and do hold this faith, have been in the paths of philosophy and science, we ask why we should not investigate the pretensions of modern philosophers

[1] *Ibid.*, p. 26.

[2] *Ibid.*, p. 47. Mr. Mitchell was one of the three original Vice-Presidents of the Institute. The others were Charles Henry Burnett, M.D., and Philip Henry Gosse, F.R.S.

and modern professors of science when they call upon us, as lovers of truth, to abandon our faith. We believe that our honest investigation of these objections will tend to strengthen the faith of those who have not the time or do not possess the necessary scientific education to investigate such questions for themselves.

"If asked why the Victoria Institute should be founded for such investigations I think I could give a very sufficient answer from my own experience. I know no other society or institution where such subjects could be discussed.

A purely theological society would not feel competent to entertain the scientific side of the discussion. A purely scientific society would repudiate the theological aspect."

This last point was again referred to at the first Ordinary Meeting of the Society, when Mr. Reddie remarked: "It had been a matter of much anxiety to those who originated this Society, to have it clearly defined what we were going to do, and what we were not going to do; and it may be considered as settled, that we ought not to enter upon what are strictly questions of scriptural exegesis. Such were rather matters for theologians, and not subjects for discussion at these meetings."[1] But Mr. Mitchell, who was in the Chair, qualified this: "The question of exegesis. I do not see how we can exclude it from our discussions. We have not only to determine whether an objection is really scientific; but if so, whether it is contrary to a fair interpretation of the Word of God."

These extracts make clear what was the boundary of the territory the new Society was proposing to occupy: what it was proposing to do, and what it was proposing not to do. In the forefront of its "Objects" was the scrutiny of all claims put forward in the name of Science, in order to determine what was truly science and what was not; and it was hoped by this means to put some curb on those who indulged in wild and fanciful speculations, through the knowledge that such speculations would not be allowed to pass without challenge. It was also hoped to make known the results of its deliberations, so as to remove the misconceptions in the minds of the public, who were not in a position themselves to assess the value of what was set before them, and were thus liable, as they still are, to take at face value anything put before them in the name of Science.

[1] *Trans. V.I.* i. p. 103.

A further expectation was, that by associating together workers in different fields, something might be done to correct the divergencies that arose from working in too water-tight compartments, and to co-ordinate the views of " Science " into one harmonious whole.

The Institute, when first formed, was in a fairly strong position. It was able to attract to its ranks many men of sufficient eminence in their respective fields to command respectful attention. Even in those days it was difficult for views contrary to those most generally held, or held by persons of repute, to find expression in the scientific societies; but the channels of communication were not so completely blocked as they are in our own day. In other words, the Institute was able in some degree at least to make its influence felt and its voice heard.

It enjoyed another advantage, in that it had a virgin field to cultivate. Any subject with which it chose to deal was fresh. It had not been exhausted by being worked over continuously. It was not difficult to find themes for discussion, and persons competent to deal with them—and most generally, within the ranks of the Society itself.

The first Paper presented to the Society at an Ordinary Meeting was a survey of the field to be covered, by George Warington, Esq., F.C.S., under the title, " A Sketch of the Existing Relations between Scripture and Science." This Paper briefly summarised the objections raised to the Scripture, and the lines of defence adopted. The objections were listed as being: " First—It is scientifically inaccurate. Second—It is historically untrue. Third—It is philosophically incredible. Fourth—It is theologically erroneous." An important point brought out in this paper was that, too often, the defence of the Scriptures is weakened by the differing and inconsistent arguments used in its support.

In order to arrive at a correct understanding of the endeavours and achievements of our predecessors, we need to try to form some picture in our mind of the intellectual atmosphere of the time. To do this, we can find a good starting point in Dr. Temple's opening essay in *Essays and Reviews*, on " The Education of the World." In this essay, Dr. Temple divided the history of the world into three periods, of childhood, youth and manhood, characterised respectively by the dominance of law, example and principle—or reason. Of course, he regarded his

own age as having arrived at the last stage, that of manhood. As we read these essays to-day, however, the predominant impression they create in the mind is of adolescence. There is a youthful cocksureness, the assertion of a superior wisdom, a haste to formulate final conclusions before there has been time to accumulate the facts, or to sift the facts when accumulated—an "Athenian" love of "telling, or hearing, some new thing."

There were other tendencies, too—the proclamation of philosophical dogmas as criteria of truth, of which Professor Baden Powell affords an example. There was the dogma of the "chain of endless causation," according to which, in the words of Scripture, "all things continue as they were from the beginning of the creation"—if indeed there were any creation. How far these antecedent hypotheses could be carried can be shown by some of Professor Powell's statements in *Essays and Reviews*: "those *antecedent* considerations which must govern our entire view of the subject, and which, being dependent on higher laws of belief, must be paramount to all *attestation*, or rather belong to a province distinct from it"[1]—he even goes so far as to say: "An event may be so incredible intrinsically as to set aside any degree of testimony";[2] and, "Testimony can avail nothing against reason."[3]

It will be seen, therefore, as we have already remarked, that it was not merely argument with which the Institute was confronted but rather a whole attitude of mind.

When we turn to science, we find that scientific thought was in a state of flux. The earlier volumes of the *Transactions* of the Institute contain evidence enough of this, sometimes in the Papers contributed to it, sometimes in references to views promulgated elsewhere. Speculation was forever overrunning observation. Theories were being propounded, dropped, and after a time taken up again, till one wonders how anything so variable could have been made the test of the truth of anything else. There is frequent reference to the abandonment, or supposed abandonment, of the Nebular hypothesis and the plutonic theory, which seemed to be regarded as a great triumph for the cause of truth. Even the theory of gravitation could be called in question.[4]

---

[1] *Essays and Reviews*, p. 107.
[2] *Ibid.*, p. 106.
[3] *Ibid.*, p. 144.
[4] See *Trans. V.I.* ii, p. 376.

The early discussions show how very difficult it is to be really objective in our thinking; how much more prone we are than we commonly realise to believe what we want to believe, and reject what we do not want to believe. There was a definite tendency to welcome any scientific theory or doctrine which *seemed* to fit in with what the Scriptures were understood to teach, just as those on the other side were apt to welcome theories with an opposite tendency. So the discovery in the Lower Laurentian rocks of the formation known as Eozoon Canadense, whose organic origin never seems to have been doubted, was hailed with delight, as disproving for ever the existence of an azoic age—this because it seemed to make it easier to accept the Mosaic account of the Creation.

It was undoubtedly a source of weakness that science was not so highly specialised as it now is, so that anyone with a smattering of knowledge could consider himself competent to judge of scientific issues. On the other hand it did mean that men were able to cultivate interests wider than their own to a degree that is hardly possible in our day. And so we have it that a Paper might be contributed on the origin of speech by a professor of mathematics, or on geology by a professor of theology.

It is strange that so strong an objection should be felt against the theory of the igneous origin of the primary rocks—any theory seemed to be preferred to this. In one of the earliest Papers read before the Society, Evan Hopkins, C.E., F.G.S., a mining engineer, who had done some exploration in the Andes, contended that granite was formed by crystallisation out of an aqueous solution—else, where did the water of crystallisation come from? The objection raised by a chemist that there was not enough water in existence to hold the ingredients in saturated solution was waved aside quite unceremoniously. On another occasion granite was spoken of as a metamorphosed sedimentary rock, "converted into its present state probably by the enormous pressure exerted on this globe, and by the transformations which are continually going on by crystallisation."[1] Another author, willing to believe anything but that heat could be the agent, asked why electricity might not have been the cause.[2]

Even Mr. Reddie himself hazarded the suggestion that the whole of the chalk formation might have been laid down in a

[1] *Trans. V.I.* iv, p. 151.
[2] *Ibid.*, i, p. 367.

century or two. He based his calculation on the possible rate of increase of foraminifera by geometrical progression.

The height of absurdity was reached in another paper by Mr. Hopkins, when he sought to explain the existence of tropical fauna and flora in temperate and sub-arctic regions by means of a theory that the land masses of the earth were continually shifting northward, or rather north-westward, at an angle of 23° 30″ to the equator (approximately the angle of the Ecliptic), the northerly movement being at a rate of no less than 20″, or three furlongs per *annum*. Mr. Hopkins was of course faced with the question of what became of the masses as they approached the pole, but he was equal to that too. They must be absorbed somehow, to re-appear later (possibly by means of some electro-magnetic action) in the southern regions and start their northward journey again. "The oceans and the lands emerging from the Antarctic Pole, merge again into the Arctic Pole, and thus circulate from pole to pole through the medium of the earth's axis."

It might have been thought that this kind of absurdity would have discredited the Institute altogether, but this does not seem to have happened; perhaps because it was by no means confined to the Institute. It is easy to cite instances. Here, for example, is a quotation from a Blue Book: "Poisson, in his *Treatise on Heat*, assumed the excessive cold of space has a condensing effect on air, causing it to become viscous; and a very eminent mathematician (Sir John Lubbock) lately wrote to me, saying that he inclined to a similar view, if not to a belief in its actual *congelation*."[1]

Then there is the spectacle of the Anthropological Society "gravely discussing a theory of one of its leading members" (Rev. Dunbar Heath). This theory supposed that the original inhabitants of Europe were mutes, who learned to speak from some Aryans who appeared amongst them, but, either through failure to apprehend the sounds correctly, or by perversity, altered the sounds—hence Grimm's Law. So, says Mr. Heath: "Let some better theory than my own be propounded. At present there seems none other which professes to account for Grimm's Law."[2] (We have not space to quote Mr. Heath on the rationalisation of emotion in guinea pigs.)

Thus, if some of our early members were guilty of absurdity at

[1] *Ibid.*, i, p. 105.
[2] *Ibid.*, ii. pp. 193ff.

times, they were in good company. And after all, is it so much more absurd than Darwin's speculation on the origin of the eye, or Dr. Broom's guess, more recently, to which Mr. Dewar has drawn our attention[1]—a guess which has since been endorsed by Professor Haldane[2]—as to how the bones of the reptile jaw became transformed into the bones of the ear, etc., of the mammal ?

We may add also, that the examples we have quoted are not typical, and the standard of most of the papers read before the Society was of a high order. After the first year or so, the Society had really found its feet.

How uncritical men could be in matters of science can be illustrated by a Paper on the origin of speech, by Professor J. R. Young,[3] in which he propounded the questions : " First—*Could* man, placed speechless upon earth, without any external aid, have invented articulate language ? Second—*Would* he, of himself, have originated and elaborated speech, even if he could ? " Unfortunately, the Professor based his main argument on the reluctance of deaf persons to talk, quite overlooking that he was importing a whole series of irrelevant considerations that vitiated his argument. One of the members (Mr. George Warington) was quick to point this out, but the point seems to have been largely lost on the rest of the audience. Uncritical as the early members could be in matters of science, a dialectical point would be taken unerringly. This seems to indicate a difference between the education and mental training of their day and ours.

In spite of all that has been said, the Society did try as best it could to preserve an impartiality of outlook and an objective philosophical attitude towards the questions that came before it. It was quite prepared to hear the other side, if only it might be allowed to discuss freely what was put before it. As is stated in the preface to the fourth volume of the *Transactions* : " There has been nothing of that stagnant uniformity of opinion which some persons dreaded would characterise our proceedings, or render discussion almost impossible ; and it should be kept in mind, that the fulness of the reports of our discussions, which is one of the distinctive features of the Victoria Institute, enables the Council to accept of Papers with the conclusions of which

[1] *Ibid.*, lxxiv, p. 51.
[2] *Is Evolution a Myth ?* p. 35.
[3] *Trans. V.I.* i, p. 231ff.

they may not in the least agree, mainly in order that they may be fully, fairly and openly criticised."

But the Institute was still somewhat suspect in outside quarters. An interesting incident occurred in 1867, when Thomas Huxley addressed a meeting of clergy at Sion College on "the difference supposed to exist between scientific and clerical opinion." Mr. Reddie, who was present, invited him to repeat his observations before the Victoria Institute. In reporting how he declined to do so, Mr. Reddie remarked: "Professor Huxley said he thought it would be inconsistent with his dignity to appear before what he called 'the tribunal' of the Victoria Institute. In inviting him to come here, no idea of any tribunal ever entered my mind, except that of the reading and intelligent public."[1]

This incident, and its sequel, illustrates also another characteristic of the Institute while in the vigour of its youth—its watchfulness and energy in striving to meet any new attack, and to meet it promptly. For though the syllabus for the forthcoming session had already been drawn up, an extra meeting was arranged at which Mr. Reddie gave a Paper in reply to Professor Huxley's arguments.

This account would perhaps not be complete unless something were to be said about the meetings of the Society in its early years. These meetings must have occupied a much longer time than is practicable now—perhaps members did not have to disperse over such wide distances—and frequent reference is made to the late hour of adjournment. Men had large appetites for discussion, and evidently more leisure than we enjoy. The Papers themselves were often (though by no means always) of much greater length than those to which we are accustomed. Sometimes, but again not always, they were inflated by a certain prolixity of language, especially in the introduction. The second volume of the *Transactions*, for example, contains some Papers which are quite short, but also a Paper "On the Relation of Metaphysical and Physical Science to the Christian Doctrine of Prayer," by Professor John Kirk, extending to nearly 59 pages; another, by Mr. Reddie, on Geological Chronology, of 38 pages; and a highly mathematical Paper on crystallography by the Vice-President, Rev. Walter Mitchell, of no less than 68 pages. The discussions were equally lengthy, and it was not

[1] *Trans. V.I.* ii, p. 335.

so very uncommon for a discussion which was not complete at one meeting to be continued on another occasion. A topic was not left, in fact, till it had been thoroughly discussed to exhaustion. There was also the cut and thrust of debate, and the chairman had a by no means passive rôle.

Conclusion.

The foundations of the Institute were well and truly laid, and the original principles have stood the test of time. But other things have changed greatly in the course of the years, and our task is to find how these basic principles can best be applied to the problems of the twentieth century, as they were to those of the nineteenth.

The battleground has largely shifted, though the battle goes on. The contents of the first volume of the *Transactions*, which are given in an addendum to this Paper, will show the kind of question that mainly occupied the attention of the Institute when it was first formed. In the eighteen sixties the issues were mostly simple and clear cut, and they ranged for the most part over a comparatively limited field. There were, firstly, those questions that were related to geology and the kindred sciences: the Mosaic cosmogony, the Flood, and the antiquity of the human race: whether man was made in the image of God, or whether he has risen to his present estate from primitive barbarism. Then there was the question of miracle in all its bearings: its credibility, its purpose and the philosophy of miracle. And so we have an interesting survey of geological history, ranging from Herodotus and Pliny, through the sixteenth and seventeenth centuries down to our own day, by Professor Kirk (though the author does put forward some strange notions); two or three Papers on the origin of man, and papers on the general relations between religion and science.

There were two striking and significant omissions. First, the higher critical theories regarding the origin of the Scriptures: these came into prominence at a somewhat later date. And secondly, Darwinism. This second omission was speedily rectified, for in the second volume there were two Papers dealing with Darwinism, not as to whether it was true, but as to whether it was credible, the protagonists being Mr. George Warington, for the credibility, and on the other side, Mr. Reddie. These two Papers occupied two sessions, and a third session was devoted to a continuation of the discussion.

To-day, in the twentieth century, the field to be covered is immensely broader. The original questions that exercised the minds of the Institute have not ceased to exist, or interest, but they no longer hold the dominating position they did in the past. partly no doubt because there seems comparatively little fresh to say except occasionally to bring our knowledge up to date, but more because other problems have become more insistent. Perhaps also we may question whether these points have ceased to be the centre of attack because they have largely ceased to be defended ?

There has also been a change in the intellectual atmosphere since the eighteen sixties. Open attacks against the Christian faith are not much in fashion. The methods used are more subtle, and more difficult to meet. It is easy to answer the attacks, but by no means easy to make the answer heard. Then as regards science, it has become much more stabilised, and (except where the theory of evolution is concerned) much less inclined to be dogmatic. With every new discovery, there have opened up fresh vistas of discoveries still to come, and pride of achievement has been largely displaced by a humble recognition of how little we know as yet of all that is to be known. We have come to realise that there is no finality in our knowledge. And further, *a priori* philosophical assumptions, like those of Professor Baden Powell, are no longer allowed to stand in the way of the acceptance of evidence and the progress of investigation.

The Institute has had to adapt itself to the changing thought of the decades, and will doubtless do so again ; but its foundation principles still stand secure, and we may rest in confidence that the Victoria Institute will still have a function to fulfil, *ad majorem Dei gloriam.*

ADDENDUM I.

List of Papers included in the first volume of the *Transactions*.

1866	
June 4th ...	"A Sketch of the Existing Relations between Scripture and Science." By George Warington, F.C.S.
June 18th ...	"On the Difference between the Scope of Science and that of Revelation as Standards of Truth." By Charles Mountford Burnett, M.D.
July 2nd ...	"On Comparative Philology, with Reference to the Theories of Man's Origin." By Rev. Robinson Thornton, D.D.
July 16th ...	"On the Various Theories of Man's Past and Present Condition." By James Reddie, Esq.
November 19th	Address by Chairman (Rev. Walter Mitchell, M.A.), opening the Second Session.
	"On the Language of Gesticulation, and on the Origin of Speech." By Prof. J. R. Young.
December 3rd	"On Miracles: Their Compatibility with Philosophical Principles." By Rev. W. W. English, M.A.
	"Thoughts on Miracles." By Edward Burton Perry, Esq.
December 17th	"On the General Character of Geological Formations." By Evan Hopkins, Esq., C.E., F.G.S.
1867	
January 7th ...	"On the Past and Present Relations of Geological Science to the Sacred Scriptures." By Rev. John Kirk.
January 21st...	"On the Lessons Taught us by Geology in Regard to the Nature of God and the Position of Man." By Rev. James Brodie, M.A.
February 4th...	"On the Mutual Helpfulness of Theology and Natural Science." By John Hall Gladstone, Esq., Ph.D., F.R.S.
	"On Falling Stars and Meteorites." By Rev. Walter Mitchell, M.A.

ADDENDUM II.

EXTRACT FROM FIRST ANNUAL REPORT (MAY 1867)

Taking the numbers upon the Foundation Lists, the total assets for the year ending December 31st, 1866, amount to £959 14*s.* 0*d.* . . . For the present year (1867), taking the annual subscribers standing upon the lists on 1st May (and omitting . . . possible withdrawals), the assets will be as follows :—

		£	*s.*	*d.*
219	Foundation Members, at £2 2*s.*	459	18	0
3	Members at £2 2*s.*	6	6	0
	Do., Entrance Fees	3	3	0
15	First Class Associates	31	10	0
28	2nd Class Associates	29	8	0
265		£530	5	0
18	Vice-patrons, Life Members, and Life Associates			
283	Total			

This income is quite sufficient to meet the expenditure of the Institute, so far as the Council can yet venture to endeavour to carry out its Objects. Convenient apartments as offices, and for holding the meetings of the Society, have been secured, on moderate terms, from the Architectural Union Institute ; and the primary objects of the Society have been already successfully advanced by the various papers read and discussed at the ordinary meetings of the Institute. But it must be obvious that before Objects 6 and 7 can be hoped to be undertaken or realised, there must be a large accession of numbers and an increase of the funds of the Society, and that thoroughly qualified paid officers must be employed to aid in carrying out these objects to the full extent contemplated. At present there is only one paid officer of the Society, Mr. C. H. H. Stewart, who is engaged as clerk at a moderate salary.

FIRST ANNUAL BALANCE SHEET FROM 24TH MAY, 1865 TO 31ST DECEMBER, 1866.

RECEIPTS.

	£	s.	d.
1 Vice Patron and Life Member	63	0	0
9 Life Members at £21 each	189	0	0
187 Annual Members at £2 2s. each	392	14	0
11 Associates (1st Class) at £2 2s. each annually	23	2	0
3 Life Associates (2nd Class) at £10 10s. each	31	10	0
22 Associates (2nd Class) at £1 1s. each annually	23	2	0
1 Ditto Subscription for 1867	1	1	0
A Subscriber (per J. J. Lidgett, Esq.)	1	1	0
Journals sold at Office	0	10	0
	£725	0	0
Balance in the Bank	46	0	8
Subscriptions for 1866 *since paid* :—			
1 Vice Patron and Life Member	63	0	0
3 Life Members	63	0	0
13 Annual Members	27	6	0
1 Associate (2nd Class)....	1	1	0
Carried forward	£200	7	8

EXPENDITURE.

	£	s.	d.
To Wyman and Sons, for Printing	170	18	0
,, Warrington, for Printing	12	11	8
,, Ortner and Houle, for Engraving	9	15	11
,, Hardwicke, for Scientia Scientiarum	26	2	8
,, Salary of late Assistant Secretary (6 months)	50	0	0
,, Salary of present Clerk (6 months)	26	0	0
,, Giles, for Reporting Meetings from June 4 to July 5	10	10	0
,, *London Mirror*	4	3	0
,, Chas. Tenpenny, for Rent, at St. Martin's Hall	10	10	0
,, Mr. Humphries, for Rent, at 32, Sackville Street	5	0	0
,, Lloyd, for Furnishing Office, 9, Conduit Street	19	0	6
,, Postages, for Journals, etc.	30	12	5
,, Advertising	14	7	6
,, Disbursements made by Clerk for Office Expenses, such as fuel, paper, etc.	15	13	7
,, Hire of Piano and two Singers at Dinner	3	3	0
,, Dinner Tickets to Editors and Musicians	13	13	0
,, Mrs. Wilkins, for Refreshments at Meetings, etc.	4	10	7
,, Invested in New Three per Cent. Annuities	251	10	0
,, In hands of Treasurer	0	10	0
,, Balance in Petty Cashbox	0	7	6
,, Balance at Bank	46	0	8
	£725	0	0
Brought forward	200	7	8
Subscriptions for 1866 *still due* :—			
1 Life Member	21	0	0
27 Annual Members	56	14	0
1 Associate (1st Class)	2	2	0
1 Associate (2nd Class)....	1	1	0
	£281	4	8

Examined and found correct, J. J. LIDGETT, W. VANNER } *Auditors.*

Discussion.

Dr. E. White (Chairman) said: We are indebted to Mr. Titterington for his interesting paper, and for the pains he has taken in digging out and searching old records.

It is important that we should continually keep before us the circumstances which led to the formation of the Victoria Institute, and the objects which the founders set before them as the goal of their attempted achievements. The Institute does not exist for the encouragement of metaphysical flights of fancy, nor is it to be used as a vehicle for the publication and propagation of freakish theories having no sound scientific or scriptural background.

The first and main object of the Society is "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 views of reconciling any apparent discrepancies between Christianity and Science."

Outward circumstances have altered, and scientific thought has undergone revolutionary changes since the middle of last century when the Society was founded, but the need for such work as our Society is attempting, has increased rather than diminished in the years which have intervened since its foundation.

As Mr. Titterington has reminded us, the grounds of attack upon the truth as revealed in the Bible have shifted, but the battle continues.

In the latter half of the last century there grew up a mechanistic theory of the Universe founded upon the theory of the Reign of Law. Men were overwhelmed by the immense discoveries pouring out from scientific laboratories and workshops of the great scientists of the Victorian age, and the theories put forward by men of science were deemed sufficient to explain all phenomena occurring in the world around us. God became unnecessary and superfluous. The theory of evolution was invoked to explain such diverse processes as the origin of the stellar universe, and the origin of the body and mind of men. Herbert Spencer wrote a system of philosophy in several volumes—a work rarely read or referred to in these days—in which he completely explained, at least to his own satisfaction, the whole history of the formation of the Universe, including the mind of man, founded upon the Evolutionary hypothesis. A few

general principles could explain everything. He represented, in his thinking, the mature fruit of materialism and blind force. He had solved the riddle of the universe.

The beginning of the twentieth century saw the advent of new discoveries which shook the older scientific theories to their foundations, and the far reaching consequences of which we cannot even dimly foretell. I refer especially to the discovery of radio-active substances by Madame Curie, and the discovery of the Quantum theory, which together have revolutionised physics; and the discoveries of Freud and his followers which have revolutionised psychology.

The onward march of scientific research, opening out entirely new lines of thought, and leading to the rejection of older theories, has led to a somewhat humbler and less dogmatic attitude on the part of our leading men of science. The old materialism of the nineteenth century has become discredited but, unfortunately, a new scepticism has arisen, which tends to reject not only outworn scientific theories, but also the ancient creeds by which men have lived. God and belief in immortality are said to be the illusions of the human mind. to be thrown aside on the rubbish heap of outworn superstitions. The old beliefs are discredited, and the old faith rejected, but nothing has emerged to supply the security which they brought. As a result, the men and women of this age are asking questions, seeking for some light to guide them to the spiritual home which they have forfeited.

All this is a challenge to the Victoria Institute and all that it stands for. We have an open door set before us, and it is for us to seize the opportunity with wisdom and courage, following with unfaltering footsteps the path set before us by the founders of the Institute.

The Rev. C. T. Cook said: The dominant impression left on my mind by the discussions which enlivened the transactions of the Victoria Institute during its earliest years is that the attacks on the divine authority and inspiration of the Scriptures, which seemed so formidable to our fathers 85 years ago, appear singularly weak to us. May we not derive encouragement from this fact? Surely the fallacies of unbelief to-day will appear even more foolish to a later generation than they do to us? We may conclude that the

tremendous progress made in all branches of science has not made belief in the Bible more difficult now than it appeared to be 85 years ago.

Mr. W. E. FILMER said: It would appear from Mr. Titterington's most interesting paper that the Victoria Institute has always had to contend with the problem of making known the results of its researches. In this connection a number of selected papers were reprinted before the war, and I should be interested to know whether this policy is to be resumed and, if so, whether copies of some of these papers could be sent free to college reading rooms at the Universities, where they would come to the notice of those most interested in them.

WRITTEN COMMUNICATIONS.

Mr. E. H. BETTS wrote: We are heartily grateful to Mr. Titterington for this opportune and salutary paper. Perhaps chiefly should we be appreciative of the thread of firm faith in God and His Revelation which runs through it as being, and as having been, the prime principle of the Victoria Institute from its inception. Reminders of this are not unneeded. We still suffer those who solemnly take it for granted that what is academically current is soundly established, that the deliveries of leading men of science are above criticism, and that, consequently, all that is needed on our part is to trim the sails of our faith to the ever-changing winds of scientific weather. To make such assumptions—and they are most often perfectly implicit—is to lower the flag—to sell the pass. We are glad of our esteemed secretary's firm stand.

Let it be made as clear as daylight that we believe in God as He has revealed Himself—so gloriously—in Christ, of which revelation we have in Holy Scripture the divinely inspired record. Let it be added that if, as a further thing, we also believe in science, it is as a method of investigation and not as an authoritative oracle whose pronouncements put a term to all questionings. Scores of believer-scientists, not a few of whom have been men of great distinction, have testified that not one single *real discovery* of science is out of harmony with an intelligent belief in and understanding of the Scriptures reverently and accurately studied. They have found them to be, indeed, the Scriptures of Truth.

It is when science fails to observe the canons of its own declared method or when it is unable to distinguish between the forms of its descriptions and the reality it attempts to describe, or further, when it vainly sets out to construct or reconstruct a philosophy of nature, that we must abandon it to the follies which will one day be surely manifest to all.

The classical misconstruction of the whole history of human thought has been Darwinism. For it has taken undeniable processes of variation which have been duly observed but strictly limited in their scope and it has paraded these as " proof " of processes which have never been observed, which are purely hypothetical and which are put forward as unlimited in their action. To such fictions of the human fancy it has dared to attribute the whole difference between unicellular organisms and man with all his intellectual powers and moral responsibility. This is not science. Yet it is being broadcast as truth for the attention of innocent childhood.

Mr. T. FITZGERALD wrote : I heartily welcome this paper, as I have on several occasions throughout my years of membership urged the necessity of proclaiming the objects of the Institute and of making known the valuable contribution it has made to the reconciling of apparent discrepancies between Christianity and science. The stand taken has been that, " *revealed* truth and *discovered* truth either agree, or at least run parallel, in their never opposing course."

When the Victoria Institute was founded it was stated that " we are suffering from the consequences of a culpable stagnation of thought or from having failed to investigate fully and fairly but rigidly all the facts and arguments from time to time put forth as truths newly discovered by science and as being contradictory to the Scriptures.

" It is in order that this may be done thoroughly that the institution of a new Society for this express purpose is proposed. . . . There is no existing scientific body that fulfils these ends. At the present time the only thing almost that is considered a fair subject for question and free opposition from every quarter, in all such societies, is Revealed Truth. There is by no means an equal freedom allowed in questioning what is called ' Established Science.' "

Is not the position very very much the same in our day ? This

surely constitutes an urgent call for renewed effort to extend the operations of this Society.

I would urge that the Fifth Object should be emphasised: "When subjects have been fully discussed, to make the results known by means of lectures of a more popular kind." The Institute has largely failed in carrying out this object. A very successful attempt was made in the year 1910 (*see* Vol. XLIII of the Transactions) when country and suburban meetings were held in Upper Norwood, Barnet, East Croydon and Wimbledon. Several additions to membership resulted.

I can look back to over 35 years' association with the Institute (there are two others now living who joined the Society in the same year as myself, and seven living who joined before me) and I cannot recall any such effort as that which took place in 1910.

Mr. DOUGLAS DEWAR wrote: Mr. Titterington's very interesting paper stimulated me to take a look at the oldest volume of the V.I. Transactions (Vol. XVII, 1883–4) in my possession. From it I find that in that year the Institute had 373 members and 529 associates, total 902. The members were apparently a learned company. They included 5 English bishops, 1 Scottish, 1 Irish and 10 Colonial bishops (including Madras), to say nothing of 5 canons. Four members were fellows of Cambridge colleges, three were professors, one of these being Wace and another the Regius Professor of Divinity at Oxford. The members also included 2 dukes, 3 earls and 2 barons, and 4 M.P.'s. Among the Vice-Presidents were the well-known doctor, Sir Joseph Phayrer, and the famous Philip Gosse; and two of the foreign correspondents were Louis Pasteur, of Paris, and Sir J. William Dawson, Principal and Vice-Chancellor of McGill University, Montreal.

From this volume I learned that among the early readers of papers or addresses to the Institute were the afore-named Phayrer and Dawson, and Lord Kelvin, Sir Richard Temple, Bart., Sir Lionel S. Beale; the Assyriologist, T. G. Pinches; Monier Williams, Professor of Sanskrit; and the archæologists, Naville, Budge and Maspero; Tristram the biologist; and the geologists Dawson, Hughes, James Geikie, Sir J. Prestwich and E. Hull. Also the zoologists, Philip Gosse (mentioned above), H. A. Nicholson and H. W. Parker; and the botanists, Rev. G. Henslow and H. B.

Guppy. Then there is Sir G. G. Stokes, Professor of Mathematics at Cambridge, and President of the Royal Society. Among those who took part in the early discussions were the Duke of Argyll, Lord Halsbury, Lord Lister, Sir H. Howorth, Boyd Dawkins, H. Woodward and the German, Virchow.

Author's Reply.

There is little for me to say, except to thank those who have so kindly contributed to the discussion.

I think that Mr. Filmer's question is answered, at least in part by the fact that the Institute are now having an adequate number of reprints of current papers. It is unfortunate that many of the most interesting papers of recent years, for which enquiry is often made, are out of print, but it is hoped that this will be obviated in future.

Mr. Dewar's reference to Sir J. W. Dawson prompts me to say that the Institute possesses some unpublished manuscripts of his, which he presented to the Society, dealing with Biblical Chronology.

I ventured to include the second addendum to the paper because it seemed to me to convey in a concise form a mass of small detail, helping to fill out the picture of what the Institute was like in its beginning, which could not appropriately be included in the running text.

889TH ORDINARY GENERAL MEETING

HELD IN THE LECTURE HALL, NATIONAL SOCIETY FOR RELIGIOUS EDUCATION, 69, GREAT PETER STREET, S.W.1, ON MONDAY, 27TH FEBRUARY, 1950.

PRINCIPAL J. E. RICHARDSON, PH.D., B.ENG., M.I.E.E., A.M.I.MECH.E., IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed and signed.

The following elections were announced:—H. W. Osmond, Esq., B.A., Member; Principal G. A. Williams, Member; J. D. Harte, Esq., A.C.I.I. Associate, A. O. Billinghurst, Esq., Associate.

The CHAIRMAN then called on R. J. C. Harris, Esq., A.R.C.S., B.Sc., Ph.D., A.R.I.C., to read the Langhorne Orchard Prize Essay by Francis I. Andersen, Esq., B.Sc., entitled "The Modern Conception of the Universe and the Conception of God," in the absence of the author.

THE MODERN CONCEPTION OF THE UNIVERSE IN RELATION TO THE CONCEPTION OF GOD.

By FRANCIS I. ANDERSEN, Esq., B.Sc.

(The Langhorne Orchard Prize Essay, 1949)

"*Then go I, my foul-venting ignorance*
With scabby sapience plastered, aye forsooth!
Clap my wise foot-rule to the walls o' the world,
And vow—A goodly house, but something ancient,
And I can find no Master."

Francis Thompson—"An anthem of Earth."

SYNOPSIS.

An integrated conception of the universe is impossible because of the relativity of every approach that begins in the human mind. A consideration of origins suggests that the Universe was created but tells us nothing about the nature of the Creator. The apparent orderliness and beauty of the world strengthen this suggestion, but do not lead to God Himself. Similarly the uncertainty principle makes a rigid determinism less possible, but does not reinstate spiritual qualities. The many difficulties that persist in naturalistic theories, *e.g.*, in evolution, may be explained by reference to God, but do not prove His existence. Certain moral problems make it even more difficult to gain a detailed conception of God from contemplation of the Universe.

However, a conception of God gained independently from special revelation illuminates ideas concerning the natural Universe. It is not possible to create a Natural Theology in its own right.

Introduction.

SOME cry one thing, and some another. The assembly is confused. Some say this modern world is fast approaching inevitable oneness as economic, political and cultural relations interlock; but across it all, tearing the network down, displaying its inner weakness, go deep cleavages in the realms of thought. Basic disagreements and discontinuities create clanging disharmonies whenever men come to speak of meaning and purpose. In the presence of this Babel we can hardly say that there is such a thing as "the modern conception of the Universe." We need always to ask first: "Which particular conception do you have in mind?"

Apart from the persistence of tenacious primitive notions, there is always a wide gap between the conceptions of the pioneers, carving their way into new realms of thought, and the ideas of the average educated men who follow hard after them. But it is not just that they are scattered back along the track. The leaders themselves are not agreed on exactly where they are going.

It is the same with the idea of God. The notions conjured up by that word in the mind of the philosopher or the ordinary man may be—well—almost anything. And this diversity does not arise just because the truth of God is viewed from many angles, like the plan and elevation of buildings that do not look a bit alike; the many voices shouting at one another contain contradictions that we cannot pretend to reconcile by the use of that handy word "paradox."

So, to limit the scope of this essay, we shall attempt to appreciate the conceptions of the average well-informed person and to show their connection, if any, with the idea of God. We shall start along this path: first we shall look at the Universe outside us. What do men think of the Universe as a whole?[1] And then, since we cannot look at God, we must be content with the adventure of thought and ask, further, "What, then of God?" It may be that this road will fail us. Then we must go right back to where we first took the wrong turning, and start along that true road to God whose entrance is Faith and whose sign post is Revelation. Nor need we be surprised if we have fewer fellow travellers along this way, for it leads us past a manger to a Cross.

[1] Prof. Daniel Lamont has reminded us that the word "Universe" means, strictly, "the whole." (*Christ and the World of Thought*, 1935.)

The Universe as a Whole.

But let us try the well-worn track. At the very outset we meet a serious obstacle. Can we really engage in any meaningful reflexion on the Universe as a whole, " this soap-bubble, blown of emptiness " (Jeans) ? That is, using the tools of observation or science ? It is an impossible experiment. As Professor Lamont has so clearly said, " Science deals with relations between things within the Universe, but there is only one Universe and there is no other with which it is related. The scientific method of investigating relations between things is therefore inapplicable to the world as a whole."[1]

This limitation is not simply due to a present restriction of the extent to which the scientific method can be applied. Dr. F. Sherwood Taylor has stated this initial limitation : " Our observations do not tell us all about a thing ; and science does not utilise all our observations, not indeed more than a small constituent element of any of them."[2] However, some scientists hope to extend their techniques to cover everything. But even if they can, our present failure to see things whole is not just because their task is incomplete. Prof. John Macmurray has shown that the establishment of a strict and comprehensive science of psychology creates an interesting inner contradiction because science itself, as a part of human behaviour, becomes part of its own subject matter.[3] Yet Sir James Jeans has said, " The outstanding achievement of twentieth century physics . . . is the general recognition that we are not yet in contact with ultimate reality." His very use of the words " not yet " implies that the physicists are well on the track of " ultimate reality," whatever that may mean. The same delusion is entertained by Sir Arthur Keith, most optimistically : " We may entertain a lively hope that as our knowledge of the economy of the Universe grows in amount and precision science may make a closer and closer approach to the solution of the mystery of Final Purpose."[4]

The mere accumulation or even completion of the data will not bring us one whit nearer to what we please to call " reality."

Nor is this failure to be traced simply to the distorted anthropocentrism of all our reflexions. I am thinking here

[1] *The Anchorage of Life*, 1940, p. 10.
[2] *The Fourfold Vision*, 1945, p. 13.
[3] *The Boundaries of Science*, 1945.
[4] *Essays on Human Evolution*, 1946, p. 17.

of the technical consequences of relativity, not of the emotional appeals made to the insignificance of man. In this latter strain Jeans declaims, " Indeed our earth is so infinitesimal in comparison with the whole universe, we, the only thinking beings, so far as we know, in the whole of space, to all appearances so accidental, so far removed from the main scheme of the Universe, that it is a priori all too probable that any meaning that the Universe as a whole may have, would entirely transcend our terrestrial experience, and so be totally unintelligible to us. In this event we should have no foothold from which to start our exploration of the true meaning of the Universe." (*The Mysterious Universe.*) Stebbing justly criticises this " perverted " attempt " to reduce the reader to a humble frame of mind and to terrify him." (*Philosophy and the Physicists.*) But it is not this mock humility that prevents a man grasping the whole ; the sober fact is that we are each one shut up in the narrow confines of our own consciousness. An " observer " is an essential part of any modern theory. And even though rational communication between consciousnesses enables us to share our findings, and is the only thing that enables us to dream of making some kind of synthesis, we are still like the blind men who encountered an elephant. The final picture does not always hang together. " Limited as we are to knowledge of the physical world, and its points of contact with the background in isolated consciousnesses, we do not quite attain that thought of the unity of the whole which is essential to a complete theory." (Eddington, *Nature of the Physical World.*) However impressive the synthesis we achieve, the imposing genie we have called up can always be traced back to the flickering lamp of an individual mind. And beyond its finitude, Prof. Lamont seriously suggests that a further cause of our pathetic failure to grasp the whole of things is to be found in the moral perversity of the human will.

All this means that we are not yet over that first large obstacle. The trouble lies in the very limitations of the scientific method itself. The inevitable result of the relativity of the scientific method is that it never takes us beyond the relation " I—my world " to any genuine notion of THE world. And even if it could, the man who uses the inductive method is powerless when confronted by a solitary fact. This truth is not affected by Raven's criticism of the claim " that Science cannot deal with what is unique . . . . " The examples he mentions, the appear-

ance of a new nebula or the extinction of the last dinosaur, though unique, can be built into the body of knowledge because they HAVE relations with other facts. But the creation (or existence) of the Universe or, say, the resurrection of Christ are events which cannot be fitted into the generalisations of science, not even as special cases.[1]

The very attempt to create a synthesis is a daring adventure that usually heightens the sense of frustration. Those who grasp most are usually the ones who feel most baffled. " In the common denominator to which science reduces things, in the sequences where the resultants seem qualitatively different from their antecedents, in the origins from which science starts in its genealogies, there is mysteriousness. All our scientific experience is rounded with mysteriousness."[2] He is not an extraordinary genius but an extraordinary fool who claims to have reached a point of restful satisfaction,

" With wide eyes calm upon the whole of things."
(Francis Thompson, *An Anthem of Earth.*)

Yet, allowing a tentative synthesis without looking closely at the foundations, we cannot begin to relate this final picture of the world to the conception of God until we have given it some kind of meaning. The problem is made even more hopeless if we consider that we cannot explain the parts we know fairly well until we have got to the roots of the whole. " Science, because of its essential method, cannot probe the secret even of an object. If we knew a single object through and through, we should know the entire Universe through and through," writes Lamont.[3]

But however truly we recognise the influence that all these deficiencies will have on any tentative synthetic conception of the Universe, it still remains true that, imperfect and incomplete though they be, we grasp at them, and weave them into our beliefs (or disbeliefs). They colour, to some extent, our ideas of God, if we believe in Him, or provide fuel for our denials of Him, if we do not believe. Our further aim, then, is to look into these

[1] C. E. Raven, *Science, Religion and the Future*, 1943, p. 90.
[2] J. A. Thomson, *Introduction to Science*, Home University Library Ed., p. 207.
[3] Lamont, Ref. 3, p. 154. *Cf.* A. N. Whitehead, " Any local agitation shakes the whole Universe. The distant effects are minute, but they are there. The environment enters into the nature of each thing." *Modes of Thought*, 1938, p. 188.

activities, and to see how valid they are. We may, indeed, give them the appearance of more validity by saying that we discern certain principles in parts of the Universe which it is reasonable to suppose prevail throughout the whole. But that is all.

The discussion falls into two parts. Firstly, the notion that the explanation of things is to be found in their origins leads to a consideration of Cosmogony. Secondly we meditate on the orderliness of things. This leads to a glance at teleology, with a brief comment on determinism. In short, we are concerned first with the Past, then the Present state of the world.

The Past.

The Cosmological argument for the existence of God has always been popular with the ordinary man. He admits the cogency of the tracing backwards of causes (of which he has an intuitive notion because of his first-hand experience of the efficacy of the act of willing) until we reach the First Cause, which is identified with God. The ready-made objection, "If God made the Universe, who made God?" is often enough for him to keep his atheism alive when he wants to. J. W. N. Sullivan says, "There is nothing logically impossible in this conclusion (*i.e.*, creation) but it nevertheless seems to be utterly incredible." (*Limitations of Science.*) We are all on the horns of the dilemma of believing either in "eternal self-existent spirit" or "eternal self-existent matter." And we ought to say in fairness that for difficulty of conception by the human mind there is not much difference between them.

Yet it is of considerable comfort to many to say "Modern Science has proved Creation." Sir James Jeans' statement, "Everything points with overwhelming force to a definite event, or series of events, of creation at some time or times, not infinitely remote," has been quoted *ad nauseam*. But we must look at it more closely.

The old argument for creation—an argument used by Newton—was virtually an appeal to the Second Law of Thermodynamics.[1] Nowadays the basis is in the picture of the Expanding Universe, popularised by Eddington. His conclusion is that "the galaxies are almost unanimously running away from us." Actually the data consist chiefly of the observed shifts towards

[1] See *Hibbert Journal*, 1938–9, **37**, 425.

longer wavelengths of spectral lines emitted by the nebulæ. It is possible to interpret these data in several ways.[1]

Eddington has attributed the red shift to the operation of the Doppler principle on the motion of the nebulæ. From a knowledge of the shift, it is easy to calculate the velocity of recession, and the general result is that the brighter and nearer nebulæ are moving away most slowly, while the more numerous, dimmer ones are receding with greater speeds. If these velocities are constant, then it can be calculated that they began to expand from an infinitesimal volume about two thousand million years ago. " As t (time) is traced back to smaller and smaller values, the system shrinks in dimensions, in the experience of the observer concerned, and in the limit $t = 0$ it approximates to a point. We may say if we like that the complete contents of the system were created once and for a at $t = 0$."[2]

Now it is possible to introduce into Milne's system of kinematical relativity a mathematical transformation so that " the epoch of ' creation ' $t = 0$ on the kinematic scale is measured by $t = -\infty$ on the dynamical scale."[3] J. B. S. Haldane has seen in the replacement of $t = 0$ by $t = -\infty$ an escape from the evidence for creation. He eagerly writes : " If we adopt the dynamical time scale we find that the atoms are not expanding, nor is the universe . . . The spiral nebulæ are not flying apart, and there was no creation at any time in the past. Time stretches backward and forward for ever."[4] Instead of trying to weaken Haldane's specious case by emphasising the speculative nature of Milne's cosmology as R. E. D. Clark has done,[5] it is easy to show that Haldane is deliberately deceiving the uninitiated just by quoting what Milne himself says about the two time scales. " They constitute two distinct languages, . . . there are different (dynamical) scales corresponding to different values of the normalisation constant t_0; the (kinematical) scale is the absolute scale.[6] Or, in the words that immediately follow

---

[1] See, for instance, the survey by Guy C. Omer, *Astrophysical Journal*, 1949 **109**, 164, or Hubble, *Science*, 1942, **95**, 212.
[2] E. A. Milne, *Relativity, Gravitation and World Structure*, 1935, p. 134.
[3] E. A. Milne, *Proc. Roy. Soc.*, 1937, **158A**, 324.
[4] *The Marxist Philosophy and the Sciences*, 1938, p. 66.
[5] *Scientific Rationalism and Christian Faith*, 1945, p. 14.
[6] E. A. Milne, *Kinematic Relativity*, 1948, p. 224.

the earlier quotation, " This is simply a way of saying that an infinite number of a given type of dynamical event has occurred since ' creation'." " The epoch $t = 0$ is, in fact, dynamically inaccessible in time."

This latter feature of his theory Milne regards as a rational advance on the relativistic cosmologies of the Einstein, de Sitter type. These " fail because they involve a creation or annihilation of matter within the experience of the observer," whereas in his system the epoch of creation, when $t = 0$, " is not an epoch any observer can experience."[1] This point recurs in other recent theories,[2] in which it is explained why " physically, one may not speak of an initial time."[3] If this is valid, its relevance to our present discussion is that our hope of seeing God at work at $t = 0$ has not been realised. He has kept His secret.

This point of creation has been discussed at length to bring out several extremely important features of modern theories. Firstly, the final theory must be stated in terms of an observer. He cannot be eliminated. Secondly, the imposition of hypotheses on the data leads to diversities ot interpretation. To those already mentioned we must add Hoyle's quaint postulate of " continuous creation " ; matter is always coming into existence, and there was no beginning.[4] It is no use saying that the interpretation we do not like is " highly speculative." They all are. So we can sum up our glance at the Past by saying that there is a general feeling that the best descriptions give the Universe a definite starting point in time. Some go behind this to the action of a Creator. But we may fairly say that this is an extra hypothesis which we are not obliged to make. Indeed it is not customary to introduce a postulate of the supernatural at the many other points where our expanding fields of knowledge meet the unknown. A God who makes His appearance as a postulate possesses doubtful " reality." As the solution to a puzzle He becomes degraded to the role of servant to human speculation, a fancy easily discarded.

In very real contrast to any barren deistical construction, the Christian (already knowing much of God from other sources)

[1] E. A. Milne, *Relativity, Gravitation and World Structure*, 1935, p. 134.
[2] G. Gamow, *Nature*, 1948, **162**, 680, *Physical Review*, 1948, **74**, 505.
[3] R. A. Alpher and R. C. Herman, *Phys. Rev.*, 1949, **75**, 1089.
[4] For review and criticism, with references, see *Science and Religion*, 1949, **2**, 102.

can rightly see in this act of creation the hand of his Heavenly Father. He may fit these theories as a small piece into the almost completed jig-saw of his theology; but it would be hopeless to try to map out a full conception of God from just that small piece. Milne expresses this in fine words, "The physicist and cosmologist then need God only once, to ensure creation . . . For man as more than cosmologist, as more than biologist, as possessing mind, possibly endowed with an immortal soul, God is perhaps needed always."[1] Truly God is needed, not just for thought, but for life and salvation; but of this the cosmogonies tell us nothing.

The Present.

Turning now to what lies immediately about us, it has been argued that the world as everyone sees it bears the marks of its Maker's hands. The difficulties in the idea of "the present," revealed by relativity theory, and the sorting out of the subjective from the objective need not worry us here. We do see the world, and into our present experience come conceptions of order and beauty, of the fitness of things, and, sometimes, of the supernatural. And all these make us think of God.

The Bible itself states that the eternal power and Godhead of the Creator are understood by the things that are made. The whole of Romans 1 is relevant to our discussion, because it raises the questions of whether this knowledge of God is attainable by any person simply by contemplating nature, or whether faith is necessary, and whether this knowledge has any connection with a saving knowledge of God.[2] One of the difficulties is that so far as conceptions are concerned the knowledge of God so far as it is clarified in thought and expressed in intellectual propositions would appear the same in the minds of a believer and unbeliever. Unbelievers can read in works of Natural Theology things that believers have discovered only because of their faith, and most of them have their ideas coloured by some of the thoughts given originally in Special Revelation. Only "faith in the Mediator" can distinguish the genuine from the false, and places the Christian religion "in irreconcilable, unbridgeable, fatal opposition" to "the religion of general

---

[1] R. A. Alpher and R. C. Herman, *Phys. Rev.*, 1949, **75**, 140.

[2] An interesting, but not completely satisfying discussion is found by John Baillie in *Our Knowledge of God*, 1939.

revelation."[1] The argument of Romans seems to be that in point of fact men have no true knowledge of God because they have stifled the hints that nature gives them about God, and that they are altogether inexcusable because the hints were so plain. But even if the suggestions of nature were followed up, " This knowledge of God, which avails only to take away excuse, differs greatly from that which brings salvation " (Calvin on *Romans*); it can at best serve to drive a man to seek a more direct personal encounter with God Himself, which, in the situation of faith, means Revelation and salvation.

But what hints does the Universe give about God ?

The Uniformity of Nature.

It is generally recognised that before the scientist can do a single thing he must take it for granted that the Universe is going to behave itself. He assumes the uniformity of nature. This in itself is a great act of faith. It is reasonable enough, but it cannot be proved. Thus J. W. N. Sullivan says, " Science itself provides no ground, beyond the pragmatic one of success, for supposing that nature forms an orderly and coherent whole. Science, therefore, rests not upon a rational basis, but upon an act of faith."[2] The details of the orderliness discovered in the Universe are summed up in the " laws of nature," but often the hypotheses behind these laws are stretched to preserve the original principle of uniformity. Sullivan, who examines the concept of potential energy, suggests that the Law of Conservation of Energy is more correctly an article of faith. Using an interesting quotation from Preston's *Theory of Heat*, he shows how the ether was invested with the most fantastic properties in order to secure the non-violation of this law, properties which made experimental verifications impossible. (*Limitations of Science*, 1933, p. 248.) Exactly the same thing has occurred in modern theory in the concept of the neutrino. Its only claim to existence is that it would account for a little energy that disappears in some nuclear reactions. But now it has been invoked on a grand scale to explain some problems in stellar evolution.[3] Its properties, absence of charge and of rest mass,

[1] Emil Brunner, *The Mediator*, Eng. Trans., 1934, p. 40.

[2] *The Bases of Modern Science*, p. 4. There is an equivalent statement in A. N. Whitehead, *Science and the Modern World*, O.U.P., p. 20.

[3] Eg. by Gamow and Schoenberg, *Phys. Rev.*, 1941, **59**, 539. For review, see A. W. Stern, *Philosophy of Science*, 1941, **8**, 614.

make it difficult to carry out direct observations in confirmation. But in spite of what appear to be tricks, the orderliness of nature is not a projection of the scientist. It is really there.

When an explanation of this is sought, some people suggest that it is an expression of the mind of God. At the other extreme some say that is due to the reign of impersonal law, so supreme that miracles are impossible. The orderliness is a meaningless fact. It is true that if we postulate a personal God there is nothing impossible in regarding both the laws of nature and the occurrence of miracles as expressions of His will, and in no sense contradictory. That is satisfactory to a man of faith, but the orderliness itself does not prove such a God.

Let us see how far it was able to lead one scientist to a conception of God. In *The Mysterious Universe* Sir James Jeans tells us that " nature seems very conversant with the rules of pure mathematics," and then steps to the position, " the Universe seems to have been designed by a pure mathematician." Yet even if some are wooed and won by Jeans from this point to the position that " the Universe can be best pictured . . . as consisting of pure thought, the thought of what, for want of a wider word, we might describe as a mathematical thinker," and if the Christian apologist, in particular, is tempted to snatch this morsel gratefully, then they should heed Eddington's caution that " the crudest anthropomorphic image of a spiritual deity can scarcely be so wide of the truth as one conceived in terms of metrical equations," to say nothing of Stebbing's blunt comment : " The Physicist, in so far as he is concerned with physical science, cannot establish that there is a God—or a Devil—unless He is an entity of the kind studied by the physicist as such. If He is an entity of such a kind, then there is no reason at all to suppose that He is God the Comforter, and many reasons for supposing that He is not. If He is not an entity of such a kind, then no changes in physical theories can provide any reason at all for saying anything about Him " (*Philosophy and the Physicists*). This is the whole difficulty of linking the two categorically different concepts such as " the Universe " and " God," when we start from the lower. " Is it possible that by contemplating the consequences of something as they unfold themselves more and more one might by a simple inference from them produce another quality different from that contained in the assumption ? "[1] No ! It is not possible. Unless we begin with God,

[1] S. Kierkegaard, *Training in Christianity*, Trans. W. Lowrie, 1941, p. 30.

we shall never reach God. "The scientific method . . . is the worst of all methods to employ in thinking about God. Intellectually it is absurdity; religiously it is presumption."[1]

So even if we would like to pass through Jeans' inductions to Berkeley's Eternal Being in whose mind all objects exist, we need to remember that all such a deity needs to meet the case is the power of universal perception—nothing more. We are left with a barren deism. What a God! He is again the servant of human thought. The mathematician has created Him in his own image, and we must say of the product, with the logic of the prophet, "The workman made it; therefore it is not God" (Hos. viii, 6). If God is in any sense to be considered like Jeans' pure mathematician, then no Satan ever mocked the ignorant masses of men so cruelly as this deity, who discloses his secrets only to those rare minds who can grasp the mathematics of His toy, the Universe. He deserves Dean Inge's facetious enquiry, "How does one pray to a mathematical God? 'O x^n, have mercy upon us!'"[2] Eddington says more wisely: "The religious reader may well be content that I have not offered him a God revealed by the quantum theory."

But what does the mathematics mean? It is simply another way of saying that the Universe is orderly. The equations describe the phenomena, they sum up the scientists' generalisations in a quantitative description where the quantities involved are symbolised by mathematical signs. They "are meaningless unless they are fed with metrical quantities" (*i.e.*, pointer readings) (Eddington). Yet see how Jeans begins with the fair remark that "our efforts to interpret nature in terms of the concepts of pure mathematics have, so far, proved brilliantly successful," and then makes the strange claim that "the final truth about a phenomenon resides in the mathematical description of it"; leading to the absurd conclusion that the successful formula "expresses the ultimate reality" (though he virtually denies this later). That the equations are our own inventions and in no sense "ultimate reality" is shown by the frequent occurrence of a variety of concepts in connection with one set of data, ranging from the cosmos, as we have seen in the case of the red shift, to the quantum. In wave mechanics, "agreement with experiment is no proof of the validity of the particular postulates, neither does it imply that they have any

[1] Lamont, *Christ and the World of Thought*, 1935, p. 11.
[2] W. R. Inge, *The Fall of the Idols*, 1940, p. 40.

definite physical significance. It will be seen that the fundamental equation of quantum mechanics may be obtained on the basis of two entirely different sets of postulates."[1] Mathematically, of course, the postulates amount to the same thing. But they appear different, conceptually. However, it would be just as effective to write down the Schrödinger equation and forget the postulates, but it could not be called the ultimate reality.

Determinism.

On the other hand, an insistence on the orderliness of the Universe may ruin our conception of God. The reign of rigid laws with mathematical precision leads to a strict determinism. This enabled T. H. Huxley to say, " That the existing world lay potentially in the cosmic vapour ; and that a sufficient intelligence could, from a knowledge of the properties of the molecules of that vapour, have predicted, say, the state of the fauna of Britain in 1869." In particular, it was said that our consciousness of free will is an illusion, and the application of chemistry and physics to biology, and the study of genetics tended to strengthen this. Spirit disappeared. Then a growing knowledge of quantum phenomena lead to Heisenberg's Uncertainty Principle, a recognition that indeterminacy is a common feature of the world of quanta. While the over-all behaviour of a great number of particles is amenable to description in terms of laws of probability, in the case of, say, any individual electron, we cannot tell what it is going to do.

In this fact was seen a way of escape from the bondage of law. It was seized eagerly by those anxious to rehabilitate free will on the respectable basis of modern physics. For free will leads to a spirit in man, and thence to personality in his Creator. Indeterminacy leads to a breaking of iron law, and so to miracles and other exciting things. Or so it is supposed. Indeed it is amusing to see how rationalists, materialists and others, fearful of the use that theologians may make of this concept, go to the fantastic lengths of saying that " freedom," far from having any spiritual connotation, is simply a property of nature. The *naïve* say that the electron has free will ; the more subtle elaborate some kind of pan-psychism in which all matter is invested with mental qualities.

But the whole chain of inference seems hardly valid. It is a

[1] S. Glasstone, *Theoretical Chemistry*, 1941, p. 18.

colossal jump from the uncertainty of the behaviour of a quantum to all that is involved in the freedom of the human spirit. Choice and decision is not a matter of indefiniteness, an indefiniteness for which, given enough cases, we could discover probability laws ; it is free, yet purposive, directive, controlled, indeed determinate in the highest sense. " If human conduct is dependent on quantized changes, it would be even more unpredictable than it really is ! Such action would have no recognisable and intelligent cause whatever, and this is not what we mean by free will."[1]

Eddington has explained quite clearly that we can only connect the freedom of the electron with freedom of the will by the " possible though difficult hypothesis that very few atoms (or possibly only one atom) have this direct contact with the conscious decision." But this he regards as " too desperate a way of escape for us." If free will is just " tampering with the odds on atomic behaviour," yet requires interference with large numbers of atomic processes, we are faced with an improbability as difficult as the straight-out breaking of a law. " Determinism comes back with a vengeance, and we are substantially where we were before."

Freedom of the will is as much a fact as the freedom of an electron. There is no reason why the latter should be considered basic. Again this modern conception about the Universe fails to afford a safe foundation for any conception of God.

Teleology.

The perception of beauty and purpose in the Universe makes a more direct appeal to human feeling and thought than the more academic notion of uniformity. Harmony and design are discovered on every hand, and from them conceptions of God are often formed.

In many cases the beauty that thrills us is a result of the reign of law, as in the perfect symmetry of crystal forms. If William Paley had known what we do today about the structure of silicates he might have found in the stone he kicked while crossing a heath more material for Natural Theology than in the watch he preferred as his example. In a sense this falls under the preceding discussion of uniformity in nature. But it

[1] W. Sefriz, *Philosophy of Science*, 1943, **10**, 32.

is not, as Malisoff has imagined,[1] a complete explanation of its loveliness to show that the symmetry of form follows from chemical properties. The grace and charm are more than that, and the appreciation of it more than the analysis of the experience by chemists and psychologists.

" What heart could have thought you ?—
Past our devisal."

(Francis Thompson, *To a Snowflake.*)

is always the more genuine utterance of the human soul.

It is a sad fact that the transfer of the study of nature from the field to the laboratory seems to have stifled this utterance. In Charles Darwin this capacity for appreciation atrophied. He confessed in later life, " In my ' Journal ' I wrote that whilst standing in the midst of the grandeur of a Brazilian forest, ' it is not possible to give an adequate idea of the higher feelings of wonder, admiration, and devotion which fill and elevate the mind.' I well remember my conviction that there is more in man than the mere breath of his body. But now the grandest scenes would not cause any such convictions and feelings to rise in my mind. It may be truly said that I am like a man who has become colour-blind."[2a] In an autobiographical note, which, it is said,[3] was not intended for publication, he spoke of a " curious and lamentable loss of the higher æsthetic tastes," saying, " My mind seems to have become a kind of machine for grinding general laws out of large collections of facts."[2b] His close friend, George Romanes, also felt deeply " the appalling contrast between the hallowed glory of that creed which once was mine, and the lonely mystery of existence as now I find it . . . the universe to me has lost its soul of loveliness."[4] In the average scientific worker of today, the charm of nature has become a datum without meaning. H. S. Shelton says : " The snow peaks as islands in a sea of cloud which I once saw was perhaps the most moving sight I ever remember. Why I have not the least idea."[5]

Again we find that the conception of the Universe as beautiful remains unrelated to any conception of God in those minds in which the dark dogmas of naturalism are unrelieved by the

[1] W. M. Malisoff, in " Chemistry: Emergence Without Mystification," *Philosophy of Science*, 1941, 8, 39.

[2] (*a*) *The Life and Letters of Charles Darwin*, 1887, Vol. 1., p. 313. *Cf.* remarks on this incident by Romanes in Vol. III, p. 54, 55. (*b*) Vol. 1, p. 101.

[3] *Cf.* J. T. Hackett, *My Commonplace Book*, Unwin, 1919, p. 318.

[4] G. J. Romanes, *Thoughts on Religion*, Ed. Charles Gore, 1896, p. 28.

[5] Dewar and Shelton, *Is Evolution Proved ?*, 1947, p. 34.

light of faith. But from the vantage point of faith the admiration of nature becomes full of new and wonderful significance. But the mere contemplation of the universe cannot produce that faith.

But there is much apparent design in the Universe in which the operation of law seems to have been interfered with in some way to bring about a highly improbable set of circumstances suited to some special end. The existence of life on this planet is perhaps the most wonderful illustration. The appearance of life required that improbability be piled on top of improbability until we have the fantastically impossible.

Firstly, conditions suited to the occurrence of living things must be produced. This requires a simultaneous occurrence within narrow limits of a great number of highly variable factors. Any one of these factors alone, *e.g.*, the state of the atmosphere,[1] may depend on a great number of independent variables. Alfred Wallace discussed this matter fully, enumerating nine chief requirements, all of which occur suitably on the earth. Summing up with the words: "The combinations of causes which lead to this result are varied, and in several cases dependent on such exceptional peculiarities of physical constitution, that it seems in the highest degree improbable that they can all be found again combined either in the solar system or even in the stellar Universe."[2]

A second requirement is that elements should exist having a great number of highly specialised properties all absolutely indispensable for the existence of life. The study of living matter opens to us a world of incredible delicacy and beauty. "Life . . . becomes a chemical symphony based on the simple melodic line of water . . . As in great musical masterpieces only the initiated can fully appreciate the versatility and the amazing chemical beauty of this creation."[3] The particular dependence of life on the peculiar properties of carbon, hydrogen and oxygen was worked out in great detail by L. J. Henderson, "one of the most tough minded of biochemists" (Lewis Mumford), to the conclusion that, "There is, in truth, not one chance in countless millions of millions that the many unique properties of carbon, hydrogen, and oxygen . . . should simultaneously occur."[4]

[1] F. T. Farmer, "The Atmosphere, Its Design and Significance in Creation," *Trans. Vict. Inst.*, 1939, **71**, 38.
[2] A. R. Wallace, *Man's Place in the Universe*, 1907, p. 314.
[3] E. J. Witzemann, *Philosophy of Science*, 1943, **10**, 178.
[4] L. J. Henderson, *The Fitness of the Environment*, 1913, p. 276.

The whole subject has more recently been presented in a delightful popular form by R. E. D. Clark. "The Universe has something very odd about it. It is a gigantic freak . . . It seems to be designed for people like us."[1]

This conclusion is based on an argument from improbability.[2] Its force seems overwhelming. But, however powerfully its weight is felt, the argument may fairly be urged against it that, "One cannot make any judgment as to the probability, in the mathematical sense, in an event which has, to our knowledge, occurred only once, like our Universe. Granting that there is a Universe at all, it must have *some* properties, and there seems no sense in saying that the properties we actually find in it are less probable than any others it 'might have' had."[3] It seems that without enlightenment from Revelation, a scientist may recognise the tantalizing suggestions of all these wonderful facts, but remain agnostic as to why "the Universe in its very essence (is) biocentric" (Henderson). Henderson says, "For the answer to this question existing knowledge provides, I believe, no clue."

But even if everything is suitable for the existence of life, its appearance and development into the diversity and complexity we see requires such a continuous violation of the Second Law of Thermodynamics,[4] that to say it occurred "naturally" would require at best an improbability so astronomical as to be absurdly impossible.

As the examination passes higher through catalysts, with the delicacy of their function and the mystery of their origin, to hormones and the controlling functions, each stage is adding wonder to transcendent wonder, and with it, impossibility to transcendent impossibility. Indeed, "the probability of this occurring on the scale of complexity of processes known to be

---

[1] *The Universe and God*, 1939, p. 8; *The Universe: Plan or Accident?*, 1949.

[2] The opposite conclusion of Jeans that "It seems incredible that the Universe can have been designed primarily to produce life like our own; had it been so, surely we might have expected to find a better proportion between the magnitude of the machine and the amount of product" (*The Mysterious Universe*, p. 16), is based on a pointless argument from size, and is irrelevant.

[3] Prof. W. E. Agar, T. S. Hall Memorial Lecture, *Some Philosophical Problems of Biology*, delivered in the University of Melbourne, 7th Oct., 1949 (unpublished). This is similar to the difficulty met in the earlier discussion on "The Universe as a Whole."

[4] This has, I think, been conclusively proved by R. E. D. Clark, "Evolution and Entropy," *Trans. Vict. Inst.*, 1943, **75**, 49.

involved in the life of a higher organism is so remote, that only the facts of the situation could establish it as true."[1] It is no use saying that life is what it is *because* the elements have those properties, or that, in spite of the impossibility of a chemical synthesis of living material, there is " no escape from the conclusion that the capacity for the manifestation of life must be inherent in matter just as are its properties."[2] It is as meaningless to say atoms have life as to say that electrons have free will.

In spite of the persistence of naturalistic theories of evolution there seems to be a growing recognition of the fact that beyond all our analysis there is a " Wholeness of the living organism "[3] which is its main feature, and which ultimately admits of nothing short of a teleological explanation. There is an integration in the patterns of nature that all the Darwinism in the world can never explain, a multitude of beautiful wonders that speak of God. To pick one homely and relatively simple illustration. The Australian lyrebird builds a nest nicely suited to the shape of the mother and the size of the baby. The mother feeds the newly-hatched infant in the nest for about six weeks. But the nest is kept scrupulously clean, because when the baby is fed it turns round and delivers its dropping into the mother's mouth. The dropping is contained in a tough rubber-like gelatinous bag which facilitates transportation ! The mother disposes of it in a nearby creek, or buries it in the ground.[4] Here several independent acts and organs are geared into a wonderful pattern of behaviour. Now it is no explanation to label this " instinct." That tells us nothing. It is only a name. And it tells us little more to point out its " survival value," which cannot account for its production in the first place. Most of these behaviour patterns must be perfect to be of any use at all. To the man without imagination or faith, they remain a mystery without explanation.[5] Their charm is wasted on the unbelieving because " both their mind and their conscience are defiled " (Titus i, 15). But in the thoughts of the man with faith, all these things are related to rich conceptions of God.

---

[1] R. E. D. Clark, *The Universe and God,* 1939, p. 180.
[2] E. J. Hartung, *Chem. Eng. and Mining Review,* 1934, **26**, 173.
[3] W. E. Agar, *Philosophy of Science,* 1948, **15**, 179.
[4] *Wild Life,* 1949, **11**, 401.
[5] Dewar and Shelton, *Is Evolution Proved?* Ch. ix.

Difficulties.

There are additional problems that believers also meet. There are things in the Universe whose existence makes it hard to construct a consistent picture of God as the Creator of them all. They fall roughly under three headings : calamities, ugliness and imperfection, and positive evil.

Calamities. We may say that things like earthquakes and floods, which make a harmonious conception of the Universe difficult for some people, are a consequence of the same laws as usually call forth our admiration. It is true that the orderly operation of these laws does give an unchanging background which serves as a point of reference for the exercise of human freedom.[1]

Imperfection. Paley began his discussion of "Natural Theology" with an examination of the eye. "That conformity to optical principles which its internal constitution displays . . . amounts to a manifestation of intelligence having been exerted in the structure." Charles Darwin (*Origin of Species*) confessed that "the belief that an organ so perfect as the eye could have been formed by natural selection, is enough to stagger anyone," and "absurd in the highest degree." Consequently he so eagerly seized on supposed imperfections which would weaken any argument based on design, that he lost the power to see what was beautiful. He gladly incorporated in the sixth edition of *The Origin* a statement that Helmholz had made on the imperfection of the human eye.[2]

Since this reference is frequently made,[3] probably popularised by Darwin's use of it, it is interesting to look at Helmholz's original remarks, *in their context.* He said, "The eye has every possible defect . . . but they are all so counteracted, that the inexactness of the image which results from their presence very little exceeds . . . the limits which are set to the delicacy of sensation by the dimensions of the retinal cones."[4] Darwin's quotation is actually of little weight. The most up-to-date

---

[1] "If matter is to serve as a neutral field it must have a fixed nature of its own." C. S. Lewis, *The Problem of Pain*, 1940, p. 19.

[2] Yet in spite of this I doubt if Darwin deserves the full weight of the rather unkind *argumentum ad hominem* in R. E. D. Clark's *Darwin Before and After*, 1948, Chap. V.

[3] E g. by J. B. S. Haldane in *Science and the Supernatural*, 1935, p. 140. (*b*) p. 310.

[4] *Popular Lectures on Scientific Subjects*, by Hermann von Helmholz, translated by Atkinson, 1893, First Series, p. 201.

knowledge demonstrates the surpassing perfection of the eye.[1] And again it is found that for the necessary simultaneously favourable alterations to go on until the eye reaches perfection requires an improbability overwhelmingly impossible.[2]

Evil. If the objection based on imperfection is often superficial, there are truly evil things that constitute a genuine difficulty. To dismiss them lightly is to ignore facts and to do injustice to many a human soul. There is much less difficulty to Christian faith if the significance of the Fall as outlined in Genesis iii is fully appreciated. Lt.-Col. L. Merson Davies has recently made some valuable suggestions in this regard,[3] though it may not explain as much as he thinks. It is recognised that the evil and harmful things in nature (organisms and organs) display the same perfection of design as the good and useful. While J. B. S. Haldane says that "The obvious theory is that they are thought out by different gods,"[4] L. Merson Davies puts all the difficult things down to the Curse. This makes it very easy. But Palæontology gives facts that are hard to fit into the Eighteenth Century picture of the pre-fall world. "There were no tempestuous winds . . . there were no weeds, no useless plants . . . the spider was then as harmless as the fly," and so on.[5] The early scorpions and spiders and Mesozoic carnivores and many others refute this. Nor does Scripture allow "that we should find traces of similar curses . . . in very ancient strata,"[6] for it teaches that "through one man sin entered into the world, and death through sin" (Rom. v, 12), and that the ground[7] was cursed "for his sake."[8] But in spite of the difficulties we must note that the only suggestions of an explanation come not from reflection, but from Revelation.

---

[1] Prof. Frank Allen, "The Eye as an Optical Instrument," *Bulletin of the American Scientific Affiliation*, Vol. 1, No. 2, p. 9, 1949.

[2] Discussion (without reference) in Alfred Noyes, *The Unknown God*, 1934, p. 73, *et seq.*

[3] "The Present Status of Teleology," *Trans. Vict. Inst.*, 1947, **79**, 70.

[4] *Science and the Supernatural*, p. 310.

[5] John Wesley's "Collected Works" Eleventh Edition, John Mason (1856), Vol. VI, pp. 194–200.

[6] L. Merson Davies, *The Bible and Modern Science*, 3rd ed., p. 89.

[7] Gen. iii, 17. The word is אֲדָמָה not אֶרֶץ.

[8] The preposition בַּעֲבוּר means "for, or because of, marking the cause on account of which anything is done (Gesenius' Hebrew Lexicon, p. 742). *Cf.* ἐν τοῖς ἔργοις σου in LXX.

Conclusion.

We are now in a position to sum up. When we examine the conceptions of God related to the modern conception of the Universe, we find that they are usually an imposition on tentative philosophical speculations of notions of God obtained elsewhere, *i.e.*, from a different dimension of knowledge. So our conclusion is that the mere study of nature in any way at all, and at any length, can never lead to a full conception of God. For that God Himself must speak. We need Revelation. If the Christian is at first disappointed to learn that science cannot prove his God, let him take heart that his confidence is grounded on something firmer than the everchanging structures of human speculation; and let him take what comfort he can from this, that, because his idea of God can be fitted without strain into the modern conception of the Universe, science cannot ever contradict his beliefs. This leads to a more constructive proposal. The basic Christian certainty of God, and the clear understanding and renewal of the mind that is given in the redemption in Christ; together with the comprehensive doctrines of God, and of Creation given in the Bible, would give preliminary stability to all research and speculation. God is not then the aim of our enquiries, but their necessary starting point[1] just like the scientists' faith in the orderliness of nature and, indeed, the rational basis for that faith. We will not be discovering evidences, but interpreting nature in terms of our preliminary knowledge of God. There is absolutely no *a priori* reason why our conception of the Universe should be normative of our conception of God, and many reasons for believing that the conceptions from the higher dimensions of experience should impose themselves on those of the lower dimensions. It is only the vain conceit of scientists (fed by technological triumphs), and their obsession with the idea that the material is more real than the spiritual, that makes them reverse this process.

To the conceptual framework of a personal Christian knowledge of God we are then in a position to fit our conception of the Universe. We have been too long cutting and trimming God to fit our passing notions of the Universe itself. Now if many of our conceptions of the world must be carved differently to fit the eternal foundation, so much the better. In the words

[1] Lamont, *Christ and the World of Thought*, 1935.

of John Calvin, " It is vain for any to reason as philosophers on the workmanship of the world, except those who, having been first humbled by the preaching of the Gospel, have learned to submit the whole of their intellectual wisdom to the foolishness of the Cross." (*Commentaries on Genesis.*)

Discussion.

Principal J. E. Richardson (Chairman) said : The paper gives a useful analysis of possible approaches to the idea of God through modern concepts of the Universe and illuminates their inadequacies. There is, however, a lack of balance, some sections being accorded greater detail than others. The section on Difficulties, wherein are raised issues very much in the mind of " the average well informed person," could have been covered to advantage in greater detail.

The appeal to Romans i is interesting in the context of the paper and on this the following two points are made :—

(1) It should not be overlooked that while Romans i, 20, declares that " the invisible things of Him from the creation of the world are clearly seen, being understood by the things that are made," the previous verse declares that " that which may be known of God is manifest in them for God hath showed it unto them."

From this it is clear that the eternal power and deity of God are evident from the universe to those who in any case have already received and accepted a revelation of the fact of God.

(2) Is there any hope that in measure at least verse 20 is true without the pre-requisite condition of verse 19 ? The arguments on page 89 conclude that it is not true, being summarised in the sentence, " Unless we begin with God, we shall never reach God."

Frankly, I find Jeans' " discovery " of the pure mathematician as the designer of the Universe very encouraging despite Eddington, Stebbings and Inge. The best scientist can only deal with a fraction of knowledge and cannot comprehend the whole, but if each in his own narrow track discovers from his appreciation of the design a designer, be he mathematician, chemist, physicist, biologist and so on, at least this will lead, or could lead to an appreciation of the eternal power of an integrating designer. Admittedly with Calvin this " can at best drive a man to seek a more direct personal encounter with God Himself," but there is that " at best " and surely it is worth encouraging.

A summary of the paper is given in Keble's hymn :

There is a book who runs may read
Which heavenly truth imparts,
And all the lore its scholars need
Pure eyes and Christian hearts.

The conclusion of the paper is perhaps best found in verse 6 of the great chapter on faith—Hebrews xi : " He that cometh to God must believe that He is and that He is a rewarder of them that diligently seek Him."

Dr. ERNEST WHITE said : More than two thousand years ago one of Job's friends said, " Canst thou by searching find out God ? Canst thou find out the Almighty unto perfection ? " It seems to me that the doubt implied in that question is as much present to-day as it was all that long time ago.

It is not the function of science to find God. Nor can our telescopes or microscopes discover Him. He is not discernible by any instrument, for all our scientific instruments are but extensions of our sense, and can deal only with the material universe.

As Mr. Andersen so ably points out, the usual arguments for the existence of God are open to criticism on logical or philosophical grounds, and His existence cannot be proved like a mathematical proposition.

St. Paul states that " the invisible things of Him are clearly seen, being perceived through the things that are made, even His everlasting power and Divinity " (Romans, i, 20 R.V.) but this supposes a prior knowledge of the existence of God. If we postulate God, and begin with the hypothesis of His existence, we can discover various reasons in support of our hypothesis. I agree with Mr. Andersen that the arguments from the necessity of a First Cause, or from Design, are not valid as proofs, and that it is as difficult to conceive the eternity of spirit as to conceive the eternity of matter.

We can only know God by faith, and that faith is founded upon the revelation which He has given of Himself in His word and by the Mediator, Jesus Christ.

Such faith can only be born in us by the Spirit of God, the " light, which lighteth every man." God is a Spirit and ultimately

can only be spiritually discerned. All this is outside the realm of science, and belongs to a category with which science does not deal.

The physical sciences are not in a position either to affirm or to deny the existence of God. To those who believe in God "the heavens declare the glory of God," but they do not prove His existence to those who have not believed. If we clearly grasp this principle, we shall not be shaken or disturbed in our faith by any new discovery or hypothesis put forward by men of science, and we shall not depend upon science to support our faith.

Mr. B. C. MARTIN said that the full knowledge of God was only obtained by faith and revelation; but there was a passage on page 99 which implied that a certain degree of knowledge was obtainable by other means.

Mr. TITTERINGTON said that in this connection the passage in Rom. i distinctly laid down the limits of such knowledge—"His eternal power and Godhead."

Mr. GORDON E. BARNES said: I should like to comment on the following passage of Mr. Andersen's very valuable essay: "So our conclusion is that the mere study of nature in any way at all, and at any length, can never lead to a full conception of God. For that, God himself must speak. We need Revelation. If the Christian is at first disappointed to learn that science cannot prove his God . . ."

I quite agree that for a full conception of God we need a divine revelation. But how are we to recognise that revelation if and when it is given? Both the Bible and Al Koran claim to be divine revelations, and how are we to know which, if either, is a true revelation? I suggest the answer is that both are tangible documents, part of the material Universe, and can therefore be examined by the method of science. The documents can be *observed*, information can be *abstracted* from them, *deductions* from these abstractions can be tested by *experiment* (or its logical equivalent), and in this way the original statements can be confirmed or disproved. In the case of the Bible (but not in the case of Al Koran) many thousands of statements have been tested and confirmed, and it is possible, by *induction*, to generalise, with ever-increasing certainty, about the accuracy of the record. Hence I conclude that because the Universe includes the Bible, a scientific study of

the Universe can lead us to a knowledge *about* God. (Of course it does not enable us to know God. That is the result of faith.) It does not prove with absolute certainty anything about God (Christian certainty comes from the work of the Holy Spirit alone), but then neither has science ever proved anything with absolute certainty.

In reply to Mr. Martin's question, I think it is correct to say that Scripture never implies that an investigation of the Universe can, apart from revelation, ever lead to a knowledge of the *existence* of God. If the investigator previously knows—by faith, which is extra-scientific (Heb. xi, 3)—that God created the Universe, then his investigation may lead to some knowledge of the *character* of God. Thus, it is because the heathen knew God (Rom. i, 21) and assumed a creation (*v.* 20), that " the things that are made " should have led them to a knowledge of His " eternal power and divine nature " (*v.* 20). It was just this knowledge that was missing. " When they knew God, they glorified Him not as God " (*v.* 21). Other passages *e.g.*, Psalm xix, 1-3, which argue from Nature to the God of Nature were either written by or addressed to people who already believed that God was the Creator of the Universe. " The heavens declare," not the existence of God, but " the glory of God."

WRITTEN COMMUNICATIONS.

Mr. D. DEWAR wrote: I feel sure that Mr. Andersen correctly attributes the fact that scientists are all at sixes and sevens in their conception of the Universe to their attitude towards God.

A recent example of the effects of adopting this attitude is to be found in Sir Robert N. Kotzé's book *The Scheme of Things*, published in 1949. The author accepts the notion of continuous creation! He writes (p. 23): " Modern theology seems still to favour the idea that it (the Universe) was brought into being out of nothing by the Creator. . . . For myself, I prefer to think of the Universe as having neither a beginning nor an end. . . . With an unlimited past the Universe is to be pictured as being in a continuous state of creation and recreation. . . . The question as to the ' when ' and ' how ' of the creation of the Universe can now be easily answered. Creation takes place now and always, and the manner of it has been and always will be ' as at present '."

He does not deal with the " how " but writes (p. 28): " If there

be a Creator of the Universe, the majesty of this Being so greatly exceeds the stature of man that it is totally impossible to comprehend that transcendent Being."

But, Kotzé writes: "We cannot ignore the facts and realities of religious experience," and he seeks to solve the problem of relations which appear to be "preposterously impossible."

His working hypothesis is (p. 145): "There is a great consciousness, which we may term the Absolute, sustaining and guiding the whole vast Universe must . . . be conceded . . . which may be regarded as the Creator of all, but in a sense that is beyond our conception even although various religions identify Him with the God they worship."

The fact that man cannot have any relations with the Absolute "can be harmonised with the evidence that man has relations with the Divine" (p. 147) "by postulating that there are, besides the transcendent Creator, other great beings in the Universe who are of lesser standing. . . . Amongst these there may be a class of Being that has the function of controlling a part of the Universe, such as the solar system or even a larger portion. He is the representative of the Absolute for that part of the Universe. Such a Being may be the God contacted by our great souls. He would be the Creator of the solar system in the sense that He has utilised the stuff that now comprises that system and all that it contains and guided it into its present form. He did not create that original stuff but used it and transformed it. . . Such a God may be deemed to have fashioned the solar system and all life in much the same way as man creates things on earth . . . and such a God may himself be conceived as the result of an evolutionary process. If we think of man as continuing to evolve in intellectual and spiritual powers, we must admit that in a million years time he must attain a much higher level than that now reached by us. If we continue such a process, there will emerge a Being incomparably superior to ourselves. It is only a natural consequence of such reasoning to think that a Being possessed of all the power we attribute to God can thus be evolved, given time and opportunity. The Universe is old enough and vast enough to have given time and ample field for the evolution of such a Being thousands of millions of years ago. In the fulness of His maturity He would take charge of a

portion of the Universe and develop it as the solar system with the earth and its sentient inhabitants have been developed."

The time has indeed come of which St. Paul wrote when men shall turn away their ears from the truth and shall be turned unto fables!

Lt.-Col. L. MERSON DAVIES wrote: I cannot, in short space, adequately discuss Mr. F. I. Andersen's paper; but I must say that, while agreeing with some of his remarks, I strongly dissent from his idea that the geological record testifies against John Wesley's picture of conditions in our creation before Adam's fall. Apparently Mr. Andersen (who is not a geologist) cannot see that his very appeal to conditions during the Mesozoic counters his own use of Rom. v, 12. Does he not realise that all fossils are of *dead* creatures? So what "man" does he suppose to have existed before the Mesozoic —not to mention the Palæozoic?

Obviously, Rom. v, 12, only refers to our own *Adamic race*; and the brief original uncursed state of our associated animal creation, *represented by no fossils*, could have left no recognisable trace in geology. But the nature of that state is indicated by the creation account, by the terms of the curse itself, and by the prophecies regarding future conditions after the curse is removed. John Wesley obviously, and rightly, based his picture on these.

Apparently Mr. Andersen, although citing my paper on Teleology,[1] never noticed my reference, on p. 74 of it, to the geological doctrine of separate creations; nor has he realised how definitely the Bible, from Genesis to Revelation, endorses that doctrine, clearly indicating (as I have often shown, *pace* Mr. Andersen) that those prior creations were cursed ones, and were treated even more drastically than our own has been.

Mr. Andersen should also note my answer to Mr. Leslie (*ibid.*, p. 99), which equally applies to himself. For Genesis shows that one of our own brute creation fell before Adam fell; and that that brute creation was cursed before man was cursed.

Mr. P. W. PETTY wrote: Mr. Andersen's is a most stimulating paper. Probably he did not wish to introduce ideas of personality, as the subject has usually been treated from a scientific rather than

[1] *Journ. Trans. Vict. Inst.*, **1947, 79**, pp. 70–101.

a psychological standpoint. I think they can further enforce his main argument. It is a matter of common experience that we cannot gain knowledge of another person—that is to say we cannot really meet that other " I " which stands over against us—unless that other person consents. We may amass facts about them, or imagine that we are doing so, but all the time the other may be acting, or pulling our leg. If this is true of another individual, how much more must it be true of God ? Only as He wills to reveal Himself can we know Him. But I think we cannot rule out the possibility that God may choose to come through nature, even although the only way by which He bids us approach Him is through the written Word.

Mr. W. E. Leslie wrote : If the problem of the Universe is to be approached from the standpoint of Revelation, we must ask whether some direct revelation to the individual or statements in the Biblical writings is meant. If the latter, we have to bring in a long line of reasoning establishing that this or that statement is in fact a Revelation.

There are suggestions that certain arguments are defective because of sin in their authors. What then about sin in the redeemed ? We must remember that the moral obliquity of the redeemed in tolerating the horrors of the Industrial Revolution, and many things in our own times, are serious stumbling blocks to many.

Mr. H. K. Airy Shaw wrote : Mr. Andersen's remarks on the effect of the " transfer of the study of nature from the field to the laboratory " are profoundly true. It is a transfer that all too often stifles the expression of wonder and even the sense of it. Few who have passed through an average university course in zoology or botany can have failed to notice the sense of aridity or barrenness which academic methods and approach seem to bring to the study of nature. Whereas the student in his early school years may have learnt (if he was fortunate) to associate the term " nature study " with something fresh, " open-air," vital, dynamic, even uplifting and inspiring—something indeed that spoke to his heart of the " wholeness of the living organism," and of the marvellous " integration in the patterns of nature "—when he has entered upon his university course he has found himself in a curiously artificial, mechanical,

technical, *dead* world of laboratories, test-tubes, reactions, experiments, measurements, formulæ and apparatus of every description: in a word, surrounded by all the "un-natural" accoutrements of *science*: and, slowly but surely, the "charm of nature" has begun to fade, till ultimately it may well have "become a datum without meaning."

The tragic story of how the universe "lost its soul of loveliness" for Darwin and Romanes is one that could probably be paralleled in the experience of countless less distinguished men—especially during the ninety years that have elapsed since Darwin first blazed the bitter trail that he surely knew was leading him away from Truth. For he spoke of his "*lamentable* loss of the *higher* æsthetic tastes"; he realised that it was his higher senses that were becoming atrophied, and he recognised that this was a matter for the deepest concern. Before 1860, it was no unusual thing to find, even in serious scientific works, references—if sometimes formal—to God and the wonders of His creation, and to the inevitable connection between "nature and nature's God"; but from that time onwards such references became more and more rare, till at the present day they would be considered as almost in bad taste. Darwin followed his intellect rather than his instinct, and led many astray after him; and that is ever the way with inanimate science. Truly, "the world by wisdom knew not God."

I welcome with all my heart Mr. Andersen's statement, in his concluding paragraphs, of the true position of the study of nature *vis-à-vis* our knowledge of God. It is magnificent, and deserves the widest publicity.

AUTHOR'S REPLY.

It is necessary for me to say at the outset how grateful I am for the kind words of encouragement and the valuable points of criticism that the discussion has brought forward. In particular there could not have been a more powerful illustration of the thesis of the Essay, that a search for God in the modern conceptions of the Universe will remain superficial and fantastic so long as it is not guided by revelation and untaught by God's Spirit, than Mr. Douglas Dewar's quotations from Sir Robert Kotzé's book. It appears that some scientists will believe any kind of supersition rather than open their minds to the one Lord.

Apart from the many things which the paper left unsaid, there are two points arising from the discussion which need clarification. Firstly, the significance of Romans i. There are three possibilities concerning the knowledge of God :—

(*a*) Man can arrive at knowledge of God simply by reflexion on the world.

(*b*) God Himself by direct activity on a man's mind uses his reflexions on the world to bring a man to an awareness of God.

(*c*) A man who has received revelation (a believer and new creature in Christ) is wonderfully enabled to see the hand of God in nature.

The truth of (*c*) is fully agreed upon, and this is the only finally true saving knowledge of God. (I Cor. i.) But this does not appear in Romans i, which proves the guilt of the Gentiles " which have not the law " (Rom. ii, 14), " the oracles of God " (Rom. iii, 2), " the things that are revealed " (Deut. xxix, 29). Dr. Richardson's first point seems to interpret Rom. i, 19, in terms of (*c*). I do not think this is right. In the sphere of special revelation through Christ a knowledge of God and perception of His glory in nature are a result of salvation in faith as in (*c*). Outside this sphere, the *guilt* of men is established because there is a limited (non-saving) revelation through nature and their own minds. This revelation requires more than man's unaided reflexion. God is active in it, *i.e.*, (*b*) not (*c*) is the meaning of verse 19, and (*b*), not (*a*) is the meaning of verse 20. This verse cannot be true without the pre-requisite condition of verse 19. This is confirmed by Paul's statement that the heathen " knew God " (verse 21) and *that* without faith or revelation or Christ. In point of fact no man can think at all without God being present. " In Him we live and move and have our being " (Acts xvii, 28) was spoken of all men.

Granted, then, this revelation, we find that it is limited in its scope, as pointed out by Mr. Titterington. " That which may be known of God " (19) in this way amounts only to δύναμις καὶ θειότης (20). A lot depends on the precise meaning of θειότης. It does seem to be a more general and vaguer term than is suggested by the translations " godhead " (A.V.) or even " divinity " (R.V.). " St. Paul is declaring how much of God may be known from the

revelation of Himself which He has made in nature, from those vestiges of Himself which men may everywhere trace in the world around them. Yet it is not the Personal God whom any may learn to know by these aids. He can be known only by the revelation of Himself in his Son; but only his divine attributes, his majesty and glory" (Trench, *New Testament Synonyms*, p. 7).

This general revelation leads either to a repentant or to a reprobate mind. It cannot suffice to produce a full natural theology, which is properly the work of a regenerate mind, as Dr. White and Mr. Barnes pointed out with reference to Psalm 19. Hence, when Mr. Leslie asks whether this is to be based on "some direct revelation to the individual or statements in the Biblical writings," I reply that both are equally necessary, *i.e.*, the inner illumination of the Holy Spirit and the outer guidance of Holy Scripture. This point is magnificently set forth in Calvin's *Institutes*, Book I, chapter ix.

The second point arises from the remarks of Lt.-Col. L. Merson Davies, though this question of the Curse is not directly involved in the argument of my paper. I mentioned it simply to indicate that the only idea which partly solves some of the problems of evil (the idea of a Curse) comes from Revelation and not from reflexion.

Yet I should like to answer Col. Davies, because the matter involves important principles of Scripture interpretation. The fact that I am not a geologist (an accusation of ignorance which I gladly admit) is quite irrelevant, though it may not be out of place to remember that many believing scientists consider that Col. Davies's theories introduce more difficulties into both science and scripture than they solve.

I believe that the Lord's warning to Adam "in the day that thou eatest thereof thou shalt surely die" (Gen. ii, 17) was literally fulfilled. Adam died at the very instant of his disobedience. The fact that his life on earth lasted many more years shows that this primary death was a spiritual death, a severing of his living relationship with God. This death passed to all men so that people walking about as large as life are called "dead in trespasses and sins" (Eph. ii, 1). The death of the body which followed later was a further result of sin—not in God's original plan for man—and this, too, passes to all mankind. Clearly Romans v, 12, only refers to our own Adamic race, the only creatures I have ever heard of who

were made in the image of God. Human death, both spiritual and physical, is the result of sin (even though a curse is not directly pronounced on Adam in Gen. iii, in spite of which Col. Davies says "man was cursed"). Sin is disobedience to God on the part of a creature bearing His image. On no grounds whatever can it be supposed that the death of animals not made in God's image must have the same significance as it has for man. Fossils prove that animals died, but not that they were cursed, or that there was any fall or sin connected with their death.

Romans v repeats again and again that it was *one* man's disobedience that brought death. "By one man [we agree that this is Adam] sin entered into the world." Nothing could be plainer, and the existence of a serpent in Eden prior to the Fall must not lead us to deny this clear statement of Scripture. Yet Col. Davies says "that one of our own brute creation fell before Adam fell." This denies that sin *entered* the world through Adam. It introduces the strange idea of the fall of a brute. It presupposes that the serpent is Gen. iii is (or was) just a brute creature in spite of the plain statement that he was "more subtil than any beast of the field" (N.B. not ". . . than any *other* beast") and in spite of his identification (Rev. xii, 9) with Satan, a supramundane spirit.

The curses described in Gen. iii are the results of Adam's sin. There was no curse before he fell. Therefore those unpleasant features in organisms which existed as much before Adam's sin as after it are not to be put down to a curse. Col. Davies, on the other hand, says (*Trans. Vict. Inst.*, 1938, **70**, 80) that the earlier rocks "are packed with evidences of death, disease, fear, pain, abortions and internecine strife," and concludes from this (not from scripture) that this is the result of earlier curses. We are not obliged to believe Col. Davies's theory of an "uncursed state" that "left no recognisable traces" (which makes proof and disproof very hard) existing for a short time prior to the fall, nor *his* doctrine of separate creations as the explanation of Gen. i, unless he can prove from Scripture, and not by uncertain inference, that the vast geological ages were cursed creations. He says "those prior creation were cursed ones and were treated even more drastically than our own."

I hold that the traditional Christian romanticising about the pre-

fall world cannot correspond to a state which suggests to Col. Davies a powerful curse. He makes it correspond to a brief interlude between two cursed states, an interlude of which we have no geological evidence. Whatever he supposes to have been the cause of these preliminary curses, Scripture gives no hint of them except a very disputable interpretation of the second verse of Gen. i.

If the Curse is the explanation of all the unpleasant and evil things in nature as we know it now, then *on the surface of it* a curse presumably accounts for the same features in the world before Adam sinned. But while the curse of Gen. iii is clearly the result of Adam's sin, the earlier curses postulated by Col. Davies are entirely without explanation from either Scripture or reason.

890TH ORDINARY GENERAL MEETING

HELD IN THE LECTURE HALL, NATIONAL SOCIETY FOR RELIGIOUS EDUCATION, 69, GREAT PETER STREET, S.W.1, ON MONDAY, 13TH MARCH, 1950.

REV. J. STAFFORD WRIGHT, M.A., IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed and signed.

The CHAIRMAN then called on E. Wellisch, Esq., M.D., D.P.M., to read his paper entitled "The Psychological Conception of Personality."

THE PSYCHOLOGICAL CONCEPTION OF PERSONALITY.

By E. WELLISCH, M.D., D.P.M.

SYNOPSIS.

Four main psychological conceptions of personality are distinguished and discussed.

1. The Psychiatric concept, which emphasises the intimate relationship of the mind to the body. It is described according to the findings of Kretschmer and of psycho-somatic medicine.

2. The Analytical concept, which enables the psychotherapist to explore the depths of the mind. It is based on the discoveries of Freud and Jung.

3. The Factorial concept, which helps to measure the factors or traits of the mind. The postulates of Murray's school of personology are explained and the factorial personality assessment of Rorschach is described.

4. The Moral or Religious concept, which deals with the meaning of man. Söderblom's and Heiler's fundamental distinction between the paganistic mystical personality and that which is based on Biblical religion is discussed. The importance of the Biblical belief for psychotherapy is emphasised.

In practice all four concepts have their place and are essential for full personality assessment and successful treatment.

The personality of every individual is unique—a fact basic to Biblical belief. The full understanding of human personality is, therefore, only possible on a foundation of Biblical religion.

The Problem.

IT is possible to distinguish four main psychological approaches to the problem of personality. These are the approaches of Psychiatry, Analytical Psychology, Factorial Psychology and Religious Psychology. There is no fundamental inconsistency between these four ways of viewing the problem, and there are elements in all of them which make it possible to gain an integrated concept of the wholeness of man.

1. *The Psychiatric Concept of Personality.*

Psychiatry is the science of the medical treatment of mental illness. Mental illness is a physical or biological phenomenon as it is a psychological one, and the treatment given uses physical methods as well as psychological ones.

One of the most illuminating psychiatric conceptions of personality was given by Kretschmer. He defined personality as the sum total of physique and character. (E. Kretschmer, *Physique and Character*, 1925, New York: Harcourt, Brace & Co.) He made the remarkable observation that the physique and character of a person are biologically and psychologically closely related.

Let us first consider the physique. Most persons have one of the following main types of physical build:

The *pyknosomatic* build: the person is stoutish, inclined to put on weight, with a broad trunk and short arms and legs. The chest is barrel-shaped and the face has the contour of a flat pentagon or shield.

The *leptosomatic* build: the person is slim, the arms and legs are long. The chest is flat and narrow. The face has the contour of a shortened oval.

There is also a third though less common type: the *athletico-somatic* build which is characterised by a powerful musculature, a broad shoulder girdle and a face which has the contour of an elongated oval.

Let us now turn our attention to the character. It is the interaction of three factors: the temperament, the instincts and the environment. What is temperament? It is the feeling, disposition and mode of action of the entire personality. Kretschmer distinguished two main types of temperament. The *cyclothyme* and the *schizothyme* temperament.

The moods of the cyclothyme person lie between two extremes: jolliness and mobility at the one end of the scale, and sadness

and slowness at the other end of it. Also the moods of the schizothyme person oscillate between two extremes. Introspection and jerkiness stand at one end of the scale and coldness and rigidity at the other end.

The *cyclothyme* and *schizothyme* temperaments are the two main types of temperament of normal persons. If the persons are, however, inclined towards mental disturbance their temperaments are called *cycloid* or *schizoid*, and if they are actually insane and suffering from one of the two main types of mental disease, they are called either *cyclophrenic*, which means manic-depressive, or *schizophrenic*. Thus a line of development connects the normal with the diseased state of mind.

The attitude to life and environment is characteristic for cyclo- and schizothymes. The cyclothyme is engrossed in his surroundings, he is " extraverted." He is a sociable, open person, a practical person of action. The schizothyme is a dreamer, an " introvert." He is asocial, an idealist and aristocrat. The notions of the extra- and introverted personality were formulated by Jung and will be explained later.

Cyclo- and schizothymes also show special aptitudes. (E. Kretschmer, *The Psychology of Men of Genius*, 1931.) If they are scientists the cyclothymes will be objective, descriptive observers and experimenters like Charles Darwin. Schizothyme scientists are systematic logicians or metaphysicians as Emmanuel Kant. If they are poets the cyclothymes are realists and humorists of the type of Charles Dickens and the schizothymes romanticists and stylists like Shelley. Cyclothyme leaders are sturdy and popular like Churchill or Martin Luther, schizothyme leaders are inflexible idealists like Calvin.

It is most remarkable that in their physical types the majority of the cyclothymes are pyknosomatic, whilst the majority of the schizothymes are either lepto- or athletico-somatic.

Kretschmer's conception of personality advanced the understanding of the inter-relationship of body and mind. It also showed that there is a development from the normal into the pathological state of mind. This development is, however, not an entirely gradual one. It occurs often in sudden changes.

There are also other temperaments or personality types which are very important to psychiatry. (D. K. Henderson and R. D. Gillespie, *A Textbook of Psychiatry*, 1944.) The *epileptic* personality is characterised by irritability, egocentricity and often a preoccupation with religious matters. Their religious practice

is frequently a shallow and selfish affair, though sometimes it is marked by a genuine and deep devotion to God. Mohammed is believed to have suffered from epilepsy. Dostoievski, who was an epileptic himself, gave in his novel *The Idiot*, a stirring description of a saintlike epileptic personality.

Hysteric persons are highly emotional and suggestible, and often like to dramatise their feelings and inner tensions. *Paranoid* persons have ideas of persecution. They are over-sensitive, suspicious people who often suffer from repressed homosexual longings. This produces inferiority feelings which are over-compensated by delusions of grandeur.

From what has been said one can see that certain mental attitudes create personality types with certain psychological and physical features. The influence on the body is sometimes so marked that typical physical illnesses result. The study of these so-called *psycho-somatic* illnesses and their corresponding personality types is a special aspect of modern psychiatry.

Asthma, for instance, is such an illness. According to Rogerson the personality of asthmatic children is often characterised by high intelligence, inner tension and an attitude which oscillates between submissiveness and desire to dominate. (C. H. Rogerson, *Brit. Med. Jour.*, 1943, i, 106.) Persons with a peptic ulcer have frequently a deep sense of insecurity and suffer from guilt and fear which is related to problems of their love relationships to parents and others. (H. Stalker, *Journ. of Mental Science*, April, 1949.) Disorders of the thyroid gland are closely related to the emotional life. Excitement and anxiety may produce increased activity and a goitre of the thyroid gland. Depression and lethargy can lower the activity level of the thyroid gland and lead to inertia and dullness.

2. *The Analytical Concept of Personality.*

Analytical Psychology is the science of mental exploration of the depth of the psyche. By depth of the psyche is meant the region of the unconscious. The methods of deep mental exploration were mainly created by Freud and Jung, the founders of psycho-analysis and analytical psychology.

Freud's conception of personality is based on his epoch-making discovery of the *unconscious*. (S. Freud, *General Introduction to Psycho-analysis*, 1920.) Only a small part of our personality lives in conscious awareness of the world. By far the greater part in us leads a life of which we are normally unconscious.

The psyche can therefore be compared with an iceberg. Only a very small part of it reaches out of the water, is conscious, whilst by far the greater part is submerged in the sea of the unconscious. (W. Healy, A. F. Bronner and A. M. Bowers, *The Structure and Meaning of Psycho-analysis*, 1931.) The personality structure of this "iceberg," according to Freud, consists of three systems: *Id*, *ego* and *super-ego*. The "id" is the collective name for the primitive, animal-like impulses. It is entirely unconscious. The "ego" is the advanced, developed self. It is in contact with the outer real world and is to a considerable extent conscious. The "super-ego" corresponds to the person's conscience. It is the moral censor of our conduct and partly conscious, partly unconscious. In infancy there exists only a very weak super-ego, and therefore the primitive urges of the id are carried out by the ego.

According to Freud all mental processes are based on the reactions between these three systems. A healthy person is one who has gained insight into these reactions and is able to direct his conduct accordingly.

By his finding of the moral controlling force of the super-ego Freud has made a most valuable contribution to moral psychology. Psycho-analysis has also other highly important moral implications. It aims at making the unconscious conscious, so elevating a person's problems to a higher, more realistic level, where he can better deal with them. It aims at making the person aware of forgotten memories, emotions and desires. This makes him able to fulfil his tasks in real life, and is often a most powerful healing force.

Of great importance are the personality types which Freud discovered during his study of the development of the child and his love relations. The unborn child in the womb or uterus lived in a state of complete security and comfort. Some persons show throughout their lives a deep longing for security and love which is supposed to be an unconscious expression of this state of original blissful existence. It can sometimes become a utopian longing for the building of a better world or the wish for a blissful reunion with the infinite as it is achieved in Nirvana. During the sucking period the infant derives pleasure from his lips and mouth. A fixation to these pleasurable "oral" memories may lead in later life to certain character features. The person may be over-dependent and optimistic or, if he is fixated to early activities of biting his mother's breast, because

she frustrated him in his wish to suck, he may become bitter, sarcastic and pessimistic. A fixation to the infantile pleasure of defecation can result in the "anal-erotic" character. That is, the person shows orderliness, parsimony and obstinacy. If in early adolescence the development of normal sexuality is disturbed the person can become fixated to the "phallic" stage which precedes the mature "genital" stage, the person will often suffer from undue self-love or "narcissism."

Jung also postulated a conscious and unconscious system of the personality. For him the centre of consciousness is the *ego*. Its outer layer is the *persona*. The word persona in Latin means *mask*. It may conceal unexpected aspects of the personality. Jung described two regions of the unconscious, the *personal* and the *racial*. The deepest layer of the unconscious is the *numinosum*. It is in closest contact with the inner, subjective world.

Personality is the wholeness of an individual's conscious and unconscious life. (C. Jung, *The Integration of the Personality*, 1940.) The process of the development of the personality is called *individuation*. This is a process of reconciliation of the conscious with the unconscious. Jung emphasised that we usually over-value the importance of our conscious functions and under-estimate the power of the unconscious life. During the process of individuation our consciousness should get more and more detached from the world of real things and the existence of the unconscious should more and more be recognised. The centre of gravity of the personality should no longer remain in the conscious alone. It should shift towards a virtual region between the conscious and the unconscious. This new centre Jung called "the self." The aim of the integration of the personality is "self-realisation." This process is fully developed only after middle life. Its beginnings exist, however, already in childhood. Self-realisation is the goal of many mystics. The mediaeval alchemists called it "the spirit body" or the "diamond body" and in taoistic mysticism it is "the secret of the golden flower." (Wilhelm and Jung, *The Secret of the Golden Flower*, 1935.)

The process of reconciliation of the conscious with the unconscious is also expressed by the interaction of the two main psychological attitudes which Jung described: the *extraverted* and the *introverted* attitude. (C. Jung, *Psychological Types*, 1938.) By an extraverted attitude we mean that there is a

close contact with the outside world and a desire to adapt oneself to it. By the introverted attitude, on the other hand, we describe an intimate contact with the inner world and the fact that a person is mainly influenced by the deep layers of the unconscious. Both attitudes are always present in everyone, but one of them usually predominates. Generally we are conscious of the stronger and unconscious of the weaker attitude. In an integrated person the opposing attitudes become reconciled.

Each attitude has four main functions: Thinking, feeling, intuition and sensation. As one function usually predominates it is possible to distinguish eight main personality types: the extraverted thinking, feeling, intuitive and sensational types and the introverted thinking, feeling, intuitive and sensational types.

3. *The Factorial Concept of Personality.*

Factor Analysis is one of the most important aspects of Academic Psychology. This is the science which is in the first place concerned with the study of normal psychology. By factors we mean abilities, traits or variables of a person. (C. Burt, *The Factors of the Mind.*) They are statistical abstractions and not concrete features of a person. Some of them are, however, meaningful. Factor Analysis is the classification of the factors and their numerical evaluation. The factorial approach to the problem of personality is very important because on it is based the science of Psychometry, that is, of measurement or testing of the mind. Intelligence-, performance- and personality-tests are based on it.

One of the founders of factor analysis was Spearman. (C. Spearman, *The Abilities of Man*, 1927.) He postulated the famous distinction of the factor of "general intelligence," "g," and the factors "s" which stand for "special abilities."

A very important school of factorial psychology has been developed in America. The leading representative of this school of "personology," as it can be called, is Murray. (H. Murray, *Exploration in Personality*, 1938.) He formed the working hypothesis that the personality is constituted by several dozens of factors or variables. They can be grouped into needs, inner factors and general traits. Needs are for instance the need for achievement, or to express aggression, sex or superiority. One of the inner factors is for instance the super-ego. General traits are anxiety, creativeness, etc. Certain of these variables form compounds. Very important are those

compounds which originate from the " five pleasurable conditions of infantile development " which were postulated by Freud : the secure existence within the womb, the pleasure of sucking, defecation, urination and of genital stimulation. Some of these compounds are oriented towards a " common field of interest." A highly important finding was the discovery that all fields of common interest are directed in the last instance by a process of " unification " towards a goal of highest aspiration. This finding is similar to A. Adler's concept of a " guiding fiction " which dominates every person's life. The child already creates a guiding principle which orients himself in the environment and leads him on towards the future. It is supposed that there is also a guiding fiction common to all humanity.

Of greatest value for the assessment of personality is a factorial approach which can be made by studying the responses to certain visual impressions. In a well-known test a standardised series of inkblots is used. The persons are asked to say what they represent. This is the principle of the Rorschach test, which is the best single personality test which we know to-day. (B. Klopfer and D. Kelley, *The Rorschach Technique*, 1946 ; W. Mons, *Principles and Practice of the Rorschach Personality Test*, 1947.) The Rorschach test gives objective information which is independent of subjective impressions of the examiner. It can sometimes give results which are not obtainable by clinical observation alone.

In the Rorschach technique the content of the object apparently seen in the inkblots is not the main point of the test. The aim is to investigate *how* the inkblots are seen. Rorschach found that there are four types of responses—those in which form, colour, movement or shading are the characteristic features. If an inkblot is seen as a house because it has the shape of one, this is a form response. " Red rose " is a colour response, " dancing clowns " denotes movement and " clouds " is a shading response. It is an amazing fact that " how we see things " may reveal the inner structure of our personality. (Ross Stagner, *Psychology of Personality*, 1948.) The reason for this is that form, colour, movement and shading play a definite role in our inner life. Form responses indicate good reasoning power and a good relationship to reality ; movement responses are characteristic of inner promptings and phantasy ; colour responses are found in persons who are stimulated from the outside world and have good social abilities ; while shading responses

may tell of sensitivity or inner tension. It must, however, be emphasised that the meaning of a single scoring category is not fixed, but depends on the constellation of all the findings.

The personality picture which can be gained from the Rorschach test is derived from a great number of scoring categories and their numerical relationships. They are expressed statistically and also graphically. From this surprising conclusions can often be made about various aspects of the inner life, the nature of a possible conflict, the intellectual level and even the psychiatric diagnosis. According to the Rorschach method one can distinguish two personality—or as they are called *experience*—types: *Extratensive* people are mostly stimulated from the outside world and therefore give many colour responses, while the *introversive* experience type is characterised by strong inner promptings and many movement responses. The Rorschach method has been compared with an X-ray examination. It penetrates deeply into a person's mind and reveals the personality structure in outlines like those of the skeleton or a silhouette.

4. *The Moral Concept of Personality.*

The fourth main concept of personality is the concept of Moral Psychology. By Moral or Religious Psychology I mean a scientific outlook which is formed by the welding together of psychological and theological views. It is often said that psychology, because it is a branch of natural science, is incompatible with the religious approach. I do not believe that this is the case: psychology can and should receive its greatest inspiration from theology.

One of the most lucid theological concepts of personality was given by the late Archbishop W. Temple (*The Nature of Personality*, 1915), who said that purpose is the most distinctive mark of personality. The supreme purpose of man is love. Love is "selfless devotion to the good of others."

The nature of love and purpose in man were ably discussed by Söderblom and Heiler. Söderblom and especially Heiler developed a concept of personality which is fundamentally important both from the theological and from the psychological points of view. (F. Heiler, *Prayer: A Study in the History and Psychology of Religion*, 1932.)

Religious experience is of two kinds. The one leads to a personality-denying and the other to a personality-asserting experience. The first is that of "paganistic mysticism," and the

second that of "Biblical religion." (Heiler refers to the first kind of religious experience as "mysticism" only, without the adjective "paganistic." But as mysticism is an important factor in Biblical religion this is apt to be misleading.)

"Paganistic" mysticism denies the impulses of life. The aim of the pagan mystic is the extinction of his emotional life and desires. Natural life is mortified and the personality is dissolved. It is absorbed in the infinite by unreserved surrender to it. By self-surrender one reaches ecstasy. Ecstasy is supreme bliss, which is the highest goal. The Upanishads called it "annihilation" or "the becoming nothing," according to Albertus Magnus it means "to withdraw oneself into oneself," and according to Thomas à Kempis it is "a state of striving after the Kingdom of Heaven by despising the world." Ecstasy is thus achieved by a negative process, a systematic extinction of all the impulses of life. Some of the above quotations are examples of Christian mysticism which was influenced by non-Biblical sources.

The way of Biblical religion is very different. It strengthens the belief in life and is inspired by values and tasks. Its aim is to realise these ideals on this earth. The importance of the individuality in achieving this aim is emphasised. The dislike of the world and the wish for annihilation are challenged by faith and action. For Biblical religion believes in a better future, in "the world to come," in "Olam Haba" when the Kingdom of Heaven will be realised on this earth. "It is not in heaven" (Deut. xxx, 12–20) where the Kingdom will be realised "but the word is very nigh unto thee . . . in thy heart that thou mayest do it." The realisation of the teachings of the Bible on this earth is the essential condition for achieving eternal life in Heaven. The brother of Jesus therefore said: "What does it profit, my brethren, though a man say he hath faith, and have not works?" (James ii, 14).

The visions of the prophets and Christian saints contain a mystical element. But Biblical mysticism differs fundamentally from paganistic mysticism. Whilst paganistic mysticism is a state towards which all aspirations converge in order to find there an end and final death, Biblical mysticism is a state from which the highest aspirations emerge, a state which gives birth to moral actions, to a beginning, a new life. Paganistic mystical bliss gives satisfaction to a person's own self only. Biblical mysticism cannot contemplate the bliss of a person unless it is also the bliss of the whole world.

It is not in ecstatic world-denial that Biblical religion finds its aim, but in faithful world-affirmation.

The psychological importance of these two kinds of religious experiences for the personality cannot be over estimated. A person who has as his highest aim the achievement of mystical ecstasy does not value moral actions as being something good in themselves. They are good only in so far as they are a means to deaden the emotions. They are thus the lowest step of the ladder to ecstasy, a mere preparation for purgation, meditation and eventual ecstasy. Good and evil are only relative powers which have no absolute meaning. The paganistic mystic must therefore eventually also give up the love of his neighbour.

For the person who believes in Biblical religion moral deeds are the essential fulfilment of the will of God. They are not a mere preliminary for an ultimate union with God; but have a positive, an absolute value in themselves. Good and evil are the most real powers on earth and good must conquer evil. When Rabbi Hillel, who lived a short time before Jesus, was asked to say precisely what the nature of his belief was, he said: " Love your neighbour as yourself ! "

The effect of these religious experiences is also very important for the personality of the psychotherapist. The attitude of the psychotherapist towards his patient is largely determined by his own life-philosophy.

Psycho-analysis has some atheistic and analytical psychology certain mystical features, but one cannot simply equate psycho-analysis with atheism and analytical psychology with paganistic mysticism. Both psychological systems have also a strong element of Biblical religion.

It is the element of Biblical belief in the therapist, maybe consciously or unconsciously acting in him, which will urge him to wrestle with the actual problem of the patient as Jacob did with the man " until the breaking of the day."

The Assessment of the Whole Personality.

For a full personality assessment all four psychological approaches are essential. The psychiatric concept is necessary because it is based on the study of the relationship of mind and body. The analytical concept emphasises the importance of unconscious experiences during the development of a person and of unconscious mental attitudes and functions. The factorial concept enables the examiner to test and measure the relative

strengths of the various personality traits. The moral or religious concept investigates the quest of the meaning of man.

The various psychological conceptions of personality are postulations of "personality types." This means that they describe the predominance of certain features within a person. These features are partly based on physical characteristics as in the case of the cyclothyme and schizothyme types or of the asthmatic or thyroid types. They are based on factors of infantile development as in the uterine-, oral-, anal- or phallic-types. They are determined by mental attitudes and functions in the extra- and introverted thinking-, feeling-, intuitive- and sensational- types. They can be derived from visual responses to the presentation of inkblots, when they form the extratensive or introversive experience types. From the religious point of view the distinction between persons with the experience of Biblical religion and of paganistic mysticism is essential.

All these classifications point, however, only to certain aspects of a person, and it would be a serious mistake to group everyone into a type. Personality types serve the important purpose of providing landmarks and means of scientific comparison, but they are not more than merely a help for the understanding of human conduct. For man cannot be classified into pigeonholes. Neither is the possession of certain features of a personality type a fate which cannot be altered.

The personality of man can never be fully assessed by simply grouping it into a personality type. For the personality of every individual is unique. This fundamental fact is emphasised by and is the essential content of Biblical religion. God himself is a personal God, whilst the God of paganistic mysticism, who is very much the same as the world-soul of atheism, is non-personal. And as He is a personal God He has a personal message to man. Everybody receives a personal call to fulfil his task like Abraham did "in Mesopotamia before he dwelled in Haran" (Acts vii, 2, 3). Everybody has a personal and unique task to fulfil here on this earth. This is why each individual must be holy: only so can full personality be developed. In paganistic mysticism on the other hand the aim is emptiness, negation and depersonalisation.

The understanding of human personality as a whole is only possible on the foundation of Biblical religion. "Now the Lord had said unto Abraham, get thee out of thy country . . . into a land which I will shew thee" (Gen. xii, 1). This call was the beginning of the full development of human personality.

Everyman is Abraham again.

DISCUSSION :

The Rev. J. STAFFORD WRIGHT, M.A. (Chairman) said :

We have listened to a most informative paper, which has condensed a large amount of material into a comparatively small compass. Such papers are valuable for keeping our knowledge of contemporary work up to date, and also for showing the different lines of approach that individual workers have adopted, lines which may so absorb the attention of these individual workers that they need others to correlate their findings. Dr. Wellisch has given us a glimpse of the correlation that is possible.

Dr. Wellisch has wisely refrained from giving his own definition of Personality. I say "wisely" because it is easy to become bogged down in definitions of things that are almost impossible to define. I think it is Allport who gives at least fifty definitions of Personality. Much depends on whether one is dealing with Personality in general, and endeavouring to state those attributes which distinguish a personal being from a non-personal; or whether one is investigating Personality in individuals, seeking to discover what makes one person differ from another or from some imagined norm. This paper has been chiefly concerned with the second investigation. May I, therefore, add a little about the former, and then link the two together ?

Dr. Wellisch has spoken of God as personal, which is the Biblical belief. It is also the Biblical belief that man is made in the image of God, and it is not unreasonable to hold that the image of God lies in the possession of Personality. Certainly it is true that it is in possessing Personality that man differs from the rest of the animal world. If we say that Personality consists in the possession of self-conscious, self-determined, and purposive life, we shall probably not be far from the mark.

Yet even so we have omitted something of paramount importance. Personality does not exist in a vacuum, but in relationship with other persons. This is where the Christian today finds the doctrine of the Trinity a very great help, though the doctrine was not evolved to meet any conscious need of this kind. The personal God to the Christian is not an isolated Monad, but a Unity that is itself a truly personal relationship. Thus one can conceive of a fully personal God existing from eternity without an eternally created order.

The Bible also does not regard man as capable of maintaining personal existence in isolation. It is not good for man to be alone. God created both male and female, and told them to be fruitful and to replenish the earth. Personality is developed and maintained in social relationships.

These relationships are the particular province of Psychology when it comes to study the personality of individuals. The attitude to life, the factors that make up character, are necessarily observed in their relation to other persons. This relation may be, for example, one of expansion towards others, an extravert attitude, or withdrawal from others, an introvert attitude. Abnormal reactions have their roots in early treatment by others. Moreover the development of Personality must not take place only *in relation to* others, but actually *with* others. We are all bound together in a bundle of life. I cannot use others as tools for my Personality-development without thereby nullifying my development as a proper Personality. I shall only become an integrated Personality if there is something approaching a " marriage " between my Personality and theirs.

This interlocking may go deeper than is commonly realised. Freud and Jung have both realised the likelihood of a linking of minds below the conscious level, and it is probable that further advances in investigations of this will come from the sphere of Parapsychology. Those who are interested in this will find some stimulating thoughts in last year's Presidential Address of the Society for Psychical Research, by Professor Gardner Murphy, on " Psychical Research and Personality." (*Proceedings of the S.P.R.*, Vol. XLIX, Part 177.) Here one can read, amongst other things, brief summaries of the application of such tests as the Rorschach Test to those who appear to possess some degree of the Psi faculty.

I should like to emphasise one more thing that Dr. Wellisch has pointed out in his paper. In investigating the relationships of Personality, Psychology must not ignore the relationship with the personal God. This relationship centres on an inward trust, which gives the dynamic adjustment, and draws the fragments of personal existence into a holy unity. But it must then go out in an expression of God-likeness, doing the will of God as Jesus Christ did it when He was on earth. Faith without works is dead, since such faith

is no more than an attempt to use God as a tool for my private development, without entering into that living fellowship, that spiritual " marriage," which welds us into union with the purposes of God. But works without faith will also be barren, since they will lack that God-centredness that is necessary for the unification and integration of a fully grown Person, made in the image of God.

Dr. R. J. C. HARRIS said :

The lecturer states, " A healthy person is one who has gained insight into these reactions and is able to direct his conduct accordingly. . . . Psychoanalysis . . . aims at making the person aware of forgotten memories, emotions and desires. This makes him able to fulfill his tasks in real life, and is often a most powerful healing force."

It seems to me that there is a danger here which lies in the assumption that right action necessarily follows as a consequence of adequate knowledge (" insight gained ").

Many philosophers would disagree. Bishop Lightfoot wrote, " Philosophy tells a man what he ought to do. Christianity gives him the inclination to do it." C. E. M. Joad stated, " The difficulty . . . is not that we do not know what is right . . . but that we lack the will or ability to act in accordance with our knowledge."

When all the analysing has been completed, one has the impression that the patient is left helplessly to face his newly " realised " problems. What relation, if any, does the will bear to this mental energy that is said to be freed and available now for the fulfilling of " tasks in real life " ?

Can one assume that the analyst finally performs a " synthesis " of the personality of some sort or another ? Perhaps Dr. Wellisch has this in mind when he says, " The attitude of the psychotherapist towards his patient is largely determined by his own life philosophy." How would the non-Christian psychotherapist attempt to deal with the problem posed by St. Paul in Romans vii, 18 and 19 ?

Dr. E. WHITE said :

Dr. Wellisch's paper is a useful summary of modern psychological conceptions of personality.

No doubt he would agree that Psychology, compared with other fields of scientific research, is as yet in its infancy. It should be realised that the different schools of psychology are not necessarily

contradictory of one another. They represent different lines of approach, and each has its contribution to make to the edifice gradually being built up. Perhaps the time is hardly ripe for a synthesis which would harmonise and weld together the various hypotheses and discoveries so far made by workers in various fields, but until this is done, Psychology will not be able to take its place as a mature science alongside its older and better integrated sisters.

One of the difficulties besetting those engaged in Psychological research lies in the types, and therefore the difference in mental outlook, represented by the psychologists themselves.

Dr. Wellisch has referred to the work of Kretschmer on physique and character. It is interesting to note that, in his book on the subject, Kretschmer gives a very favourable account of the Cyclothyme, and takes a rather poor view of the Schizothyme. Some years ago I attend some lectures given by Kretschmer at the Tavistock Clinic, and I was inpressed by the fact that he himself fits in very well in physical conformation with the round-chested, round-bellied, Pyknic type which he describes in his book as associated with the Cyclothymic personality. Hence, no doubt, his bias in favour of the Cyclothymic. It is obvious too that in the personalities of Jung and Freud we can discover characteristics which influenced their teaching. Jung is an introvert, and his psychology has a spiritual and philosophic character not found in Freud's teaching. Freud, an extravert, is far more objective and logical in his writings.

The question of the spiritual and religious side of personality has been raised. This is where some Freudian analysts are lacking. Unfortunately some psychologists are atheistic, and either hostile to, or mildly tolerant of, religious conceptions. They are therefore unable to minister to the spiritual needs of their patients.

It is possible for a person to be psycho-analysed and to benefit greatly by the process, losing his neurotic symptoms, and obtaining a new outlook on life, and yet to be left unsatisfied in the depths of his soul. For complete wholeness, man needs to find the satisfaction only to be found in God. Jung went so far as to lay it down as a *sine quâ non* of success in psycho-therapy that the analyst should believe in God.

Mr. PREECE asked whether the lecturer was acquainted with Saunders' *Christianity after Freud*, and a somewhat similar book by

Dr. Lee, *Freud and Christianity*, and if so, whether he could kindly give his views on them.

Written Communication.

Lt.-Col. L. Merson Davies wrote :

This is an excellent paper. It should be of the greatest value to Christians who are troubled by attacks based on the supposed findings of psychology, by giving them a grasp of the subject as a whole.

I would only enter a *caveat* with regard to the reference to Charles Darwin, whose works I know pretty well. Although he was doubtless cyclothyme by nature, and capable of producing works of real scientific value—*e.g.*, his publications on Climbing Plants, Fertilisation, Earth-Worms, etc., as I have remarked before—Darwin finally switched almost completely from the observable present to the hypothetical past. Thus the works by which he is best known are of a purely philosophical nature ; and they are tenth-rate philosophy, since he had no capacity for abstract thinking, and his inconsistencies are glaring. In these works, he ceased to be a judge of facts, and became a special-pleader obsessed by the doctrine of Malthus, which he translated into his ideas regarding the unlimited powers of Natural and Sexual Selections (*alias* Blood and Lust) working on endless variations, under the stress of a merciless Struggle for Existence. For comments on his philosophy, see my article on " Darwinism " (*The Nineteenth Century and After*, Vol. CXXXV, January, 1944, pages 27–36).

Dr. Wellisch's paper makes me wonder whether this drastic switch from the objective role, for which Darwin was naturally suited, to a fanatically subjective one for which he was anything but suited, may help to account for the prolonged ill-health from which Darwin suffered during so much of his later life.

Author's Reply.

I am grateful to the Rev. J. S. Wright for remarking that personality is developed and maintained in social relationships. No human being is an isolated individual, but we are all members of one family. " No man is an Iland, intire of it selfe," said John Donne. But " every man is a peece of the continent, part of the maine." Therefore, " I am involved in Mankinde." This is the reason why

the believer in the Bible cannot enjoy happiness unless it is shared by others.

Parapsychological investigations might throw a new light on these relationships, and I thank Mr. Stafford Wright for his interesting quotations of works in this field.

The relationship with the Personal God is, I believe, the central content of psychology. Faith and works are its essential expressions. They are not different functions of belief but each of them includes the whole belief.

As Dr. E. White said, psychology is as yet in its infancy, and it is not yet possible to harmonise the views of the different psychological schools. This is to a great extent due to the different temperament and mental outlook of the psychologists themselves.

A unification of the various psychological schools will require a common basis of belief in the ultimate meaning of our life. I have the conviction that this common basis cannot be a compromise of the main philosophical and religious systems but will be the belief in Biblical religion only.

I agree with Dr. Harris's remarks that knowledge is not necessarily followed by right action. Right action needs also a right moral attitude and, above all, the grace of God. This was meant by the stirring words of St. Paul in Romans vii, 18 and 19, together with what follows in chapter viii.

Referring to Mr. Preece's question, I regret that I have not seen Saunders' book *Christianity after Freud.* I know the book *Freud and Christianity* by Dr. Lee, and am of the opinion that it is valuable as a source of information and as a stimulant for thought on this most important and difficult subject.

Lt.-Col. L. Merson Davies's assumption that the ill-health from which Darwin suffered during his later life might have been related to the pessimistic philosophy of this great scientist is a fascinating idea. I think that it would be most interesting to study this possibility analytically.

891ST ORDINARY GENERAL MEETING

HELD IN THE CAXTON HALL, WESTMINSTER, S.W.1, ON MONDAY, 27TH MARCH, 1950.

JACOB LEVEEN, ESQ., B.A., IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed and signed.

The CHAIRMAN then called on F. F. Bruce, Esq., M.A., to read his paper entitled "Recent Discoveries in Biblical Manuscripts."

RECENT DISCOVERIES IN BIBLICAL MANUSCRIPTS.

By F. F. BRUCE, Esq., M.A.

SYNOPSIS.

Whereas the gap between the time when the New Testament documents were written and that to which our earliest extant copies of these documents belong is now almost negligible, there has been hitherto a gap of over a thousand years between the date of the latest Old Testament documents and the earliest known Hebrew copies of these. Until recently evidence to bridge this gap was provided by early versions, the Samaritan Pentateuch, quotations in Mishna and Talmud, and fragments recovered from the Cairo *geniza*. The scrolls and fragments recently discovered at 'Ain Feshkha, in Palestine, which include one complete and one incomplete copy of the Book of Isaiah in Hebrew, appear to have revolutionised the whole position. This is especially true if those are right who date them in the two centuries preceding A.D. 70, but even if they are several centuries later than that, their contribution to our knowledge of the history of the Old Testament text is of very high value. Much work remains to be done on them, but it already seems clear that Professor Albright has good reason to describe them as "unquestionably the greatest manuscript find of modern times."

THE sudden but much belated interest shown by the British Press in recent manuscript discoveries in Palestine during the summer of 1949 brought to the attention of the general public a subject which Biblical scholars had already been following keenly for a year and a half. Early in 1948 the announcement of these discoveries in the world of learning had incited sober and distinguished Biblical scholars to apply to them

adjectives like "sensational"[1] and "phenomenal"[2]—words more commonly associated with popular journalism than with professorial pronouncements. Of these manuscripts the one which excited greatest interest was a complete parchment scroll of the Book of Isaiah in Hebrew. When this scroll was examined by experts of the American Schools of Oriental Research, it was judged by them to be older by far than any copy of Hebrew Scripture previously known. Professor Millar Burrows of Yale assigned it to the first century B.C.;[3] Professor W. F. Albright of Baltimore put it even earlier, "about the second century B.C."[4] These suggested dates themselves explain the excitement which the news of the discovery caused, for, if they are anywhere near the truth, then "the script of this parchment" (to quote Professor Albright) "is easily a thousand years older than that of the oldest Hebrew Biblical roll hitherto known."[5]

It is well known that, although the New Testament did not begin to be written until all the books of the Old Testament were in existence, we have until now had extant copies of the Greek New Testament far older than any extant copies of the Hebrew Old Testament. We have copies of the Greek New Testament written in the fourth century A.D. (notably the Vatican and Sinaitic codices), very substantial fragments written in the third century (notably the Chester Beatty Biblical papyri), and some pieces which have survived from the second century (notably the Rylands papyrus fragment of the Fourth Gospel, the oldest extant piece of the New Testament, dated less than fifty years from the composition of the Fourth Gospel itself).[6] But when we turn to our earliest copies of the Hebrew Bible, we find them separated by a much greater lapse of time from their autographs. The Revisers' Preface to the Old Testament (1884) states in a footnote that "the earliest MS. of which the age is certainly known bears date A.D. 916." This is a Leningrad codex of the Prophets. Another early Hebrew manuscript at Leningrad is a codex of the whole Old Testament belonging to the first

[1] W. F. Albright in *BASOR*, No. 110 (April, 1948), p. 2.
[2] G. E. Wright in *BA* 11 (1948), p. 21.
[3] *BA* 11 (1948), p. 21.
[4] *BASOR*, No. 110 (April, 1948), p. 3; cf. No. 115 (Oct. 1949), pp. 10 ff. Albright first arrived at this conclusion by comparing the Isaiah scroll with the Nash papyrus and judging it to be older. Albright dates the Nash papyrus in the 1st cent. B.C.; other scholars have dated it rather later.
[5] *BASOR*, No. 110 (April, 1948), p. 3.
[6] See Sir F. G. Kenyon in *Journal of Transactions of the Victoria Institute* 77 (1945), p. 117.

decade of the eleventh century. Oxford possesses an almost complete codex of the Hebrew Bible nearly as old as this, and at Aleppo there is a codex a little older. Older still are a Hebrew Pentateuch codex in the British Museum, usually dated in the ninth century, and a Cairo codex of the Prophets completed in A.D. 895.[1]

The relatively late date of our oldest extant Hebrew manuscripts is bound up with the veneration with which copies of Holy Scripture were regarded by the Rabbis. When these were too old and worn to be of further use for reading, they were reverently interred. It was thought better that they should receive honourable burial than that the name of God inscribed upon them should run the risk of being profaned by unworthy use of the material. Before they were buried, however, they were laid aside for a time in a *geniza*—a store-room attached to the synagogue where documents no longer in use were stored or hidden (the word literally means "hiding-place").

One of these *genizoth*, by a happy chance, continued to house its literary contents for hundreds of years, until they were discovered and made accessible to Hebrew scholars in the closing decades of last century. This was the *geniza* of the Old Cairo synagogue, which formed the subject of Dr. Paul Kahle's fascinating Schweich lectures for 1941.[2] Among the treasures which this old store-room yielded up were portions of Hebrew Scripture older than those already mentioned. These and other documents found with them have added considerably to our knowledge of the textual history of the Hebrew Bible in the period preceding A.D. 900.

It looks as if it was not only wear and tear that led to the removal of old Hebrew Bibles. We know that in the early centuries of our era Jewish scholars were at work on the Hebrew Bible, doing their best to safeguard the purity of the text. They considered (among other things) variant readings found in the manuscripts available to them, and endeavoured to decide between them. About A.D. 100 they produced a standard edition of the consonantal text of the Hebrew Scriptures. Then, in order to preserve the proper interpretation, pronunciation and punctuation of this text, succeeding generations of scholars affixed to it a large number of signs principally intended to

[1] See Sir F. G. Kenyon, *Our Bible and the Ancient Manuscripts* (1939) pp. 44 ff.; P. E. Kahle, *The Cairo Geniza* (1947), pp. 36 ff.

[2] *The Cairo Geniza* (Cumberlege, 1947).

guide the public readers in the synagogues in the right enunciation of the sacred writings, since Hebrew was no longer a living vernacular. They also supplied a large body of notes on the text, the longer notes being placed at the beginning and end of manuscripts, and the shorter notes in the margins.

These editors were not exactly guided in their work by the strict canons of textual criticism as they are understood to-day. Their business was rather to edit the text of the Hebrew Bible in the light of the authoritative tradition which had been handed down to them through successive generations of teachers. From this concern with tradition—Heb. *masorah*—these editors received the name by which they are commonly known, "Masoretes"; the text which they established on the basis of their studies is similarly known as the "Masoretic" text. There is reason to think that some of the Masoretic activities in the eighth and ninth centuries were stimulated by the example of Muslim scholars who had already done similar work for the text and pronunciation of the Qur'an.[1]

It must not be thought, however, that in their devotion to traditional interpretation the Masoretes took liberties with the sacred text.[2] On the contrary, they treated it with the greatest imaginable reverence, and devised a complicated system of safeguards against accidental corruption. For example, they counted the number of times each letter of the alphabet occurs in each book; they noted the middle letter of the Pentateuch and the middle letter of the whole Hebrew Bible, and even made much more detailed and complex calculations than these. "Everything countable seems to be counted";[3] and when all the counting was done, they made up mnemonics by which the various totals might be readily remembered.

When the Masoretic text was finally established in this way, it appears that previous copies of the Scriptures were withdrawn from use and consigned to *genizoth* with a view to later interment. The final recension of the Masoretic text became the standard for all subsequent copies of the Hebrew Bible, whether in manu-

[1] Kahle, *op. cit.*, pp. 78 ff.

[2] H. M. Orlinsky declares that "the Masoretes of the post-talmudic period merely reproduced by consonants and vowels the text which had been handed down to them" (*Journal of Biblical Literature* 62 [1944], p. 25); *cf.* his review of Kahle's Schweich lectures in the *American Journal of Archaeology* 52 [1948], p. 473.

[3] H. Wheeler Robinson, *Ancient and English Versions of the Bible* (1940), p. 29.

script or (afterwards) in printed editions. Of course, with the best care in the world a few variations have crept into the text in the course of its transmission by hand and press during the last thousand years. Up to recent years printed editions of the Hebrew Bible have followed the text of an edition printed in 1524–25 under the editorship of a Hebrew Christian named Jacob Ben Chayyim. But Dr. Kahle has pointed out that Ben Chayyim's text depended on manuscripts not earlier than the fourteenth century. The latest standard edition of the Hebrew Bible—the third edition of Rudolf Kittel's *Biblia Hebraica*, published at Stuttgart in 1937—shows a text prepared by Dr. Kahle on the basis of the Leningrad copy of the complete Old Testament dated 1008–9.[1] This copy is closely related to the Aleppo copy already mentioned (which was not available to Dr. Kahle). In addition to the Leningrad manuscript, Dr. Kahle used photographs of the British Museum codex of the Pentateuch and the Cairo codex of the Prophets, both of which date from the closing years of the ninth century. These copies, along with the Leningrad codex of the Prophets, represent the text as established by members of a Masoretic family of Tiberias in Palestine—the Ben Asher family. On the basis of these early copies a more accurate edition of the Masoretic text has been produced than any previously printed.

The treasures found in the Cairo *geniza* included portions of the Hebrew Bible antedating this final Masoretic recension, and these revealed something of the history of Masoretic work on the text of the Old Testament. There were Masoretes at work in Babylonia as well as at Tiberias in the centuries preceding A.D. 900, although it was the form established at Tiberias that ultimately prevailed.[2] Some of the work of the Babylonian Masoretes was discovered in the *geniza*, throwing light on an earlier stage of the textual transmission of the Hebrew Bible than had been directly attainable until then.

Even so, it might appear that we have a much slenderer guarantee of the accurate transmission of the Hebrew text of

[1] This manuscript was sent from Leningrad to Germany for several years in the 1920s for Kahle's use. The Universities of Halle and Bonn possess photostatic copies. The University of Leeds possesses a photographic reproduction of one of these; this is understood to be the only facsimile of the manuscript in England.

[2] P. E. Kahle, *Der masoretische Text des Alten Testaments nach der Überlieferung der babylonischen Juden* (Leipzig, 1902); *Masoreten des Ostens* (Leipzig, 1913); *Masoreten des Westens* (Stuttgart, 1927–30).

the Old Testament than we have of the Greek text of the New, in view of the relatively late date of our earliest Hebrew witnesses. But there are other lines of evidence to be borne in mind. As regards the consonantal text, there has been little change or variation in it since it was fixed in the time of Rabbi Aqiba, early in the second century A.D. This is borne out by the Biblical quotations in the Mishna (*c.* A.D. 200) and the Gemaras of Palestine (*c.* A.D. 350) and Babylonia (*c.* A.D. 500), as also by the character of the text paraphrased or translated in the Aramaic Targums and in the Greek version of Aquila. Unfortunately the Hebrew text of Origen's Hexapla (*c.* A.D. 230) has not been preserved.[1] The second column of his Hexapla, however, contained the Hebrew text of the first column transcribed in Greek letters, and about 150 verses of the Psalms in this second column (as well as in the four following columns which exhibited four Greek translations) were found towards the end of last century by Cardinal Giovanni Mercati in the Ambrosian Library at Milan. Some other Hexapla fragments and portions of Aquila's translation of the Books of Kings were among the discoveries from the Cairo *geniza*. The extant fragments of Aquila's version are specially important for textual criticism, because his version was a slavishly literal rendering of the authorised consonantal Hebrew text fixed in the time of Aqiba, carried out in such a way that it is never difficult to tell exactly what Hebrew word lies behind Aquila's Greek word.[2]

About A.D. 400 Jerome translated the Old Testament into Latin directly from Hebrew. His translation, together with references made to the original text of the Old Testament in some of his other writings, is thus a witness to the character of the Hebrew text five hundred years before the Masoretes concluded their work. Still earlier in the Christian era we have another witness in the Syriac version of the Old Testament, also

[1] Origen's Hexapla was an edition of the Bible in six columns. In the Old Testament these columns exhibited respectively (1) the Hebrew text; (2) the Hebrew text in Greek transliteration; (3) Aquila's Greek version; (4) Symmachus's Greek version; (5) Origen's edition of the Septuagint; (6) Theodotion's Greek version. Origen's Hexapla was preserved at Caesarea in Palestine until the Saracen conquest of the seventh century and there it was consulted by later scholars such as Pamphilus, Eusebius and Jerome.

[2] A good example of Aquila's translation is his rendering of the opening words of Genesis: *en kephalaio ektisen theos syn ton ouranon kai syn ten gen.* The individual words are Greek, corresponding one by one to the words of the Hebrew, but the sentence itself is not Greek; it is quite unintelligible without reference to the original. In particular, his rendering of the accusative particle *eth* by Gk. *syn* makes nonsense in Greek.

translated from the Hebrew.[1] And from the last three centuries B.C. we have the Greek version of the Old Testament commonly called the Septuagint. Although the Septuagint text sometimes deviates from the Masoretic text and occasionally helps us to correct it, yet in general it confirms that no material changes were introduced into the text of the Old Testament during the thousand years and more between the time when this translation was made and the time to which our chief Hebrew manuscripts belong.[2]

Yet another witness, so far as the Pentateuch is concerned, is the Samaritan Bible, which is restricted to these five books. The Samaritan Bible is simply an edition of the Hebrew Pentateuch which has been transmitted along another line than that of the Masoretes. The Masoretic and Samaritan editions are descended from an archetype not later than the fourth century B.C., and possibly much earlier. At any rate, the Samaritan Bible carries the evidence for the text of the Pentateuch considerably farther back than the Septuagint does, and the variations between the Samaritan and Masoretic texts of this part of the Bible are quite insignificant by comparison with the area of agreement.[3]

And now, beyond everyone's expectation, comes this latest discovery, which looks as if it may add very considerably to our knowledge of the textual history of the Hebrew Bible.

In the summer of 1947 a bedouin goatherd of the tribe of the Teammereh, pursuing a straying goat into a cave at 'Ain Feshkha, to the north of the Dead Sea, found a number of ancient scrolls, of parchment and leather, inscribed with Hebrew writing. How many scrolls were in the cave when the discovery was made cannot now be known. Four of them, however, made their way in November, 1947, to the Syrian Orthodox Monastery of St. Mark in Jerusalem,[4] and three more were secured in January, 1948, by the Hebrew University of Jerusalem. (The number of scrolls secured by both institutions was originally reported to be larger, but it turned out in the course of examination that in

[1] Kahle, *The Cairo Geniza*, pp. 179 ff.

[2] Kahle, *op. cit.*, pp. 132 ff. It must be remembered that we have Septuagint MSS. of much earlier date than the Hebrew MSS. mentioned, as early as the 4th and 3rd centuries A.D., not to mention a fragment of Deuteronomy of the 2nd century B.C.

[3] Kahle, *op. cit.*, pp. 144 ff.

[4] They made their way to the Syrians because a Muslim sheikh to whom they were shown mistook the script for Syriac Estrangelo!

one or two instances what at first appeared to be separate scrolls were really parts of one original scroll.)

The circumstances of the discovery and identification of the scrolls, and later of the official inspection of the place from which they came, are not without an element of romance, especially in view of the troubled conditions in Palestine at the time. But they also pleasantly reflect a remarkably high degree of helpful co-operation between Muslims, Jews, and Christians of various traditions at a time when racial and religious animosities were burning fiercely.[1]

The Syrian Monastery enlisted the interest of the American School of Oriental Research in Jerusalem in the scrolls which it had obtained,[2] and great excitement and not a little scepticism were aroused when it was announced that one of these scrolls was a complete copy of the Book of Isaiah in Hebrew, dated by some of the American experts as far back as the end of the pre-Christian era. Arrangements were made for the scrolls to be taken to America, where they have since been intensively studied by scholars.

The scepticism which greeted the announcement was natural and healthy. The chances of finding Hebrew manuscripts materially older than the earliest hitherto known were reckoned on good grounds to be so slender that such a surprising piece of news as this seemed too good to be true. Memories of famous hoaxes in the past were recalled, such as the Shapira forgeries of 1883.[3] But the more the scrolls were studied, the more convinced the American scholars became that their original conclusions were right and that anything in the nature of forgery was ruled out by all the circumstances of the case.

The Isaiah manuscript, a parchment scroll twenty-two feet in length, exhibits in general a text in remarkable agreement with the Masoretic text of the later manuscripts.[4] The deviations are much more in the realm of spelling and inflection than in actual wording. The importance of this manuscript for textual criticism,

[1] "It is pleasant, however, to note that Dr. Sukenik has occasion to thank both Christians and Moslems of Bethlehem for aid he received during that terrible period in acquiring the scrolls now in the possession of the Hebrew University" (H. L. Ginsberg in *BASOR*, No. 112 [December, 1948], p. 19).

[2] See J. C. Trever's account in *BA* 11 (1948), pp. 46 ff.

[3] *Cf.* Kenyon, *Our Bible and the Ancient Manuscripts*, p. 48.

[4] *Cf.* M. Burrows, "Variant Readings in the Isaiah Manuscript," *BASOR*, No. 111 (October, 1948), pp. 16 ff.; No. 113 (February, 1949), pp. 24 ff.; *Orthography Morphology and Syntax of the St. Mark's Isaiah Manuscript*, *J B L* 68 (1949), pp. 195 ff.

as well as for the history of Hebrew writing, spelling and accidence, is obvious, especially if it belongs to the first or second century B.C. And if such an early date can be established, the manuscript may also have some bearing on the literary criticism of the Book of Isaiah. It does not, of course, answer the ordinary questions about Second or Third Isaiah (chapters 40–55 and 56–66, respectively), since these are usually dated in the sixth and fifth centuries B.C.; but it does rule out of court attempts to date portions of the book in the Maccabean age or even later (such as B. Duhm's dating of the apocalypse of chapters 24–27 and R. H. Kennett's dating of the Servant Songs). Albright[1] argues that the fact of the manuscript's general agreement with the Masoretic authorities, together with the fact that where there is divergence the Masoretic text is usually better than the newly discovered variants, shows that the Masoretic text (the consonantal text, of course) goes back to an archetype of pre-Maccabean date. If this conclusion could be established, its importance would obviously be immense. But we must wait.

Another of the scrolls owned by the Syrians is a Hebrew commentary on the Book of Habakkuk, in which Habakkuk's prophecy is interpreted, not of the conditions in Habakkuk's own day, but of conditions obtaining under the Macedonian dynasties of Ptolemaic Egypt and Seleucid Syria.[2] These two powers are denoted respectively as the "Kittiim (Greeks) of Egypt" and the "Kittiim of Syria." This internal evidence gives a clue to the date at which the commentary was composed, and indicates that at that time the Book of Habakkuk was acknowledged and used as Holy Scripture. The use made of it, in fact, rather resembles the use made of prophetic Scripture by some of our contemporaries who find in it references to persons and events of our own day. Whatever we may say about such a use of the literature, it at least implies that the literature so used is regarded as divinely inspired and canonical. The date of the actual scroll is another question, but an early examination suggested a date between 25 B.C. and 25 A.D.[3]

[1] In an article "Are the 'Ain Feshkha Scrolls a Hoax?" (reply to S. Zeitlin), *JQR* 40 (1949–50), pp. 41 ff.

[2] See W. H. Brownlee, "The Jerusalem Habakkuk Scroll," *BASOR*, No. 112 (December, 1948), pp. 8 ff.; "Further Light on Habakkuk," No. 114 (April, 1949), pp. 9 f.

[3] J. C. Trever, *BASOR*, No. 113 (February, 1949), p. 23 (in an article, "A Palaeographic Study of the Jerusalem Scrolls"). S. A. Birnbaum, "The Dating of the Habakkuk Cave Scroll," *JBL* 68 (1949), pp. 161 ff., places it between 100 and 50 B.C.

Yet another Hebrew scroll in this collection, which has been called the "Sectarian document," seems to be some Jewish sect's manual of discipline. The sect in question may have been identical with the sect which has been thought responsible in the first instance for storing all these documents in the cave at 'Ain Feshkha. Whether the sect can be identified with any hitherto known to us is doubtful. Some have thought of the Essenes, who are known to have had coenobitic communities in the Dead Sea region and who have been called upon to account for so many phenomena in Judaism and Christianity in the closing days of the Second Temple. Somewhat less improbable is the attempt to equate them with the "Covenanters of Damascus" known from the so-called Zadokite Fragment; in that case they will have stored the scrolls in the cave before migrating from Palestine to Damascus.[1] But we really do not know.

The fourth scroll in the Syrian collection is taking longer to unwrap, owing to the very brittle character of the material; but when a detached fragment was inspected it proved to be an Aramaic work of Enochic character. Whether it is (as some hope) a copy of the Aramaic original of First Enoch, or something very like it, it looks like being of extraordinary importance for our knowledge of the rise and development of apocalyptic thought and literature in the period between the Testaments.[2] The Aramaic is said by Albright to belong to the late Persian period.

The scrolls which were secured by the Hebrew University belong to three Hebrew works: (1) a military manual which Professor Eleazar Sukenik has called "The War between the Children of Light and the Children of Darkness"; (2) a collection of Hymns of Thanksgiving; (3) another copy of part of the Book of Isaiah, containing about eleven chapters from chapter 48 onwards. The Hymns of Thanksgiving plainly depend upon the canonical Book of Psalms, and may therefore help to fix a *terminus ad quem* for the completion of the Psalter. Professor Snkenik produced a preliminary report of these manuscripts with facsimiles in a volume entitled *Megilloth Genuzoth*, published

[1] M. Burrows, *BA* 11 (1948), p. 58; H. L. Ginsberg, *BASOR*, No. 112 (December, 1948), p. 21. The Zadokite Fragment referred to was discovered in the Cairo *geniza* and edited by Solomon Schechter under the title *Fragments of a Zadokite Work* (Cambridge, 1910). See the translation in R. H. Charles's *Apocrypha and Pseudepigrapha* ii (1913), pp. 793 ff. There are one or two striking contacts between the Habakkuk commentary and the Zadokite Fragment.

[2] J. C. Trever, in *BASOR*, No. 115 (Oct. 1949), pp. 8 ff., identifies the work with the lost *Book of Lamech*, possibly one of the sources of First Enoch.

by the Bialik Foundation at Jerusalem in the latter part of 1948. We look forward to receiving further information about the scrolls in this collection—particularly, of course, the portion of Isaiah which they include.[1] It is noteworthy that the latter, in common with the complete Isaiah scroll of the St. Mark collection, agrees with the Septuagint in reading the opening words of Isa. liii, 11, as: "From the travail of his soul he shall see *light*."

The truce in Palestine made it possible to visit and inspect the cave in February and March, 1949. The inspection was supervised by Mr. G. Lankester Harding, director of antiquities for the Hashimite Kingdom of the Jordan, which at the time of the truce was in control of the district where the cave was situated. With Mr. Harding was Père R. de Vaux of the Dominican École Biblique in Jerusalem, and they were visited twice in the course of the work by Professor O. R. Sellers of the American School and Mr. D. C. Baramki of the Palestine Museum.[2] Not much was left in the cave, as there had already been unofficial inspections. But the identity of the cave was established beyond doubt. The pottery which was left in the cave indicated that at one time about two hundred rolls had been deposited there in jars, covered with inverted bowls. The date of the pottery agreed remarkably with the date assigned to the manuscripts on palaeographical grounds; it was plainly late Hellenistic, with the exception of a lamp and cooking-pot of the Roman period. These last-mentioned objects suggested a visit to the cave in the Roman period, and some people have wondered whether this visitor might not have been Origen! We know that Origen found Hebrew and Greek Biblical manuscripts about A.D. 217, hidden in one or more earthenware jars, in the Jericho neighbourhood, which he used in the preparation of his Hexapla.[3] But perhaps we should resist the temptation to ventilate our strange surmises, and stick to identifications for which there is reasonable evidence.

---

[1] See also H. L. Ginsberg, "The Hebrew University Scrolls from the Sectarian Cache," *BASOR*, No. 112 (December, 1948), pp. 19 ff.; F. M. Cross, Jr., "The Scrolls in the Hebrew University," *BA* 12 (1949), pp. 36 ff.; H. Danby's review of Sukenik's book in *JTS* 50 (1949), pp. 169 ff.

[2] O. R. Sellers, *BASOR*, No. 114 (April, 1949), pp. 5 ff.; G. E. Wright, *BA* 12 (1949), pp. 32 ff.; R. de Vaux, *Revue Biblique* 56 (1949), pp. 234 ff., 586 ff.; G. L. Harding in *The Times*, August 9, 1949, and in *PEFQ*, 1949, pp. 112 ff.

[3] Eusebius, *Ecclesiastical History* vi, 16. Eusebius is now known to have based his report on notes left by Origen, which were rediscovered and republished by Cardinal Mercati in *Studi e Testi* 5 (1901), pp. 28 ff. See Kahle, *op. cit.*, pp. 160 ff.

Some manuscript fragments lying in the cave had clearly been torn from the scrolls already known. Hundreds of other fragments were discovered as the floor of the cave was excavated. But it looks as if some more had already been removed by bedouin or other unofficial visitors, and it is to be hoped that these will soon see the light of day.

These fragments more recently discovered are now being studied by Père de Vaux in Jerusalem and published in successive numbers of the *Revue Biblique*. (Some are receiving special treatment in the British Museum.) They include portions of Genesis, Leviticus, Deuteronomy, Judges and the Book of Jubilees (all in Hebrew). The Leviticus fragment (chapters 19–22) is written in a much older script than the others, approximating to that used in the Lachish letters of the early sixth century B.C.[1] A fragment containing Deuteronomy xxxi, 1 shows a text agreeing rather with the Septuagint than with the Masoretic reading.[2] Among some other fragments from the cave which the Syrian Monastery acquired early in 1949 (probably from some unofficial investigator) were three fragments of the Book of Daniel from two different scrolls, showing portions of Dan. i, 10–16; ii, 2–6 (including the place where the Hebrew gives place to Aramaic), and iii, 23–30. It will be specially interesting to know what the palaeographers think of the date of these fragments.

Whatever variations there may be in the dating of the various scrolls and fragments found at 'Ain Feshka, there is a fairly wide consensus of opinion that they all belong to the period preceding the destruction of the Temple in A.D. 70. Such is the conclusion not only of the scholars of the American Schools of Oriental Research but of Professor Sukenik of the Hebrew University, Père de Vaux of the Jerusalem École Biblique, Mr. Jacob Leveen of the British Museum,[3] Dr. S. A. Birnbaum of the London School of Oriental and African Studies,[4] and others. There are other views, of course. Professor Solomon Zeitlin of Philadelphia, persists in regarding the whole *cache* as a mediaeval hoax.[5] All the evidence is against this; but there are other scholars who

---

[1] "A good deal like the alphabet of the Siloam Inscription," says O. R. Sellers in a letter quoted in *BA* 12 (1949), p. 32.

[2] J. Leveen in *The Times*, August 26th, 1949.

[3] *The Listener*, August 25th, 1949; *The Times*, August 26th, 1949.

[4] "The Date of the Isaiah Scroll," *BASOR*, No. 113 (February, 1949), pp. 33 ff.; "The Dating of the Habakkuk Cave Scroll," *JBL* 68 (1949), pp. 161 ff.; *The Times*, August 25th and September 13th, 1949.

[5] *JQR* 39 (1948–49), pp. 235 ff., 337 ff.; 40 (1949–50), pp. 15 ff., 57 ff.

deprecate any untimely haste in dating the manuscripts.[1] Professor G. R. Driver has suggested that, as the text of the Biblical manuscripts resembles that underlying the Vulgate more than that underlying the Septuagint, a date of around A.D. 400 is more likely, pointing out that even in that case the find is a most important one.[2] He urges that two technical investigations should be made—on the character of the ruling (both horizontal, guiding the lines of writing, and vertical, dividing the columns) and the composition of the ink. Ruling with lead and the use of metallic ink, he points out, would (so far as our present knowledge goes) be signs of considerably later date than that assigned to the manuscripts by most of those who have hitherto examined them.[3] Professor D. Winton Thomas of Cambridge has also emphasised the necessity of suspending judgment, until the manuscripts have been studied by a much wider range of scholars, but agrees that "on one matter scholars are not likely to disagree, namely, that these new documents antedate by centuries the oldest Hebrew Biblical manuscripts hitherto known."[4]

What we now await for impatiently is the publication of complete facsimiles of these manuscripts, so that scholars of all lands may be able to study them. Facsimiles of those being studied by the American Orientalists are being prepared under the direction of Professor Burrows, and we expect to see them soon, that of the Isaiah manuscript first of all. We must also hope to receive further reports by other kinds of experts on the condition and age of the writing materials and ink, for the issues at stake are so important that the genuineness and date of these documents must be established as thoroughly as possible.[5]

[1] *Cf.* E. R. Lacheman, "A Matter of Method in Hebrew Palaeography," in *JQR* 40 (1949–50), pp. 15 ff.

[2] *The Times*, August 23rd, 1949. J. Leveen replied to him in *The Times*, August 26th, and T. C. Lethbridge in *The Times*, August 31st. Driver has since made it clear that he does not *deny* the earlier dating (he hopes it is right); but he wishes scholars to bear other possibilities in mind at this initial stage in the study of the scrolls.

[3] *The Times*, September 22nd, 1949.

[4] *The Times*, August 25th, 1949.

[5] Whatever may be the result of an investigation of the ink along the lines suggested by G. R. Driver in his letter to *The Times*, September 22nd, 1949, J. Leveen (letter to *The Times*, August 26th, 1949), quotes Dr. H. J. Plenderleith of the British Museum to the effect that the age of the writing materials cannot be dated within a narrower margin than about a thousand years. In an account of the British Museum fragments (reported in *The Times*, August 12th, 1949), Dr. Plenderleith said that their ink is "a carbon ink, and quite stable."

Already, however, sufficient evidence has been adduced to confirm Professor Albright's view that this is "the greatest manuscript discovery of modern times."[1] A new and undreamed of chapter has opened in Biblical studies.[2]

DISCUSSION:

Mr. J. LEVEEN (Chairman), after paying tribute to the lucid exposition of the subject by the Lecturer, said: There have been some attacks upon the genuineness of these Scrolls, particularly those made by Professor Zeitlin, of New York. In order, as he thought, to clinch the matter, this professor conjured up a Genizah fragment, dated 750 A.D., and asked us to believe that the writing of this document was similar to that of the Dead Sea Scrolls. Unfortunately for the professor, there are two flaws in his arguments. In the first place, there is no real resemblance between the writing of the Scrolls and the Genizah document, as any Hebrew palaeographer could see at a glance. Secondly, it was recently proved convincingly by Dr. J. L. Teicher, of Cambridge University, that the Genizah document's real date was 1050 A.D., the scribe (as sometimes happens) having omitted the "hundreds" in the date.

In England scepticism has so far been confined to one Semitic scholar, Professor G. R. Driver, of Oxford. But his attitude has not been marked by such extremism as that of Zeitlin.

Regarding the dates of these scrolls, we have a weight of circumstantial evidence:

1. There are the MSS. themselves. The forms of the letters are conclusive, especially the elongated final ם, together with ד, ת, ס, י, ע. All the evidence converges on the unassailable antiquity of the documents. We can dismiss the idea of a hoax, or of modern date.

2. The *jars* in which the scrolls were contained are of the second or third century B.C., and the jars cannot be much older than the MSS. Scrolls would not be put into ancient jars, but into new ones—possibly even made at the time for the purpose.

[1] In a letter to J. C. Trever, quoted in *BA* 11 (1948), p. 55. *Cf.* his editorial remark in *BASOR*, No. 110 (April, 1948), p. 2: "unquestionably the greatest manuscript find of modern times."

[2] Three excellent summaries of the discovery and its significance are given by B. J. Roberts in *The Expository Times* 60 (1948–49), pp. 305 ff., in *Religion in Education*, Autumn 1949, pp. 7 ff., and in *The Listener*, September 8th, 1949, pp. 401 ff.

3. We have also the nature of the text as revealed by the fragments. For instance, in four columns of "Isaiah B" there are a dozen variations from the Masoretic text in each column: the text is intermediate between this and the text used as a base for the Septuagint. There is one striking instance where there is a reading corresponding to the Septuagint version: the addition of the word אור in Is. 53: 11—מעמל נפשו יראה אור[1].

This is further evidence of early date.

Dr. Solomon A. Birnbaum said: May I first of all thank the Committee for their kind invitation to this lecture. It was a model of lucid exposition.

There is one observation I should like to make. The lecturer has mentioned that "the date of the pottery agreed remarkably with the date assigned to the manuscripts on palaeographical grounds," but it would have been useful if he had discussed what, to my mind, is *the* decisive evidence—the palaeographical.

Internal as well as archaeological evidence are very often open to most different interpretations, so that in dating a newly discovered document the results may differ by many centuries. Palaeographical evidence, however, provides a safe basis, if handled by a palaeographer. Here we have something tangible to work on, something which can be measured by instruments. Measuring is the basic method of palaeography. By working out a comprehensive system of measurements, letter by letter and age by age, it is possible to establish an unassailable palaeographical basis. Once we have that to start with, it is easy to relate to it the script of any newly discovered document.

A palaeographer can sometimes tell by even a few letters at what time they were written. A good number of columns from the Cave Scrolls have been published, so that the amount of material has been entirely adequate for perfectly reliable palaeographical dating.

These Scrolls are a treasury of material, and work on them will go on for years to come—but as far as the question of their date is concerned, there is no need to suspend judgment. That they are pre-Christian is certain beyond a shade of doubt. Their dates vary: the oldest one is Isaiah Scroll A. Its script is from about 175–150 B.C.E. while that of most of the other Scrolls is from about the middle of the

[1] From the travail of his soul he shall see *light*.

first century B.C.E. The Leviticus Fragments, in the Palaeo-Hebrew script, date from about 450 B.C.E.

Dr. H. J. PLENDERLEITH (Keeper of the Research Laboratory, British Museum) said he had followed with much interest the discussion between palaeographers and archaeologists regarding the supposed antiquity of the Dead Sea Scrolls and the dates assigned to them. Unable to agree among themselves, all parties turned to the Scientist in confident expectation that he would, by testing the writing materials and the ink, be able to resolve their difficulties and assign to the documents a definite date. This, unfortunately, was more than science at present could do. Dr. Plenderleith went on to say that the fragments with which he was personally concerned in the Laboratory were the gleanings from the cave which Mr. Lankester Harding and Père de Vaux had excavated. Twenty-five years of experience in the handling of antiquities had convinced him at once that the materials were genuine, a conviction which was, subsequently, fully justified when the fragments were submitted to scientific examination. Leather and parchment were both identified, but deterioration had changed the microscopic structure to such an extent that it was impossible to tell from what animals the skins were derived, nor how old they were. Some parts of the manuscripts had completely decomposed, and here the material had run together to form a pitch-like solid, highly viscous and sticky, having the characteristics of glue rather than of leather.

As for the ink, Dr. Plenderleith continued, carbon alone was used. Had iron been present it would have shown up at once as some trace of tanning agent could still be detected in the leather fragments, and tannins in the presence of iron cause staining—that is, the fragments would have been virtually stained by iron ink. This absence of iron ink is taken by some scholars to indicate an early date for the documents, but Dr. Plenderleith drew attention to the fact that when man discovered the intricate process of converting skins into leather by using vegetable tannins, he was well on the way to discovering iron ink, as the presence of any soluble iron would, together with the tanning agent, make ink. The conclusion to be drawn from this is that the nature of the ink cannot be regarded as vital evidence for dating purposes. In discussing ink, reference had

been made in *The Times* correspondence to Blau's *Hebräisches Buchwesen*, and Dr. Plenderleith felt that he should take this opportunity of pointing out the danger of accepting at their face value the old recipes quoted there. It is stated, for instance, that the metallic ink which was used at the time of the Talmud was made with copper, whereas, in fact, tannin combined with copper could never result in ink. This is a common error which, no doubt, sprang from the unfortunate name "Copperas" given to ferrous sulphate, a constituent of iron ink. In spite of its name, it contains no copper whatsoever, and for this reason has been responsible for much confusion in technical literature.

Another technical point adduced as a possible means of dating is the presence of ruled lines on which to place or hang the script. In a scroll fragment examined by Dr. Plenderleith, there was exhibited a series of blind tooled parallel lines emanating from a row of ink dots in the margin (possibly intended to be cut off) and it was asserted that the presence of this ruling is evidence that the scrolls must be of a later date. Dr. Plenderleith was unable to agree with this, and was more inclined to support the chairman's suggestion that ruling must have grown up almost simultaneously with writing. He had examined the Codex Sinaiticus (fourth century A.D.) which clearly showed the membranes pricked (in the text) and lines ruled by blind tooling, and an even earlier document, a Ptolemaic papyrus, was also found to be ruled. This latter example was particularly interesting, as the fibres of payrus are usually sufficiently parallel to function as natural lines.

The results of trying to date the MS. by scientific investigation had, so far, proved disappointing. The only positive contribution that science has been able to make is with regard to the actual material itself. When it came into the laboratory it was very brittle, and for the most part glued together by the decomposed tissue, and it was necessary to relax the membrane so that the pages could be separated without breaking, and at the same time solidify, by refrigeration, the decomposed tissue which threatened to engulf and obliterate the script. This was successfully accomplished, and the material restored to a condition suitable for the purposes of study.

Finally, in reply to a question on the possibility of using the radio

carbon figure as an estimate of age, Dr. Plenderleith said that this had already been carefully considered. It was generally agreed that it was possible to date the material by this new scientific method to within 500 years, but this would involve destroying some of the MS. To arrive at a closer approximation it would, in the present state of our knowledge, be necessary to sacrifice more of the material than seemed desirable.

A question was asked, What were the Shapira forgeries, referred to on page 138 ?

Written Communication.

Dr. Basil Atkinson wrote :

" May I be allowed to add to the excellent summary of the recent discoveries, which has been made by my friend Mr. F. F. Bruce, a few words to say that early in the present month Professor Sukenik lectured on these scrolls to a representative audience in the University of Cambridge ? In the course of his lecture he expressed the opinion that the scrolls in the cave came from a *geniza*, and his conviction, for which he gave a series of convincing arguments, that they antedate the Maccabaean period. In fact his *terminus a quo* was the Alexandrian conquest in the late fourth century B.C.

Author's Reply.

I have little to add to my paper save to express my warm gratitude to Mr. Leveen for his kindness in taking the chair and placing his palaeographical experience at our disposal as he has done, and to Dr. Birnbaum and Dr. Plenderleith for honouring my lecture with their presence and contributing to the discussion as experts in their respective fields. My failure to emphasize the primacy of the palaeographical evidence for dating the scrolls, as I ought to have done, has been rendered innocuous by the authoritative remarks of two such eminent palaeographers as Mr. Leveen and Dr. Birnbaum.

The first instalment of complete facsimiles from the Syrian collection has now appeared, and Sukenik has published a " Second Survey " of *Megilloth Genuzoth*. These, together with the facsimiles to follow, will engage the close attention of scholars for a long time to come.

The only other point to which I need refer at present is a lecture

delivered in Paris by Professor A. Dupont-Sommer on May 26, 1950 (reported in the *Manchester Guardian* on May 27) and published as a 32-page brochure, *Observations sur le commentaire d'Habacuc découvert près de la Mer Morte* (Paris, 1950). In this he ascribed the composition of the Habakkuk commentary to the year 41 B.C. or thereby, on the basis of its historical allusions, and argued that this and the other documents were hidden at the time of the war of A.D. 66-70. The sect which owned the documents, identified by him with the Covenanters of the Zadokite Fragment, had features closely similar to those of the Essenes. We must wait for further study before deciding between this view and Sukenik's—not to mention the others which have been and will yet be propounded. But a date before A.D. 70 for the documents is becoming increasingly probable.

In answer to the question about the Shapira forgeries, it may be said that these were portions of Deuteronomy in Hebrew, written in characters similar to those on the Moabite Stone, and therefore presumably dating (as it was claimed) from the 9th century B.C. The " discoverer " of these documents, an antiquarian dealer named Shapira, was soon proved to have written them himself on strips of leather cut from the margins of an ordinary synagogue scroll. The exposer of the hoax, the French archaeologist Clermont-Ganneau, wrote of it in *Les fraudes archéologiques en Palestine* (1885); a sympathetic and slightly fictionalized account is given by Shapira's daughter, Myriam Harry, in *La petite fille de Jérusalem* (1914).

892ND ORDINARY GENERAL MEETING

HELD IN THE CAXTON HALL, WESTMINSTER, S.W.1, ON MONDAY, 17TH APRIL, 1950.

HARVEY M. CAREY, ESQ., M.B., B.S., M.Sc., D.G.O., M.R.C.O.G., IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed and signed.

The following elections were announced:—Rev. Vernon C. Grounds, A.B., B.D., Fellow; Pastor G. A. Williams, Fellow; Rev. Frederick H. Squire, F.R.S.A., Fellow; David Widdison, Esq., M.P.S., Fellow; Rev. W. J. Feely, A.B., Th.B., Fellow; Harvey M. Carey, Esq., M.B., B.S., M.Sc., D.G.O., M.R.C.O.G., Fellow; H. G. H. Lillycrap, Esq., Member; R. H. Shalis, Esq., Member; W. Lloyd Pierce, Esq., B.A., Member; A. R. Braybrooks, Esq., Associate; D. J. Smith, Esq., Associate.

The CHAIRMAN then called on Douglas Dewar, Esq., B.A., F.Z.S., to read his paper entitled "Genetics and Evolution."

GENETICS AND EVOLUTION.

By DOUGLAS DEWAR, B.A., F.Z.S.

SYNOPSIS.

The science of genetics, although less than 50 years old, has added much to our knowledge of heredity, because (*a*) geneticists study organisms of which a number of successive generations can be reared in a year, and (*b*) geneticists have greatly increased the rate at which mutations occur in organisms by exposing the latter to X and other rays and mustard gas and other irritants.

It is submitted that the new facts brought to light by genetics are unfavourable to the evolution theory, because (1) geneticists have been no more successful than practical breeders in effecting transformations in the organisms on which they have operated. (2) Geneticists have been led by their work to believe that acquired characters are not inherited, and so have offended the Soviet Government, which will not allow Mendelian genetics to be taught in Russia. (3) The vast majority of the mutations in organisms bred by geneticists are not beneficial ones, and the fact that mutations of the ordinary kind are not only produced but multiplied by X-ray treatment suggests that the mutations are the result of damage to genes or chromosomes. (4) Most genes, although their main effect is on a particular organ, seem also to affect many if not all other organs. This renders it highly improbable that a mutation can be favourable on balance.

Criticism of Goldschmidt's theory that chromosomes and not gene mutations are the causes of evolution.

Comments on the fact that the chromosomes and mitosis appear to be as complicated in protozoa as in the most complicated metazoa.

It is submitted that geneticists are dealing only with the part in heredity played by the nucleus and are neglecting the almost equally important role of the cytoplasm.

It is submitted that the necessity for the genes, chromosomes and cytoplasm to co-operate with one another renders it difficult to believe that all existing organisms are descended from one-celled ancestors.

UNTIL the beginning of the present century scientific and practical breeders were completely in the dark regarding what may be called the mechanism of inheritance. This was the state of affairs when I had finished my course at Cambridge in 1895, although about 30 years previously the Abbé Mendel at Brünn and Charles Naudin at Paris had independently published the results of their experiments on hybridising plants, in which they disclosed the particulate nature of inheritance. Mendel went so far as to enunciate certain " laws " of inheritence. But the work of these men was for many years ignored by botanists and zoologists. Darwin, although aware of Naudin's work, did not appreciate its significance and made no mention of it in his book on variation in animals and plants.

In 1900, however, three botanists—de Vries in Holland, von Tshermark in Austria and Correns in Germany, realised the value of Mendel's discoveries and verified his results. Shortly after this, Bateson and Hurst, followed by Punnett and Saunders in England, and Morgan, Bridges and Sturtevant in the U.S.A., took up the matter on the zoological side.

Thus was established the science to which Bateson gave the name of Genetics. This new science met with bitter opposition, an account of which was given by Dr. Julian Huxley in *The Sunday Times* of July 10th, 1949. Some of the reasons for this opposition will be noticed later. Nothing daunted, the devotees of the new science continued their experiments, and Morgan and his collaborators hit upon the device of breeding insects of which many successive generations can be reared in a year. The creature which has been the subject of most of the experiments is the little fruit-fly *Drosophila melanogaster*, of which the distribution is world-wide.

As early as 1913 the American geneticists announced their conviction that the heredity outfit of every animal is to be found in that part of the nucleus of the germ cell which takes the form of rod-like chromosomes at the time of cell division. By 1925 they announced their belief that the objects that control heredity are arranged in linear series along the chromosomes, much like the beads on a string. These objects are called genes. The chromosomes are visible under the microscope, but it is doubtful whether the genes are distinguishable even under the photon microscope.

At present we can make only approximate estimates of the size of genes. It is estimated that the diameter of a gene is more than 20 and less than 77 mμ (millimicrons). If we take 50 as an average it means that the diameter of a gene is 1/20,000th of a millimetre.

A gene is generally believed to be composed of one (or possibly a very few) complex protein molecule. Schrödinger, who is a Nobel Prize winner, writes (*What is Life?* (1944)): "the gene is probably a large protein molecule in which every atom, every radicle, every heterocyclic ring plays an individual role more or less different from that displayed by any of the other similar atoms or ring," and "the gene is generally believed to be a very complicated molecule. It is probably an aperiodic solid, *e.g.*, every group of atom plays an individual role not entirely equivalent to that of any other . . . a gene contains certainly no more than about a million or a few million atoms." Later, after quoting some authorities, he changed his figure from "million" to "thousand." This last would seem to be the more accurate figure. Obviously the structure of the gene is very important in connection with mutations.

Hundreds of geneticists are now at work, and the reports of their experiments and those of their predecessors fill many volumes. Thus the question arises: are the results of these experiments favourable or unfavourable to the theory of evolution? In my view they are most unfavourable. As many biologists disagree with me, let me set forth briefly the grounds upon which my opinion is based:

1. The experimental work of geneticists and of practical breeders shows that species are very stable and resistant to attempts to transform them, despite the phenomenon of variation.

Practical breeders have been handling our domestic animals for

centuries, but no fundamental change has been made in any kind of animal. In the case of some of these domestic animals, notably horses, cats and dogs, we have pictorial evidence that during the past six millennia they have undergone very little modification.

In the case of horses no less an authority than Lady Wentworth declares:

> "The present species has walked on single hoofs and shown the same structure as far back as history can trace him." (*Horses of Britain* (1944).) "Further, early cave and rock pictures show that in the neolithic period both the heavy-boned northern type of horse and the lighter southern type existed in Europe. The former exhibited one large and two small varieties, while the southern type is depicted in European rock pictures as a speckled pony: the pure Arabian appears only in the rock paintings of Arabia (where it is often depicted as galloping with a rider carrying a spear) and of Egypt (1800 B.C.), where it is shown both ridden and driven." (*The Authentic Arab Horse and His Descendants*' (1945).)

Similarly ancient pictorial representations show that in ancient Egypt, fully 6,000 years ago, several breeds of domestic dog existed, one of which, of greyhound type, was used for hunting deer, another breed had short legs like a dachshund, a third had pendent ears.

We know from the pictures that the oldest domestic animals were asses, oxen, sheep, goats, pigs, dogs, cats, geese and ducks.

The earliest known pictures of domestic animals show that none of them has changed much, each domesticated species was 4,000 years ago as sharply marked off from all other kinds of animals as it is to-day.

It is true that in the case of animals bred for amusement rather than utility many freaks have been produced by man. Darwin made much of this, asserting that if some of the pigeons bred by fanciers had been found in the wild they would have been deemed new species or even genera, and he argued that if man in a few centuries can produce by selection such forms natural selection working during millions of years could have effected vastly greater changes.

Darwin, however, knew nothing of the effect on the body of the secretions of the ductless glands, and shut his eyes to the

fact that these freaks are quite incapable of maintaining themselves in nature, monstrosities resulting from gland unbalance; yet, despite their abnormality, they clearly bear the stamp of the wild ancestor. Thus fantails, pouters, jacobins, barbs, tumblers, swallows, trumpeters, etc., all bear the hallmark "pigeon." Moreover, all these breeds, when crossed or when mated with the parent form, yield fertile offspring.

The work of geneticists confirms that of the practical breeders. In the animals on which the former have experimented they have produced many freaks and monstrosities (some of these will be noticed later), but, as in the case of the domestic animal freaks, these are all clearly members of the wild species from which they have been bred. It is true that geneticists have been at work for less than fifty years, but in most cases they have experimented on animals which in the laboratory produce a number of successive broods in a year. Thus in the case of the little fruit fly *Drosophila melanogaster*, on which the majority of geneticists have worked, 25 successive generations can be reared in a year, so that some 1,000 generations have been bred in the laboratory. Assuming that the generation time for man is twenty-five years on an average, or 40 generations in 1,000 years, it would require 25,000 years to perform this experiment on man. Nor is this all, Müller discovered in 1927 that by irradiating this fly with X-rays the rate at which mutations occur is increased about fifteen thousand per cent. Needless to say, these flies and other creatures experimented on have been freely X-rayed during the past 20 years. In consequence the number of mutations which have been produced in the laboratory has been vastly increased. But the mutations so produced are all of the same kind as those which occur in untreated individuals. This is true of the mutations induced by other rays and mutation-inducing chemicals, such as mustard gas.

"Experiments on several types of organisms," writes R. D. Evans (*Science* (1949), vol. 109, p. 304) "have shown that irradiation can produce gene mutations. These induced mutations are not novel types, but appear to be entirely similar to those which occur spontaneously."

Another interesting discovery made by geneticists is that the average rate per generation at which spontaneous gene mutations occur is substantially independent of life span. Thus as many mutations are likely to occur in a fruit-fly in its life-time of 14 days, as in that of a horse which lives for as many years. At

the Bicentennial Conference on Genetics, Palaeontology and Evolution held at Princeton University in 1946 Professor Haldane said, "the order of magnitude of the mutation rate per generation in man is about the same as that of *Drosophila melanogaster*, although the mutation rate per day in man is only a five-hundredth that of *Drosophila*."

As Professor Sturtevant pointed out at the same Conference, it is hard to determine natural mutation frequencies because spontaneous mutations are usually extremely rare events. According to Evans (*op. cit.*) the rate is of the order of 10^{-5} to 10^{-6} per gene per generation.

When considering the results of genetical work it is desirable to bear in mind that *Drosophila*, on which so much work has been done, is an unusually variable genus, even for an insect. Of the birds, the biggest known genus is *Zosterops*, of which 67 species have been described. In the case of insects, however, a genus of this size is not unusual. Several hundred species of *Drosophila* have already been described. M. D. T. White writes of it: "It is quite probable that when the Drosophilids of the more remote parts of the world have been properly studied the genus may be found to contain well over a thousand species. We may regard it as a flourishing group which is probably evolving fairly rapidly at the present time." (*Animal Cytology and Evolution* (1945), p. 124.)

2. The experimental work of geneticists seems to show that the effects of use and disuse are not inherited, nor are characters acquired by an individual during its life-time. This is the view of nearly all geneticists to-day, outside Russia.

The prevailing view is thus stated by H. J. Müller, who was awarded the Nobel prize for his work as a geneticist: "Genetics has adduced cogent evidence that, despite the strong influence of environment in modifying the body as a whole, and even the protoplasm of the cells, the genes within the germ cells of the body retain their original structure without specific alterations caused by the modification of the body, so that, when the modified individual reproduces, it transmits to its offspring genes, unaffected by its own acquired characters. The offspring will not tend to repeat the parental modifications unless the same peculiar environment is itself repeated." (Article "Variation," *Ency. Brit.*, vol. 23, p. 988.)

As a little reflection should render it clear that if neither the effects of use and disuse nor acquired characters are inherited,

the theory of evolution is impossible, it is surprising that the majority of geneticists in English-speaking countries seem still to accept the evolution theory. The attitude of these is most illogical. The French seem to realise this and in consequence few of their biologists are geneticists. It is significant that the article on genetics in the French *Encyclopaedia* is by E. Guyénot, a professor at the University of Geneva. Dr. A. Labbé, a professor at the School of Medicine at Nantes, and an ardent transformist, writes:

> "Genetics, which is consecrated to the study of heredity, has become a kind of religion, dogmatic, mystical, intolerant, which has its temples, its priests, its believers, its councils, and which aims at converting all the biologists in the world. For it transformism may still exist in theory, but in practice the very fact of transformism is incomprehensible. However, the geneticists still call themselves transformists; just as in politics where the left and the right parties each claim exclusively the epithet republican. Without being deliberately opposed to these genetical ideas, nevertheless I cannot accept them without many reservations, and, in common with most French biologists, I cannot admit even the foundation of genetics other than as a possible, but unproved entity. Genetics ends inevitably in a more or less complete negation of evolution: at the most it can conceive of fortuitous variations. . . . We do not want this genetics which hampers us. . . . It is only when the laws of the transformation of species will be better known that we can attack the problem of heredity. Let us then set aside genetics which leads us either to the strict fixity of species or a relative variation which is not evolutionary." (*Le Conflit transformiste* (1929), p. 140.)

To the logical biologist, there are only two alternatives, either to reject evolution, or to fly in the face of genetical evidence and believe that acquired characteristics are inherited.

Not many biologists accept the first alternative. One of the few who do is Heribert Nilsson, of Lund University, who is a botanical geneticist. He writes: "It is obvious that the investigations of the last three decades into the problem of the origin of species have not been able to show that a variational material capable of competition in the struggle for existence is formed by mutation. Further, as it has also been impossible to demonstrate a progressive adaptation by means of the trans-

mission of acquired characters (all the numerous experiments made have yielded negative results), we are forced to this conclusion that *the theory of evolution has not been verified by experimental investigations of the origin of species* "(italics his). He continues : " Is then biology without evolution conceivable?" He replies : " Just as affinity in Chemistry or Mineralogy need not be based on the assumption that the elements evolved from one another, from Hydrogen to Uranium, there is no more need of our basing the related series of biology on an evolution from amoeba to *Homo* and so on." (*Hereditas*, vol. XX (1935), p. 236.)

The second alternative was adopted by the late Professor E. A. MacBride in England and, under the orders of the Soviet Government, by all Soviet biologists.

MacBride sought to eat his cake and have it too, by being a geneticist and at the same time asserting that acquired characters are inherited. Indeed he went so far as to the head chapter VIII of his *Evolution* (Benn's Sixpenny Library, No. 109 (1927)) : " Inheritability of Habit as the Real Cause of Evolution."

The view of the Soviet Government is thus set forth in an editorial article in *Izvestia* of September 8th, 1948, by Kaftanof, Minister of Higher Education in the U.S.S.R. :

" There are two opposite trends in biological science. One of them is progressive and materialistic, called Michurin's theory . . . the other is the reactionary, idealistic Weismann's or Mendel-Morgan theory. In opposition to the Mendel-Morgan trend Russia developed and, encouraged by the Soviet régime, brought to its full bloom, the great theory of the great modifier of nature, I. V. Michurin.

" Michurin's materialistic theory has been continually enriched by the works of his followers, with the academician T. D. Lysenko at their head. This trend in biology has developed into a mighty current which has taken hold of the masses. It inspires millions of collective farmers with faith in the creative power of their efforts and gives them a firm assurance in the realisation of new successes in the field of abundancy of farming products.

" The Michurinists have proved, not by word but by demonstration, that it is possible to direct the inborn qualities of animals and plants in a desired manner. Michurin's theory has adopted and developed the best sides of Darwinism. Darwin had explained the evolution of animals and plants from the materialistic point of view. Michurin has developed this knowledge and taught methods of directing the process of producing

new species of plants and new species of domestic animals, thus transforming Darwinism into a really practical creative doctrine. . . . Thanks to the care of the Bolshevist party and of the Soviet Government, as well as to the personal care of our great leaders, Lenin and Stalin, Michurin's theory has been preserved from oblivion and has become the property of the people. The efforts of Michurin's followers led by the academician T. D. Lysenko have brought it to a new height of achievement. . . . The last session of the U.S.S.R. Lenin Academy of Agricultural Sciences . . . has brought to light the opponents of Michurin's doctrine in biology and has dealt a stunning blow to the reactionary Weismann-Morgan theories." Then he gives a list of the Russian geneticists who were deprived of their posts. Among these are I. I. Schmallhausen who "denies the inheritance of acquired characters and finds that evolution depends upon mutations which originate directly in the germ cells of the organism and have a quite accidental and indeterminate character, not regulated by the conditions of its life. This idealistic, reactionary theory is fundamentally antagonistic to Darwin's teaching. Nevertheless Schmallhausen always hid under the banner of Darwinism. . . . All biological chairs and faculties must be held and supported by qualified Michurinists. . . . We must have textbooks based on the progressive Michurin theory. . . ." (*Science*, Jan. 28th, 1949, pp. 3 *et seq.*)

All this is most discreditable to the Soviet authorities and is injurious to scientific progress, and has elicited justifiable protests from British and American biologists. But some of these protests have been almost hysterical and unnecessarily violent, notably Dr. Julian Huxley's attack in *Nature*, and the broadcast by Dr. C. D. Darlington in December, 1948. Possibly some of this acerbity is because Lysenko and his followers are treating the biologists with whom they disagree very much in the same way as British and American biologists treat those who reject the evolution theory. Anyone who rejects transformism is as unlikely to be given a biological appointment in an English-speaking country as one who asserts that acquired characters are not inherited is to be given a biological post in Russia. Both the Soviet authorities and the British biological authorities are trying to stamp out opponents of evolution, and the Soviet authorities regard geneticists as the enemies of evolutionism. *Hinc illae lachrymae*!

3. The vast majority of mutations are the reverse of beneficial; indeed a large percentage are lethal, *i.e.*, they lead to the early death of the animal in which they occur.

Let me quote a few authorities in support of this statement. Mr. E. B. Ford writes: "It may be said that all genetic factors which have arisen by mutation in the laboratory have certain peculiarities in common. It seems that they are nearly always associated with some lowering of vitality as compared with the wild-type form, and the more marked their effect the more deleterious seems to be their action. They appear to be concerned with the production of small superficial differences or with obviously pathological departures from normality which could not in any event survive in a state of nature. Further, nearly all are recessives. . . . It may, in short, be stated that no mutation has ever occurred in the progress of genetic work which is fully viable and behaves as a dominant to the wild type condition. That any have given rise to changes which would be of survival value in nature appears highly doubtful." (*Mendelism and Evolution* (1936), p. 43.)

Mutants of the shrimp *Gammarus* "would have but little chance, in normal conditions of nature, of survival through the early critical period. Each new mutation has shown greatly lowered vitality during its earlier generations, accompanied by marked abnormalities in breeding." (Sexton, Clark and Spooner, *Jour. Marine Biol. Assn.* (1930), p. 189.)

Gene-mutations are "generally injurious" (*Genetics* (1931), p. 14.)

Robson and Richards (*The Variations of Animals in Nature* (1936), p. 222) write of *Drosophila*: "We have taken the list of 389 mutations given by Morgan, Bridges and Sturtevant in *The Genetics of Drosophila* (1925), and analysed them as far as possible with the following result:

Lethal	90
Defective	120
Viability poor	16
? Defective	9
Uncertain or normal	114
Eye colour	40

Speaking generally, it may be said that nearly 60 per cent. of the mutants are certainly defective, and a certain small percentage is normal."

Notice that not one of these mutations is described as beneficial or good. Nevertheless, in my opinion, Robson and Richards have under-estimated the number of bad mutations. As the result of a perusal of *The Mutants of Drosophila melanogaster*, by Bridges and Brehme, which was published in 1944, I wrote: "These mutations are almost all what may be called *loss mutations*, all are defective in some way, thus over 100 mutations of wings have been recorded, in all of which the wings are defective or reduced to stumps or absent." (*Is Evolution Proved?*" (1947), p. 187.)

Professor J. B. S. Haldane challenged this assertion (*Is Evolution a Myth?* (1949)) but when I invited him to name some good mutations, he was able to cite only some black mutants of *Drosophila melanogaster*, which are more resistant to drought and insecticides than is the wild type. But many of these stocks show low viability—a serious defect, so the best that can be said of them is that, like the curate's egg, they are good in parts!

J. H. Müller asserted: "Most mutations are bad, in fact good ones are so rare that we may consider them all as bad." (*Time*, November 11th, 1946, p. 46.)

The best proof that mutations are almost invariably bad is the fact that X-ray treatment causes abundant mutations of the kind that occur normally, and the evidence indicates that these rays act by displacing or knocking out atoms in the molecules of the genes on which they impinge, in other words these rays cause damage to the genes.

This is what Schrödinger, a Nobel Prize winner, has to say in this matter (*What is Life?* (1944)): "The mutations are actually due to quantum jumps in the gene molecule" (p. 34), and: "We shall assume the structure of a gene to be that of a large molecule, capable of only discontinuous change, which consists in a re-arrangement of the atoms and leads to an isomeric molecule. The re-arrangement affects only a small region of the gene, and a vast number of different re-arrangements may be possible. The energy thresholds separating the actual configuration from any possible isomeric ones have to be high enough (compared with the average energy of an atom) to make a change-over a rare event. These rare events we shall identify with spontaneous mutations. . . . We may safely assert that there is no alternative to the molecular explanation of the hereditary substance. The physical aspect leaves no other possibility to account for its

permanence. . . . It is conceivable that an isomeric change of configuration in some part of our molecule, produced by a chance fluctuation of the vibrational energy can be a sufficiently rare event to be interpreted as a spontaneous mutation. Thus we account, by the very principles of quantum mechanics, for the most amazing fact about mutations, the fact by which they first attracted de Vries's attention, that they are 'jumping' variations, no intermediate forms occurring . . . X-rays, so to speak, cause explosions. That in many cases the effect of the explosion will not be an orderly isomeric transition, but a lesion of the chromosomes, a lesion that becomes lethal when by injurious crossings the uninjured partner (the corresponding chromosome of the second set) is removed or displaced by a partner whose corresponding gene is known to be itself morbid—all that is absolutely to be expected and is exactly what is observed" (p. 66).

It is easy to understand how X-rays can break a thread-like chromosome, or eject an atom, or disturb atoms in the gene molecule. But treatment with mustard gas seems to be as effective as X-rays in producing mutations, and I find it difficult to see how the impact of a mustard gas molecule on a gene molecule can produce the same effects as bombardment by X-rays.

Experiments. however, show that the effects in the two cases are not exactly the same. Auerbach, Robson and Carr give an account of some of these differences. They write ("The Chemical Production of Mutations," *Science*, 1947, pp. 243–7): "After X-ray treatment of males (of *Drosophila melanogaster*) most of the mutated offspring show the induced abnormality (such as the yellow body colour instead of the normal grey) over the whole surface of the body. Only a small proportion (less than 15 per cent.) of the mutated individuals are mosaics (*i.e.*, show the abnormality in a part of the body, the remainder being normal). In the progeny of the mustard-gas treated males, on the other hand, the mosaics form a high proportion (usually between 30 and 50 per cent.) of all mutated individuals."

It is also found that bombarding by X-rays is more likely than treatment with mustard gas, to break the chromosome thread.

As X-rays and mustard gas are both destructive agents and as the mutations they produce are identical with those which occur in animals not subject to special treatment, I submit that the belief that the accumulation of successive mutations in natural

conditions can in course of time gradually transform one type of animal or plant into a higher or more complex type, is on a par with the belief that the aerial bombing of a town composed mainly of huts and small cottages can in time transform it into a town composed of large houses, churches and warehouses.

4. Another fact, which in my view is most unfavourable to the evolution theory, and which writers on genetics are apt to slur over, is the large number of genes which co-operate to produce quite trivial features. For example, as Stern admits (*Genetics, Palaeontology and Evolution* (1946)): "No less than 30 genes co-operate in forming the actual colour of the eye of the adult *Drosophila*." There is nothing peculiar in this, "each character has been found by geneticists to depend on many genes for its realisation." Now Müller estimates that there are only 1,800 genes in *Drosophila*. From this it follows that if each gene operates in connection with only one character, the number of genes possessed by *Drosophila* is quite inadequate for the realisation of all its characters. Therefore geneticists have to believe that most, if not all, genes affect a number of characters. As Stern puts it: "The conclusion follows, therefore, that in general there is no simple one-to-one relation of gene to character, or of character to gene. Development of organisation, character and organism must accordingly be envisaged as consequences or products derived from multidimensional networks of genic interactions."

Müller goes even further. "There is reason to infer," he writes (Article "Gene," *Encyc. Brit.*, vol. 15, p. 1000), "that every gene contributes to every part of the body, affecting some parts more than others, and it is these that are picked out for convenience in studying heredity."

As a mutation seems to involve the dislocation or disturbance of at least one of the atoms in one of the molecules of the gene affected, the resulting mutation is likely to affect all the organs or features on which that gene acts, and the odds must be enormous against this effect being favourable on all or most of these organs. So that the odds are enormous against the mutation being a good one. Stern certainly does not overstate this when he writes: "Because there is such a complex interplay among genes, mutations or hereditable changes in genic structure and action will generally be disadvantageous to the organism already in possession of a well-adjusted genotype (or collection of genes). So also a deterioration or pronounced change of

environment may put the organism with a formerly well-adapted genotype at a disadvantage, because genes interact not only with each other but also indirectly or directly with the environment. For these reasons a change in the action of the genes without environmental changes, or change in the environment without genic change, or change in both genes and environment may be expected to make for an unbalance even though the system was formerly a well-adjusted one." Being a good evolutionist, Stern then proceeds to make the best of a bad job. He writes: "Nevertheless, gene mutation is a *sine qua non* of evolution, and environmental changes inevitably occur and make new demands upon the organism, so there must be situations in which genic or environmental changes are tolerable to the organism during those periods in which new genotypes are being subject to selection or new environments explored."

The last part of the above passage is typical of the transformist's outlook. He starts off with the assumption that evolution has occurred, and so has to assert that highly improbable events *must* have happened!

In another attempt to overcome this difficulty Professor H. S. Jennings of the Johns Hopkins University, U.S.A., writes (*The Biological Basis of Human Nature* (1930), p. 322):

> "When we see gene mutations in experimental breeding, have we before our eyes the process that has resulted in progressive evolution?
>
> If all such mutations are destructive or disadvantageous, they cannot be the material of progressive evolution. Some investigators have therefore expressed the opinion that in gene mutations we are witnessing merely the disintegration of the genetic system, the breaking down of organisms, not their upbuilding; we are observing the 'wrecking of the train,' not its construction. The method of progressive evolution would then be completely hidden from us.
>
> To this it is answered that it is not known that all gene mutations are disadvantageous. For many of the mutations producing slight changes, there is no indication of harmful effects. There are even certain conspicuous alterations which, it is practically certain, are not disadvantageous. Different colours in rabbits and rats arise by mutation: there appears to be no evidence that they result in decreased vigour. The diverse eye colours in man must originally have arisen by mutations: presumably blue eyes (since they are recessive)

from darker eyes. Yet there is no indication that differences in vigour go with diverse eye colours.

It was to be anticipated that most changes in the materials of the genetic system, so drastic as to cause a sudden large alteration in the structure or physiology of the organism would be harmful. But the case is different with respect to the much more numerous mutations causing very slight effects. Many of these too may be harmful, but some of them may not. Some of them may well make the individual more efficient under the conditions in which it lives. Even if but a small proportion of them are thus advantageous, this is sufficient. Individuals with these rare beneficial mutations will multiply, gradually supplanting those without the mutations. After a time a large proportion of the stock will consist of the individuals bearing the advantageously modified genes."

The above is clearly wishful thinking on the part of Jennings. It may be soothing syrup to some. How much more soothing to the evolutionist would be an example of a mutation which is clearly advantageous!

Dr. Richard Goldschmidt, Professor of Zoology at the University of California, occupies an isolated position among geneticists because he asserts that the gene mutations (on which they set such store, and which he calls micro mutations) can lead only to evolution within the species, *i.e.*, can produce only varieties, races and sub-species. He sets forth his views thus (*The Material Basis of Evolution* (1940), p. 6): "I cannot agree with the viewpoint of the textbooks that the problem of evolution has been solved as far as the genetic basis is concerned.

"This viewpoint considers it as granted that the process of mutation of the unit of heredity, the gene, is the starting point for evolution, and that the accumulation of gene mutations, the isolation and selection of the new variants which afterwards continue to repeat the same process over again, account for all evolutionary diversifications. This viewpoint, to which we shall allude henceforth as the neo-Darwinian thesis, must take it for granted that somehow new genes are formed, as it is hardly to be assumed that man and amoeba may be connected by mutations of the same genes, though the chromosomes of some Protozoa look uncomfortably like those of the highest animals. It must further be taken for granted that all possible differences, including the most complicated adaptations, have been slowly built up by the accumulation of such mutations. We shall try

to show that this viewpoint does not explain the facts, and we shall look for explanations which might evade these and other difficulties and simultaneously account for such facts as have to be pushed in the background to make the popular assumptions plausible. At this point in our discussion I may challenge the adherents of the strictly Darwinian view, which we are discussing here, to try to explain the evolution of the following features by the accumulation and selection of small mutants: hair in mammals, feathers in birds, segmentation of arthropods and vertebrates, the transformation of the gill-arches in phylogeny including the aortic arches, muscles, nerves, etc.: further, teeth, shells of molluscs, ectoskeletons, compound eyes, blood circulation, alternation of generations, statocysts, ambulacral system of echinoderms, pedicellaria of the same, cnidocysts, poison apparatus of snakes, whalebone, and, finally primary chemical differences like haemoglobin vs haemocyanin, etc. No one has accepted this challenge! Corresponding examples from plants could be given."

Goldschmidt devotes the first 185 pages of the book named above demonstrating that gene mutations cannot account for the origin of new species, much less of higher categories. He concludes this part of his book thus (italics his) (p. 183): "Micro-evolution by accumulation of micromutations—we may also say neo-Darwinian evolution—is a process which leads to diversification strictly within the species. . . . *Sub-species are actually, therefore, neither incipient species nor models for the origin of species.* They are more or less diversified blind alleys within the species. The decisive step in evolution, the first step towards macroevolution, the step from one species to another, requires another evolutionary method than that of sheer accumulation of micromutations."

Goldschmidt devotes the last 200 pages of his book to macro-evolution. This part of his book is an anticlimax, in that the only cause of evolution that he can suggest is change in the way in which the genes are arranged in the chromosomes: these changes he calls systematic mutations to distinguish them from changes in the genes themselves. He asserts (p. 203) that the facts have led him to believe that "a pattern change in the chromosomes, completely independent of gene mutations, nay, even of the concept of the gene, will furnish this new method of evolution."

This is a startling announcement because the ways in which

chromosomes can be repatterned appear to be few: (1) A section of a chromosome may get broken off or detached and then re-attach itself to the same chromosome at some other point, or it may attach itself to another chromosome, and in either case it may attach itself with its original front end in front or at the back, so that the linear order of the genes is reversed (Inversion). (2) The detached section may not re-attach itself to another chromosome, and so add to the number of chromosomes, although the total length of all the chromosomes will not be increased.

In these two instances there is no increase or diminution of the number of genes, or in the structure of any of these. The only alteration is that many of the genes change their neighbours. (3) The detached section of the chromosome may get lost and cease to form part of the gene complex. This entails a loss of genes, otherwise no change. (4) A chromosome, or all the chromosomes may not split up longitudinally at cell division, so that the number of chromosomes becomes doubled and each gene becomes duplicated. This is the condition known as polyploidy, which is uncommon in animals but often occurs in plants; indeed many of the flowers produced by horticulturists are polyploids. This tends to increase the size of the plant affected, and may result in the formation of new species, but these are all of the same type as the normal parent. The loss of genes that occurs in (3) above, at the best may mean an unhealthy plant; more often it has a lethal effect.

As the repatterning of chromosomes is effected by X-rays and mustard gas, it, as in the case of gene changes, appears to be of a pathological nature, and it is difficult to believe that a succession of pathological changes can convert an amoeba into a starfish or any other class of viable animal.

Apart from this, so far the experimental work of geneticists seems to negative this hypothesis. Numerous experiments show that the repeated inversions and duplications which seem to have occurred in chromosomes have had very little effect on the body form of the species in which they are exhibited. Thus there are two races, known as A. and B. of the fly *Drosophila pseudobscura*, very alike in appearance, despite the fact that their chromosomes exhibit a number of differences, indeed, greater differences than those between the species *D. melanogaster* and *D. simulans*. Nor is this all; within each of these two races the chromosomes exhibit considerable diversity.

"Tan and Koller," writes M. J. D. White (*Cytology and Evolution* (1945), p. 100), "have shown that the two races differ in at least four inversions in each limb of the X, one in the 2nd and one in the 3rd chromosome. Within each race, however, the gene-sequences are not constant, since a number of different inversions are present. The 3rd chromosome of *pseudobscura* seems to be especially variable: a total of 21 different inversions are now known in this chromosome. Seven of these are found only in race B., 13 only in race A., while one (known as 'standard') occurs in both. As far as the other chromosomes are concerned, five sequences are known in the 2nd chromosome, two in the 4th, while in the X three are known in the 'right' limb and two in the 'left' one. The unusual variability of the 3rd chromosome is quite unexplained, but Helfer has shown that all the chromosomes are equally fragmented by X-rays in proportion to their length." White adds (p. 101): "The morphological differences between the A. and B. races are so slight that they cannot be detected except by careful measurements and statistical analysis. The sharpest difference recorded is in the wing-beat frequency. The mating between the different chromosomal types appears to be at random."

Again *Drosophila miranda* and *Drosophila pseudobscura* are very alike in external appearance, yet their chromosomes are quite different, and their hybrids when produced are completely sterile. Dobzhansky and Tan have estimated that if they be derived from a common ancestor there must have been about 100 breaks in the past in their chromosomes. These are not peculiar cases. Goldschmidt himself writes: "From the work on intraspecific chromosome changes we know that inversions and re-arrangements may occur without having any noticeable effect, even when they are accumulated."

Moreover even losses of parts of chromosomes or additions to or duplication of chromosomes may have very little effect on external appearances. J. B. S. Haldane (article "Heredity" in *Encyc. Brit.*) mentions that "individuals of *Drosophila melanogaster* which have lost one of the pair of small chromosomes are viable but small." Further, the presence of a third small chromosome has little apparent effect on the creature. In animals the augmentation of the number of chromosomes is very uncommon, but it occurs frequently in plants, when the number

may be doubled or further augmented. The result of such multiplication is usually an increase in size of the plant in question, but no fundamental change seems to be effected. No amount of multiplication of the chromosomes will turn a rose into something which is not a rose or a hemp-nettle into something which is not a hemp-nettle.

Against all this evidence Goldschmidt has not adduced a single instance where it can be shown that chromosome re-arrangement has resulted in the production of a new type of organism. All that he can do is to assert that this must have happened in the past because of the great differences between the various classes and other large groups!

Goldschmidt attempts to get over the fact that chromosome changes in all the cases genetically investigated do not result in considerable change in the body thus (p. 206): "This new pattern seems to emerge slowly in a series of consecutive steps. . . . These steps may be without any visible effect until the repatterning of the chromosome (repatterning without any change of the material constituents) leads to a new stable pattern, that is, a new chemical system. This may have attained a threshold of action beyond which the physiological reaction system of development, controlled by the new genetic pattern, is so basically changed that a new phenotype emerges, the new species, separated from the old one by a bridgeless gap and an incompatible intrachromosomal pattern. 'Emergent evolution' but without mysticism! I emphasise again this viewpoint, cogent as it is and, in my opinion, necessary to an understanding of evolution, is to be understood only after the fetters of the atomistic gene theory have been thrown off, a step which is unavoidable but which requires a certain elasticity of mind."

The above passage shows the effect of the belief in evolution on the human mind. Goldschmidt realises that the gene mutation theory cannot account for evolution, so he discards this theory and replaces it by a far less tenable one. It never occurs to him that evolution may not have taken place.

Moreover, as chromosome mutations are induced by X-rays and other irritants, just as gene mutations are, a great many of the former must have occurred in the laboratory while the geneticists have been at work. Therefore, if Goldschmidt's theory were true, many viable new genera should by now have been bred in the laboratory. The fact that this has not happened is fatal to Goldschmidt's theory.

So far nothing approaching an adequate cause of evolution has come to light.

5. Of the facts brought to light by the geneticists and cytologists one of the most unfavourable to evolutionism is that the chromosomes of the simplest organisms appear to be as complicated as those of the highest animals. "The chromosomes of some Protozoa," writes R. Goldschmidt (*The Material Basis of Evolution* (1940), p. 6), "look uncomfortably like those of the highest animals."

The process called mitosis, whereby a cell divides into two is so complicated that, in my view, it cannot have been developed by the blind forces of nature. This process is described in all elementary books on cytology and genetics. An excellent easily-accessible account is given by V. H. Mottram in the chapter "The Chromosome Ballet," of his *The Physical Basis of Personality* (Pelican book, A.139).

Karl Belar writes (article, "Protozoa," *Encyc. Brit.*, vol. 18, p. 626): "In all groups of the Protozoa we recognise to-day the occurrence of true mitosis, as complicated in every way and indeed often much more complicated than in multicellular animals. . . . In no case can we say that the method of nuclear division in the Protozoa is simpler or more primitive than in the higher animals and plants: the chromosomes of the Protozoa are no fewer than and show in most cases the same peculiarities as those of multicellular organisms."

This does not mean that the chromosomes of all animals are very alike in appearance. In fact they exhibit great variety in number, form and size; but there seems to be little, if any, connection between these features and the kind of animal in which the chromosomes occur. As regards number in the generative cells, the thread-worm *Ascaris* has 1 chromosome, and at the other end of the scale the moth *Phigalia* has 112: *Drosophila melanogaster* has 4, the rabbit 22, man 24. Twenty-four is quite a common number, it occurs in perhaps the majority of placental mammals, in several birds, some snails and amphibia, but it has not been found in any marsupial mammal or lizard or fly.

As to how the genes produce their effects I can only hazard a guess, *viz.*, that each gene manufactures a chemical compound or enzyme which stimulates the surrounding cytoplasm to develop in a special direction. The cytoplasm, in turn, influences the nature of the enzymes produced by the genes which it

surrounds. Thus does the undifferentiated cytoplasm in each cell become differentiated into the form it exhibits in the cell of the adult.

But every cell in the developing embryo contains all the genes of the species. The cells in the legs contain the same genes as the cells in the eyes. Why then do the eye-inducing genes not produce eyes in the leg, or the leg-inducing genes produce legs in the eye region? The reason seems to be that *each gene can only fulfil its organ-inducing function when it is surrounded by the right kind of cytoplasm.* To produce an eye two factors are essential: the genes which secrete the necessary enzymes and the cytoplasm which has become differentiated in the eye-direction, *i.e.*, acquired the power of developing into part of an eye under the proper stimulus.

The foregoing remarks make it clear that, in my opinion, geneticists are dealing only with one aspect of the problem of heredity, *viz.*, the part played by the chromosomes and the genes; they pay little attention to the role of the cytoplasm, which constitutes by far the greater part of the ovum and of every other living cell. The reason for this procedure on the part of the geneticists is, I think, that the behaviour of the chromosomes is easy to watch through the microscope, while that of the constituent parts of the cytoplasm is difficult, if possible, to make out. Dr. C. H. Waddington in a broadcast talk in August, 1949, rather naïvely said that the "few thousand particles known as genes are the most important things which are passed on from the parent to the offspring." He considers that the genes are more important than the cytoplasm "because, if the genes in an animal are abnormal, then the adult which develops will be abnormal, whereas we find very few abnormalities or peculiarities that can be traced back to changes in the rest of the egg." (*Listener*, August 25th, 1949.)

It does not seem to have occurred to Dr. Waddington that if anything goes wrong with the cytoplasm, the ovum will fail to develop, or that the cytoplasm may be much more stable than the genes and chromosomes.

To speak of the genes being more important than the cytoplasm is on a par with saying that the walls of a house are more important than the foundations on which they are built. The cytoplasm is the foundation of the edifice which we call an organism. It is the medium in which the genes exist and from which they derive their sustenance. In a cell which has just been produced

by division the chromosomes swell by taking in material from the cytoplasm; later some, at any rate, of this material is returned to the cytoplasm, after it has been changed chemically in some way.

I am not alone in believing that the cytoplasm plays a far more important role in heredity than most geneticists will allow. Conklin, Loeb, Jenkinson, Russell and Sonneborn have all stressed the great importance of the cytoplasm.

Without accepting all E. S. Russell's conclusions I may say that I consider his *The Interpretation of Development and Heredity* (1930) a most valuable book.

Dr. H. J. Jennings, although he does not seem to go so far as Russell is, I submit, almost certainly correct when he writes:

> "The cytoplasm is the medium in which the genes live and operate. It is modified, transformed by the action of the genes, so that at the later stages of development the cytoplasm differs greatly from that which was present in the earlier stages. This changed protoplasm reacts anew with the genes, causing these now to change their action, resulting again in new cytoplasmic products. This continues until ultimately the diverse tissues and organs of the adult body have been produced as a result of changes in the cytoplasm. . . . The cytoplasm is the material out of which the parts of the diversified body are manufactured, through interaction with the genes. But in the development the cytoplasm is not passive; it reacts upon the genes, and what the genes do, what they produce is largely determined by the nature of the cytoplasm in which at various stages of development they find themselves." (*The Biological Basis of Human Nature* (1930), p. 78.)

Clearly then the genes in the ovum of a crustacean are surrounded by cytoplasm of a very different nature to that of the cytoplasm in which the genes of a mollusc, or of a vertebrate are placed.

This, I contend, is the reason why the genes of a Protozoan, in conjunction with the surrounding cytoplasm, produce an animal having neither skull, limbs, vertebrae, pelvis, eyes, ears, snout, teeth, mouth, brain, nerves, heart, blood, blood vessels, intestine, liver, spleen, etc., while those in the cytoplasm of the ovum of a vertebrate, in conjunction with the cytoplasm, produce an adult having all the above things.

If the cytoplasm of vertebrates be derived from that of Protozoa by a process of evolution, it is surprising that no one has made a plausible suggestion as to what has effected the difference between the end-products of the two kinds of cytoplasm.

The genes and the chromosomes work in co-operation with the cytoplasm; without such co-operation the development of the fertilised ovum would either go awry or fail to take place.

If, then, the great groups of many-celled animals and plants evolved from one-celled ancestors as the result of successive mutations, all these mutations must have changed both the genes and the cytoplasm in such a manner that, despite these changes, the genes not only continued to act in unison with the cytoplasm, but acted more successfully and so produced more and more complicated organisms.

The idea that mutations of this description not only took place, but were caused by unidentified natural forces, is, I submit, fantastic. Some nineteen hundred years ago St. Paul said, "All flesh is not the same flesh: but there is one kind of flesh of men, another flesh of beasts, another of fishes, and another of birds." To-day I think we can go farther and say that all cytoplasm is not the same cytoplasm: but the cytoplasm of each class of animal differs from that of all the other classes.

Discussion.

Dr. Harvey M. Carey (Chairman) said: The old chemists watching a fire propounded the "Phlogiston Theory of Combustion," which postulates that when combustible material burns phlogiston is driven off, leaving behind the calx or ash. Their observations were correct, but their deductions based on these observations were in error because of their ignorance of the underlying mechanism.

Biologists have made accurate observations, but their deductions should be accepted with caution until the underlying mechanisms are understood. This applies particularly to evolutionary concepts. It is to the subject of genetics that one must look for a satisfactory explanation of the basis of evolutionary change if indeed this has occurred or is occurring. The old Lamarckian concept of the inheritance of acquired characters appears to be largely discarded in most circles in view of the failure to marshal any real experimental evidence in its favour. Mendelian variation has been shown to be

limited in its scope, so that the evolutionary theory has fallen back on to the concept of mutation in an attempt to find a satisfactory " modus operandi."

The fact that the great majority of mutational changes appear to be abstractions rather than additions of features can be readily understood from a consideration of the underlying biochemical changes. Mutations occur spontaneously, but their rate of appearance can be accelerated by gamma radiation, mustard gas, etc., which possess in common the capacity to alter the chemical character of the conjugated protein molecule which is the basis of the gene. It is an elementary chemical principle that small changes in the chemical composition of a molecule, such as the oxidation of a reactive group or radicle, will rob a substance of its specific properties. Evidence has not been forthcoming of the production of a molecule with the capacity of inducing the development of new morphological features which differ qualitatively from already existing structures and which are not merely degenerations or quantitative modifications of these features.

Even if this problem is solved, it must still be demonstrated how a number of new characters appear simultaneously or in a compatible sequence, and how at every stage of the process the physiological integrity and survival value of the individual is maintained. This herculean task has not been satisfactorily discharged by the most competent brains in evolutionary circles.

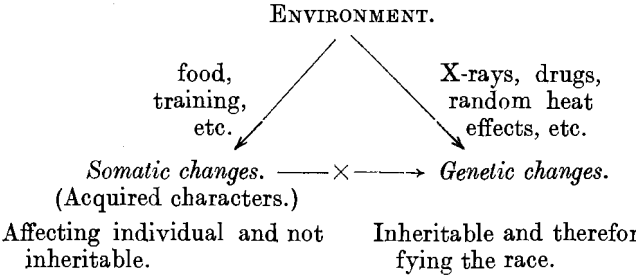
Mr. G. E. Barnes said : I should like to thank Mr. Dewar for his very able summing-up of the present position with regard to the relation between genetics and evolution and, at the same time, to add a few comments on his paper.

With regard to section 1, I should like to ask Mr. Dewar what he means by the " hallmark " or " stamp " of a pigeon. If he is judging from morphology, then Darwin's claim is perfectly correct that many of the varieties of domestic pigeon are sufficiently different from the wild Columba livia to warrant their being put in separate species or genera, had their ancestry been unknown. The fact that fertile offspring are produced when two of these varities are crossed is no longer regarded by taxonomists as a criterion of their belonging to the same species.* The fact that the immediate cause of the

* *See* Calman, *The Classification of Animals* (1949), ch. 3.

varying characters is in some cases an endocrine one does not imply that there is not some more fundamental genetic cause which appears in successive generations. And surely, the fact that in certain environments these varieties are incapable of maintaining themselves does not preclude the possibility that in other environments (*e.g.*, geographical isolation) they would be capable of so doing. It seems to me therefore that Darwin's argument from human selection to natural selection is still relevant. If taxonomists had no knowledge of the ancestry of the varieties of pigeons, they would, I believe, regard them as separate species or genera.

Mr. Dewar states in section 2 that "if neither the effects of use and disuse nor acquired characters are inherited, the theory of evolution is impossible." Surely this is not true. Almost all biologists outside Russia would agree that acquired characters do not affect the genetic constitution of the individual, and therefore do not influence its offspring (and this is all that Müller is saying in the passage that he quotes), but that does not mean to say that the environment will not have a direct modifying effect on the individual's genes. Such effects are well-known, and have been shown repeatedly to influence the offspring. Thus environmental effects may be represented as follows :—



To deny, as most would, the inheritability of acquired characters is merely to erase arrow X in the above scheme, but this does not prevent evolution.

At the end of section 4, Mr. Dewar concludes that Goldschmidt's theory is untenable, because chromosome mutations have never, so far, produced viable new species in the laboratory. This does not necessarily follow. The laboratory is normally a very stable environment, and if new species have not developed in the labora-

tory, that is no reason why they should not develop in a changing environment such as occurs in nature. No genetic pattern can manifest its effects in somatic characters unless it is given a suitable environment, and an environment which is suitable for one genetic pattern may be very different from one which is suitable for another. New patterns may be arising continually in the laboratory, but the chances are that the laboratory environment which is suitable for the original type may not be suitable for the new patterns, and they will therefore not be observed as viable new species. Had those same changes occurred, however, in a constantly changing environment, it is much more likely that new types would have arisen.

There are some small points relating to section 5. It is perfectly true that " each gene " can only fulfil its organ-producing function when it is surrounded by the right kind of cytoplasm. But what determines that the right kind of cytoplasm should be present at the right time ? The answer, in the case of most developing embryos (regulation eggs) and possibly in all, is earlier gene activity. So we are brought back again to the importance of the genes. I do not disagree at all with Mr. Dewar's timely warning against forgetting possible cytoplasmic factors, but I believe that the weight of evidence is in favour of the overwhelming importance of the genes rather than of the cytoplasm. Geneticists are, of course, aware of cytoplasmic factors when they talk of " plasmagenes." A slight inaccuracy, which, however, does not affect the argument, is the statement that " the cytoplasm constitutes by far the greater part of the ovum and of every other living cell." Among living cells which possess more nuclear material than cytoplasmic material are mammalian monocytes and many spermatozoa.

Towards the end of his paper, Mr. Dewar writes, " If the cytoplasm of vertebrates be derived from that of Protozoa by a process of evolution, it is surprising that no one has made a plausible suggestion as to what has effected the difference between the end-products of the two kinds of cytoplasm." I do not think it is surprising at all. The neo-Darwinist (and most biologists are neo-Darwinists) would consider the explanation, genetic mutations, so obvious that it need hardly be stated.

I would make one general remark about the whole problem. It

may be very dangerous in discussing the problem of the relationship between genetics and evolution (as it has proved in other biological problems) to argue from very carefully controlled laboratory conditions to events in nature. Nearly all genetical work has taken place in the laboratory, whereas nearly all evolution, if it has in fact occurred, has occurred in nature.

Dr. R. J. C. HARRIS said: Mr. Dewar has tended to support his argument, in some places, with inaccurate data. These inaccuracies do not affect the argument decisively but must not be allowed to pass unnoticed.

It is biochemically naïve to talk of a "gene molecule." The gene itself seems to be nothing more precise than a locus on a chromosome and the addition of "molecule" to its properties has, except for the physicist, nothing to support it. The danger lies, not in the assumption that the gene is *composed* of atoms, but in the hypothesis that the gene *is* a "molecule." This *may be* merely another way of stating the hypothesis that the "structure" of each gene is unique but the point is that once the gene begins to be endowed with the properties of a molecule, then it can be postulated to react chemically with simple molecules, such as the mustard gas mutagen, or to mutate as a result of "quantum jumps in the gene molecule" (Schrödinger). No analytical data have ever been put forward for a gene. The chromosomes, however, appear to consist of protein and nucleic acid.

Mr. Dewar finds it easy to understand *how* X-rays can break a thread-like molecule, but it is precisely this question of the mechanism of action of X-rays and chemical mutagens that is, at present, engaging the attention of geneticists, physicists and biochemists! The physicists, like Schrödinger, tend to support the "quantum jump to a gene isomer" hypothesis whereas the biochemist tends to look for evidence of chemical interference with gene function. *If* the genes exert any specific autosynthetic, or heterosynthetic, function (and the very interesting work of Tatum and others with *Neurospora*, suggests that they have, in this organism, a direct relationship with the cytoplasmic enzymes), then the biochemists's explanation becomes reasonable. It is a misrepresentation to suggest that it is "the impact of a mustard gas molecule on a gene molecule" which has been put forward by

geneticists to explain the action of chemical mutagens. Geneticists are quite willing to accept chemical transformation of the gene as a cause of gene mutation. Many geneticists, in fact, are still quite content to consider genes as "beads" on a chromosome "string." The recent progress in elucidation of gene action has largely been the result of the fertilization of genetics by biochemistry.

The chemical mutagens are usually reactive substances and, in view of the chemical complexity of the cell, there seems to be no reason why such molecules should pass unchanged through the cytoplasm and act selectively on the genes. Equally, since the cell is a unity, there is no reason why an interference with cytoplasmic enzyme systems should not produce, as an end-result, interference with gene function.

As Mr. Dewar so cogently points out, the cytoplasm has enjoyed a greater importance among geneticists in recent years. This is almost certainly because it has been shown (by biochemists !) to possess a structure which is in every way as interesting as the structure of the nucleus and equally as important [*see, e.g.*, Brachet, *Growth* 1947, **11**, No. 4, pp. 309–324].

T. H. Morgan [*Embryology and Genetics*, New York, 1934, p. 10], postulated a mechanism for differentiation in embryonic development.

Initial differences in the chemical composition of the cytoplasm affect the genetic activity of nuclei which are primitively identical. These modified nuclei, in turn, affect the cytoplasm and induce its differentiation. This hypothesis is now, as indeed in 1934, largely unproved but experimental evidence in support of it is accumulating.

[Brachet, *L'hypothése des plasmagènes dans le développement et la différenciation.* Unités Biologiques douées de Continuité Génétique Centre National de la Recherche Scientifique, 1949.]

WRITTEN COMMUNICATIONS.

The BARONESS WENTWORTH wrote : I have a long unpublished article on the subject beside what has been published in *Thoroughbred Racing Stock*. The more I consider it the more fantastic I think the conclusions as to *horse* evolution.

Major Keyloch's theory that "no horse can inherit any characteristic from either of its parents but only from its grandparents" proves how misleading a study of genes and chromosomes may be

in practical breeding where theory is sometimes flatly contradicted.

Accepted facts :—

(1) No grey horse can be produced unless one at least of its parents is grey (grey includes all stages preceding white).

(2) Two greys can sometimes produce a bay.

(3) Grey cannot be inherited from a previous generation having been once lost, or occur sporadically.

(4) Two bays can produce a chestnut, but two chestnuts can only produce chestnuts.

It will be noted in the following breeding example all four grandparents may be grey, but have no influence on their grandchildren's colour :—

Bay	Bay Horse	Grey Horse / Grey Mare	The bay is inherited directly from the parents and the colour of the grandparents never reappears.
	Bay mare	Grey Horse / Grey Mare	

Dr. O. R. BARCLAY wrote : I do not wish to comment on Mr. Dewar's main thesis, but I do feel that I must comment on his statement on pp. 156 f. that "if neither the effects of use and disuse nor acquired characters are inherited, the theory of evolution is impossible." To quote authorities in 1927 and 1929 to prove this seems hardly relevant because, as he admits, genetics was in its infancy then and, one may add, was often misunderstood. Surely Mr. Dewar must admit that most of the ablest evolutionists and geneticists to-day find no impossibility here. Mr. Dewar does not discuss theories of the "evolution" of dominance or of beneficial effects in mutations which on first appearance are recessive and harmful. These theories may seem to be highly improbable but they are surely possible.

In any case Mr. Dewar himself seems to believe that natural mutation may by natural or artificial selection produce limited but permanent changes within a species ; this surely is evolution on a very small scale. It may be that such a mechanism seems incapable of accounting for large-scale changes or constructive changes, but surely he cannot go further than to say that it seems so improbable that we ought to dismiss the suggestion. A slight overstatement here could spoil the force of his argument altogether, and ignores much ingenious speculation on the part of learned men.

Mr. R. T. LOVELOCK wrote: This excellent and interesting paper has proved doubly valuable firstly as being a simple summary of an involved subject presented by an expert in language which a "layman" may understand, and secondly as being a presentation of the case against evolution from one who knows as much of the biological detail as do the protagonists of that theory. I found the development of the idea that in the cytoplasm we have an agent equally potent with the genes in the mechanism of heredity particularly provocative of thought, since it has long been evident that if the Bible be true, the activities of Mendel did not lay bare the whole of the story.

The Bible contains throughout its length, as an underlying presumption, the idea that "sin" is a transmissible taint, while in some places (*e.g.*, Matt. 23 : 29–33) the transmission would seem to be genetical rather than environmental. It is obvious that if only Mendelian laws are concerned with inheritance, in no sense can the sin of Adam effect the personal content of his descendants, and if we are to accept the Bible principle on this point, we must believe that genes as entities constitute only a part of inheritance. While science is still in ignorance of the detailed construction of genes and their mechanism, I have always felt at liberty to ignore the argument from ignorance and believe that a mechanism as yet unknown was in operation which ensured the transmission of some factors dependent on this life. Mr. Dewar has indicated that in the cytoplasm we have an agent which might well cause similar genes to result in differing structures, and until the full nature of these elements is known the argument of "Mendel" can never be advanced against the Bible teaching. It is, of course, recognised that no experimental evidence for such an idea has yet been found, and the Russian teaching is a piece of political expediency.

One point arising from this second factor in inheritance might well have been more forcefully indicated. When the laws of Mendel received their first grudging recognition from science in this country, Bible protagonists hastened to accept them, jubilantly pointing to all the difficulties which had been assembled for the followers of Darwin; it would have been more in keeping for them to "do as they would be done by" and realise that the whole picture was not then known, and that argument from ignorance is no more

sound in biology than it has been proved to be in archæology. Mr. Dewar might well have stressed a little more the implications of his point about cytoplasm—that this additional factor should prevent any honest protagonist from using the limitations of mutation as a point against evolution ; there is lack of evidence for, but that can never become evidence against, until we know more of the mechanism. Even so acute a mind as that of Dr. Clark has made this error in a recent work (*The Universe : Plan or Accident* ? pp. 97–99), when he argues that since natural selection will never accomplish a gradual transition from one useful form to another, and we know that all such transition must be such by gene mutation, therefore natural selection can never accomplish evolution. We do not know what cytoplasm can do, nor whether it is liable to discontinuous " jumps " akin to mutation ; if, however, it were, and Mr. Dewar was right in supposing that a change in it could completely alter the form originated by a given gene, then such transition would become a possibility.

As science has progressed it has served to reveal in increasing detail how God works, and natural law is but the name for those parts of divine intervention which we understand more clearly than the rest. We know that in the past God has given rise to various forms of life ; increased accuracy in time measurements has already caused the term " explosive evolution " to come into use. We might expect that sooner or later increased biological knowledge will begin to illustrate the nature of difference between types and suggest how they arose under God's direction. For the sake of the Bible's reputation it is well to see that we are not found supporting error when that time comes.

Dr. E. S. Russell wrote : I have read Mr. Dewar's paper with great interest and appreciation. His critical account of the gene theory is most valuable ; it is up-to-date and brings out very clearly the weaknesses and limitations of the gene hypothesis. His criticism of Goldschmidt's theory of the repatterning of chromosomes is devastating.

I entirely agree with him that evolution cannot be explained in terms of the gene-natural-selection hypothesis. This may account for the origin of intra-specific races, and possibly in some cases of species, but it is quite incompetent to explain how the larger steps

in evolution came about—the formation of new classes, orders or families. My own view is that without some form of directive and creative variation which is cumulative from generation to generation there could have been no large-scale evolution.

As to the transmission of acquired characters, I believe that this has played an important part in certain forms of evolution, those namely that lead to adaptive radiation, especially in Vertebrates. Some very cogent evidence has recently been adduced by Wood Jones (*Habit and Heritage*, 1943) in favour of this transmission. It does not, however, seem to be the sole key to evolutionary differentiation, much of which is not of the nature of adaptive specialisation.

I agree with Mr. Dewar that the importance of the cytoplasm has been underestimated, but I would go further and suggest we should not consider nucleus and cytoplasm separately, but as mutually interdependent constituents of a real unity, the cell as a living whole.

That evolution has taken place seems incontestable, but we know extraordinarily little as to the way in which it has come about or as to its "causes" or "factors." It may be that a metaphysical rather than a purely scientific theory is required.

Professor T. DOBZHANSKY wrote : Free expression and discussion of opposing theories is doubtless important and beneficial for the progress of science. However, discussion is profitable chiefly when the area of agreement between the opponents is much greater than that of disagreement. Unfortunately, I must take exception to almost every opinion on biological matters expressed in Mr. Dewar's highly provocative paper. I shall restrict myself to a single point which, however, occupies a rather central position in Mr. Dewar's argument, namely, that since no mutations definitely beneficial to their carriers are known, the modern theory of evolution falls to the ground. I submit that the opposite is true ; the genetic theory of evolution would be embarrassed if anyone were to observe the origin of a mutant superior to the ancestral type in the environment in which the latter normally lives. All types of mutation occur with finite frequencies and, accordingly, the probability that we can observe a mutation arising for the first time in the history of the species is negligible. Mutants which are useful in the normal genetic and secular environment have, by and large, already become

incorporated into the normal genotype of the species or race by natural selection. But we have ample evidence that a mutation which is deleterious in a certain environment and on a certain genotypic background, may be useful in another environment or in conjunction with other genes. To give but one example, Spassky and the writer exposed to a stringent selection some strains of Drosophila flies whose viability had been reduced below normal by certain mutations. During fifty generations of selection, the viability of most of the strains rose to normal again owing to selection of mutations favourable to the altered genotypic background. Classification of mutants as "useful" or "deleterious" is quite meaningless unless the nature of the genetics and secular environments is stated. If we had no other evidence that evolution has taken place, observation on the behaviour of mutants would lead us to construct a theory of evolution.

Dr. JOHN HOWITT wrote: This paper by Mr. Dewar is, like all his writings, full of interest to the student of evolution. Genetics is the laboratory of evolution as geology is the history, and it is amazing to discover the actual results of laboratory experiments in this field. "Natural selection" and the "survival of the fittest" were catch phrases that captivated the imagination of an earlier generation. But in the laboratory of genetics these concepts have yielded only negative results, as Mr. Dewar has pointed out. In a recent article Dobzhansky (*Scientific American*, January, 1950, p. 35) refers to certain experiments conducted by himself and B. A. Spassky in which they intentionally disturbed the harmony between an artificial environment and the fruit flies living on it. He states that at first the change in environment killed most of the flies, but during fifty consecutive generations most strains showed a gradual improvement of viability. He concludes as follows: "Most mutants that arise in any species are, in effect, degenerative changes, but some, perhaps a small minority, may be beneficial in some environments." This is a far cry from the survival of the fittest and illustrates the almost unbelievable extent to which geneticists are forced to retire in order to support a theory which is obviously false.

Lt.-Col. L. MERSON DAVIES wrote: This is a most timely paper, which should open the eyes of people impressed by the claims of

evolutionary geneticists. I am particularly interested to see that Mr. Dewar stresses the *rôle* of the apparently structureless cytoplasm; for I insisted on this same matter when I reviewed Dr. Joseph Needham's work on *Biochemistry ond Morphogenesis* (1942) at the request of the editor of *The Nineteenth Century and After*. In my remarks (*ibid.*, Vol. CXXXIV, for August, 1943, pp. 77, ff.) I pointed out (pp. 82–84) that Dr. Needham could only claim to find "a number of stimuli (*alias* enzymes, catalysts, hormones, genes, organisers, evocators, etc.), which either activate structures or cause them to appear"; and I insisted that this was not enough, since the stimulus was "the least significant part of each problem" for, as "every student of mechanisms, especially living ones, must realise, the explanation of most reactions lies far more in that which reacts than in that which causes the reaction. To depress a switch or turn a knob may 'evoke' any kind of result, according to the mechanism concerned. It is not the switch, but the attached mechanism, which decides whether the result will be to produce light, heat, wireless sounds, start an engine or fire a gun. In living structures the distinction between stimulus and stimulated is still more marked; and the effects, say, of adrenalin, are far less explicable by its own relatively static and simple composition than by the far more complex living organism which both produces it and draws on it in moments of emotional crises."

I then showed how, as regards developing structures, the "subordinate nature of the *rôle* played by the stimulus" was "indicated by one of Needham's own diagrams" (his Fig. 42) "and remarks regarding it"; for there the essential guiding structure which Needham had to postulate as deciding the course of events by "determination of parts to pursue fixed fates" was wholly unknown and unidentified. Since, in the initial zygote (fertilised cell), the chromosomes and their genes are only supposed to be stimuli, I asked: "Where, then, is the real mechanism? Is it in the seemingly structureless cytoplasm?" This question was never answered, either by Needham himself or by his colleagues at Cambridge, to whom separates of the paper were sent.

The more we try to solve the mystery of organic structures the more vast and impenetrable does that mystery seem to be. As I pointed out, the multiple facts which Dr. Needham emphasised

regarding the growth of the individual only increased the difficulty of explaining them, since " all the colossal programme of its vastly intricate development, and the whole life cycle—together with arrangements for the unlimited continuation of the type—are packed away in a minute cell, and must apparently be located just where there is no sign of any structure at all," *i.e.*, in the cytoplasm.

The fact that evolutionists will not face such considerations, shows how they fight shy of *basic problems*, and magnify secondary discoveries as if they solved matters instead of actually increasing their mystery.

Dr. A. MORLEY DAVIES wrote: My knowledge of genetics is very superficial. As with Mr. Dewar himself, my own biological training ended at a time when genetics were in a very rudimentary state, and I have only followed their development in casual reading. I am therefore unable to contribute any comments of value. I recognize that Mr. Dewar makes some very reasonable criticisms.

Professor HERIBERT NILSSON (Lund, Sweden) wrote: Thank you for the copy of Mr. Dewar's paper. However, I am now busy finishing off the work I began in 1940 on Speciation, and so have no opportunity of making the comments I should otherwise have been only too pleased to submit. But I can say this, that my attitude to the Evolution question agrees entirely with that of Mr. Dewar.

AUTHOR'S REPLY.

In reply to Mr. Barnes, in my view every variety of pigeon shows the hallmark pigeon in its comportment, carriage, gait, flight, and its behaviour in the presence of another of its species. I have no doubt that Mr. Barnes would recognise as a pigeon any new breed shown to him, just as he would recognise as a dog any mongrel dog, even if of a type he has never seen.

The fact that taxonomists unacquainted with the origin of, say, the fantail pigeon might class it a species or even genus different from that of the blue-rock simply shows that form is not an infallible criterion of a species. This test is on the whole satisfactory when applied to wild animals, but is apt to fail when dealing with freaks, incapable of holding their own in the wild, bred by breeders.

As regards my assertion that the theory of evolution is impossible

if neither the effects of use or disuse or acquired characters are inherited, Mr. Barnes rightly says that, if these factors are eliminated, there remain various other agents which cause gene and chromosome mutations. But I contend that the apparently random mutations caused by these agents are incapable of converting into a Vertebrate a Protozoan, which lacks eyes, ears, nose, legs, heart, liver, spleen, pancreas, bones, muscles, nerves, bloodvessels, no matter how much time is allowed. I see no reason to-day to modify the following assertion I made nearly twenty years ago: "There appears to exist no mechanism whereby a new type of organism can arise from an existing one" (*Man: A Special Creation*, p. 55). Shuffle *ad infinitum* all the constituent atoms in the molecules, the molecules in the genes, and the genes in the chromosomes of a protozoan and the result will still be a protozoan. I may add, that, in my view, even if the effects of use and disuse can be inherited the theory of evolution is impossible; if they are not inherited the impossibility is palpable.

As to the laboratory being normally a very stable environment: this is not so in the case of that of a geneticist, whose object is to induce as many mutations as he is able. Much time and energy have been spent on trying to discover mutagens. Apart from radiations of several kinds, chemical means of inducing mutations have been adopted. Some account of this work is given by Auerbach, Robson and Carr in their paper "The Chemical Production of Mutations." They tell us that the search for chemical mutagens has been going on for well over 20 years. . . . Iodine, ammonia, metal compounds, and carcinogens are only some out of the great number tested. These geneticists have been working with four kinds of mustard gas. I submit that Drosophila flies have been subjected to a far greater variety of environments since 1916 than they experienced during the whole period of their existence before that year.

As to the relative importance of the nucleus and the cytoplasm, I think that geneticists are beginning to realise that the latter has more say in the matter of heritance than has hitherto been believed. With all respect to Mr. Barnes I do not consider that the suggestion that the difference between an amœba and an elephant is accounted for by the piling up of gene mutations is plausible. I agree that

the fact that geneticists have not produced a new kind of animal does not necessarily mean that there has not been evolution in nature. But I do think that the results of their work indicate that it is highly improbable that all existing animals and plants are descended from one-celled ancestors.

I am greatly indebted to Dr. Harris for showing us how the biochemist's idea of the gene differs from that of the physicist. As most of us, including myself, are not *au fait* with the latest work of biochemists and physicists I hope that the Council of the V.I. will induce Dr. Harris to give us a paper on Biochemistry and Evolution and ask a physicist to favour us with a paper on Physics and Evolution.

As no one has ever seen a gene, I am glad that Dr. Harris emphasised that in the case of this as in that of the atom and of the molecule we can at present only theorise as to its nature. Dr. Harris goes so far as to say that the gene seems to be a locus on a chromosome ; would it not be preferable to say " an entity occupying a definite locus on a chromosome " ?

To my way of thinking a locus is simply an area of space which may or may not be occupied by some object, so that it has no property save emptiness, and its only function could be to serve as a resting place for some physical object. Thus, as the gene appears to have a potent effect on the formation of organs, unless it be non-physical, it must be composed, like all matter, of atoms held together, and consist of at least one molecule, and apparently a very complicated one.

I am sorry to have made it appear that geneticists believe that mutations may be caused by the impact of a mustard gas molecules on gene molecules. The idea is mine. As treatment with mustard gas induces mutations similar to those induced by X-rays I try to visualise how it is that the effects are similar.

Dr. Harris shrewdly remarks " there seems to be no reason why such molecules (*e.g.*, mustard gas molecules) should pass unchanged through the cytoplasm and act selectively on the genes." Does not the same problem arise in the case of X-ray and other irradiations ?

In conclusion I hope that Dr. Harris will, in the paper I suggest, tell us about the recent discoveries regarding the structure of the

cytoplasm. I was led to stress the importance of this on considerations other than its structure.

Lady Wentworth's remarks are a valuable antidote to the writings of enthusiasts, such as L. J. Langdon-Davies, who greatly overestimate the practical value of the work of geneticists. Langdon-Davies writes (*Russia Puts the Clock Back*, p. 50): "Poultry farming, too, has benefited from genetics. . . . Thus to begin to lay eggs early a chicken must possess two special genes in its chromosomes." If, by looking at a chicken one could know that it had or had not these valuable genes, this knowledge would be of great practical value. In fact its value is only academical. Lady Wentworth, as an experienced horse-breeder, cannot but feel that geneticists have afforded little help to horse breeders. It is the latter who set problems for the geneticists. W. E. Castle writes ("The ABC of Color Inheritance in Horses," *Genetics*, vol. 33, 1948): "The horse genes have been given special names, as they have been discovered, and it is not easy to correlate these with the better-known names and symbols used by experimental breeders." Occasionally a black horse has a bay foal. As this fact is not easy to account for on the assumption that only four genes, A, B, C and D, control the colour of the coat, some geneticists postulate an extra gene E. to account for this.

Doubtless some horse-breeders have found Mendel's laws helpful and they seem to afford a plausible explanation of some of the facts revealed by breeding operations.

In reply to Dr. Barclay, when I speak of the theory of evolution being impossible I refer to the theory that all living organisms are descended from a single-celled ancestor or a few such ancestors.

I think it confusing to apply the term evolution (or even micro-evolution as Goldschmidt does) to changes within the species of which no biologist since the time of Linnæus denies the possibility.

I would limit the term evolution to changes which have resulted in the formation of new families and all the larger groups of organisms; I would call changes that take place within the species, genus and family differentiation.

I would describe as Creationists those who believe that all the changes in organisms that have taken place in the past are those that come within the category differentiation.

I quote MacBride, Labbé and Heribert Nilsson, not as proof tha the theory of evolution is impossible, if the effects of use and disuse and acquired characters are not inherited, but as biologists who do realise this. The contribution of the last-named to this discussion bears out my contention in his case.

I know not whether or not most of the ablest evolutionists and geneticists "find no impossibility of evolution," even if the effects of use and disuse are not inherited. They certainly write as if they believed in evolution. Possibly in some cases this belief is the result of what they were taught as students, and they have not considered the matter since. Others may be merely following the fashion, as seems to be the case with some French zoologists, for Paul Lemoine (when summarising, in his capacity as editor, the contents of the volume of the *Encyclopédie Française* dealing with living organisms) wrote : " The result of this exposition is that the theory of evolution is impossible. In reality, despite appearances, no one any longer believes in it, and one speaks, without attaching any importance to it, of evolution to denote succession, or more evolved in the sense of more perfected, because it is the conventional language, admitted and almost obligatory in the scientific world. Evolution is a kind of dogma in which the priests no longer believe, but which they keep up for their people." So far as I am aware no protests against this statement appeared in French periodicals.

For my part I find it difficult to believe that Dr. Barclay, or any other biologist who has studied the question, believes that in the course of time an amœba-like protozoan can have evolved into a vertebrate solely as a result of (1) losses of atoms in the genes, (2) successive rearrangements of the atoms of the molecules of which the genes are composed, (3) losses of or rearrangement of these molecules, (4) loss of chromosomes or parts of them, (5) division or union of chromosomes, (6) repeated rearrangements of the genes in the chromosomes.

In order to realise what belief in such evolution means, let us consider a living amœba and a living man. *Ex hypothesi* each of these is descended from an amœba-like ancestor endowed with certain genes. Let us assume that this common ancestor lived 1,500 million years ago and that one line of its descendants has terminated in the amœbas now living in England and a second line

has terminated in the men living in England. The genes in the living amœba and men are direct descendants of the genes of an amœba which lived 1,500 million years ago. In the case of the amœba all the random mutations of the genes in its lineage from the ancestral form have, so to speak, cancelled each other out, so that the amœba is morphologically indistinguishable from its 1,500 million years-old ancestor, but the mutations in the line of ancestors of man first changed the amœba into a metazoan, say an echinoderm, next they converted this into a fish, later they changed the fish into an amphibian, and then transformed this last into a reptile, and later turned this into a mammal, and finally into a human being. And this human lineage while undergoing all its amazing transformations contrived to hold its own in the struggle for existence.

Mr. Lovelock rightly points out that if the cytoplasm plays an important part in heredity, it is open to evolutionists to say: "The fact that gene and chromosome mutations are very limited would not show that evolution is impossible; we do not know what the cytoplasm can do, or whether it is liable to discontinuous 'jumps' akin to mutation." But this contention affords the evolutionists little help, because the cytoplasm is as much exposed to the action of the external forces which cause mutations to occur, as the genes and chromosomes are, and the meagre results of the work of breeders and geneticists show that such "jumps" occur very rarely, and the few that are known to have occurred, such as that which resulted in the ancon sheep, seem to have been of a pathological nature.

In my view Mr. Lovelock's criticism of Dr. Clark is not well founded, and the latter is right in citing as a most serious objection to the theory of undirected evolution the fact that the synthesis of arginine in *Neurospora* involves seven stages, some of which involve the production of substances apparently quite useless to *Neurospora*, and each of these substances is the product of a different enzyme which is itself dependent on a particular gene.

I am greatly beholden to Dr. E. S. Russell for his kind remarks and for having, by his *The Interpretation of Development and Heredity*, led me to suspect that geneticists are concentrating too much on the cell nucleus. I subscribe to his view that the sound

course is to consider nucleus and cytoplasm as a real unit and the cell as a living whole.

However, I do not agree that Prof. Wood Jones has adduced cogent evidence of the transmission of acquired characters. A perusal of *Habit and Heritage* gave me the impression that the case for such transmission is very weak. The author was able to cite only four instances of what he believes to be such transmission :—

(1) The facets on the leg and the ankle bones of Asiatics.
(2) The cervical curve in the backbone of Weddel's Seal.
(3) The reversal of the ordinary direction of body hairs in some marsupials.
(4) The single uterus of Primates.

In the case of (1) and (3), I suggest that Wood Jones puts the cart before the horse. Seeing how uncomfortable it is for a European to squat on his haunches for any length of time, I think that the Asiatic habitually assumes this posture because his leg and ankle bones are provided with these facets. It may well be that kangaroos and Koalas use their combs in the way they do because of the direction of the hairs to which these are applied.

As regards (2), Wood Jones assumes that the neck curve of the seal is a consequence of its land ancestors having taken to water and so having to hold up the head when swimming as a dog does. To my mind the notion that any quadruped ever gradually got its legs fettered as they are in seals and sea lions is fantastic. (*See Is Evolution a Myth* ? p. 49.)

As to (4), I cannot believe that the single uterus of the Primates is the consequence of the rupture at every birth for untold generations of the partition separating the *culs-de-sac* of the bifid uterus of the ancestors of the Primates.

Professor Dobzhansky's and Dr. Howitt's communications reached me by the same post. As Dr. Howitt's is in effect a reply to Professor Dobzhansky, it enables me to shorten my remarks.

Prof. Dobzhansky's assertion that " the genetic theory of evolution would be embarrassed if any one were to observe the origin of a mutant superior to the ancestral type in the environment in which the latter normally lives " is exhilarating, coming as it does after Professor J. B. S. Haldane's gallant attempt to prove that good mutations are not uncommon. I take it that Professor

Dobzhansky contends that every race or species now existing has become so well adapted to its environment, as the result of natural selection, that all the mutations now showing themselves are more or less harmful, and the most harmful are weeded out by natural selection, which thus keeps the race in a static or unchanged state, and this will continue until changes in the environment occur which will render useful some mutations hitherto harmful, and natural selection will then lose no time in incorporating these mutations into the genotype of the species. After this change the species will remain static until a further change in the environment converts harmful mutations into useful ones.

On this view evolution would seem to be an extremely slow process—a series of minute steps with a long rest between each step. But Professor Dobzhansky makes it clear that in his view the environment is almost as changeable as the weather in England. He writes " the environment is never constant ; it varies not only from place to place but from time to time " (*Scientific American*, January, 1950, p. 36).

While disagreeing with Professor Dobzhansky regarding the stability of the environment, I agree that a mutation harmful in one kind of environment might be useful in another kind and so be preserved in the latter as, for example, an insect on a windswept island in which a wingless mutation occurs. But this does not alter the fact that the mutation is what may be called a loss mutation, and it is difficult to believe that evolution can be the result of loss mutations or of mutations that were originally harmful and only became beneficial owing to environmental change. Such mutations would seem to result in devolution rather than evolution.

The very interesting experiment of Dobzhansky and Spassky may mean, as the experimenters believe, that the mutation which lowered viability in the first environment slightly improved it in the new. But I submit that an alternative explanation is possible, *viz*, that in the highly selected fly population exposed to the new environment a new mutant arose which increased viability or nullified the effects of the gene or genes responsible for the low viability of the original population.

I may remark that some geneticists do not share Professor Dobzhansky's optimism. Dr. Carl C. Landegren of Southern

Illinois University writes, (*Scientific American*, March, 1950, p. 2): "I am of the opinion that 'progressive' evolution has never been observed in the laboratory. The minor fluctuations demonstrable in the laboratory which Dobzhansky calls 'evolution' are, in my opinion, merely forward and backward changes comparable to the balancing movements which an acrobat on a tightrope has to perform to maintain his balance but which have nothing to do with his forward progress, except that if he failed in them he would fail completely."

The comments of Lt.-Col. L. Merson Davies are very welcome, as they supply an inadvertent omission in my paper. Some seven years ago I read with great appreciation and profit his review of Needham's *Biochemistry and Metamorphosis*. In my view Davies is right in emphasising that the genes are stimuli rather than the real mechanism of heredity. As in the case of most organs the genes have probably more than one function, and it seems to me that they, with the chromosomes, are a beautiful device for ensuring that no two individuals of a species are identical, a fact which has been brought home to the people by the use made by Scotland Yard of human finger prints as an infallible means of identification.

The number of possible combinations of the genes is enormous. This is what Professor Dobzhansky has to say on this matter (*The Scientific American*, January, 1950, p. 36): "Although the number of genes in a single organism is not known with precision, it is certainly in thousands, at least in the higher organisms. For *Drosophila* 5,000 to 12,000 seems a reasonable estimate, and for man the figure is, if anything, higher. To be conservative, let us assume the human species has only 1,000 genes and that each gene has only two variants. Even on this conservative basis, Mendelian segregation and recombination would be capable of producing 2^{1000} different gene combinations in human beings. The number 2^{1000} is easy to write but it is utterly beyond comprehension. Compared with it, the total number of electrons and protons estimated by the physicists to exist in the universe is negligibly small! It means that, except in the case of identical twins, no two persons now living, dead, or to live in the future, are at all likely to carry the same complement of genes. Dogs, mice and flies are as individual and unrepeatable as men are."

O

To my mind one of the most impressive phenomena of the living world is this prodigious variety, coupled with the stability of the type.

893RD ORDINARY GENERAL MEETING

HELD IN THE CAXTON HALL, WESTMINSTER, S.W.1, ON MONDAY, 1ST MAY, 1950.

THE VERY REV. W. R. MATTHEWS, K.C.V.O., D.D., D.LITT., DEAN OF ST. PAUL'S, IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed and signed.

The following elections were announced :—Rev. Albert Hughes, B.A., B.D., Fellow ; John J. Brunt, Esq., M.B., Ch.B., Fellow ; W. J. Reed, Esq., Member ; R. H. Reed, Esq., Member (on transfer from Associate) ; D. A. Burgess, Esq., Associate ; N. L. Dunning, Esq., Associate.

The CHAIRMAN then called on Professor H. D. Lewis, M.A., B.Litt., to read his paper entitled "The Theology of Reinhold Niebuhr."

THE THEOLOGY OF REINHOLD NIEBUHR

By Prof. H. D. LEWIS, M.A., B.Litt.

SYNOPSIS.

Reinhold Niebuhr opposes his own view to two other views, designated by him respectively "The Classical View" and "The Modern View." Both these views of history, as Niebuhr describes them, attempt to rationalize the meaning of history too exhaustively, the first by seeking the meaning of history in certain immutable forms or ideals and thus lessening the importance of actual historical process, the second by expecting some eventual consummation of history to exhibit it as the realisation of a fully rational end. Niebuhr agrees with the Classical View that the meaning of history must be found beyond history, but he conceives of it in terms of a transcendent reality which is also immanent in historical process. In presenting this view he centres attention especially on the "ambiguous" nature of man as a creature bound to act selfishly and yet aware of a wider claim, a creature of "necessity and freedom." But it is argued in the following paper that this does not do the slightest justice to fundamental ethical principles, and the position is shown to be fraught with other serious confusions. In the closing sections it is also urged that the account of the irrational element in human nature offered by Niebuhr has little real relevance to the problem of immanence and transcendence.

DR. NIEBUHR is one of the most influential religious thinkers of the present time. Nor is it merely in religious matters that his influence is felt. He exercises much direct influence on politics also, and he has helped to sway opinion on public matters of great importance, notably during the war. But this

is not a case of the same person playing two rather different roles. For Niebuhr's religious thought is largely concerned with problems of practice, and especially with the application of Christian ideals to public action. He is aware of the dangers which beset the vigorous reaffirmation of the Protestant faith in the modern world, where Protestants have often been held responsible for political quietism and a shelving of responsibility under cover of an other-worldly religion in which salvation is mediated for us in ways that seem to have little to do with the way we live. It is plain that there cannot be many accusations more serious than this, and it is therefore of the greatest interest and significance that Reinhold Niebuhr should have devoted his latest work to the examination of the place which Christian teaching finds for the life of historical change we live in the present existence. He appreciates the importance which religious thinkers have ascribed to history, and he wishes himself to support and emphasise the view that the Christian revelation draws its significance for us from its embodiment in historical circumstances. But how is this emphasis on historical process to be reconciled with the belittlement of human action in traditional Protestant doctrine, and how must history be understood in the new assessment of its importance? These are the questions we wish to put especially to leading Protestant thinkers, and when one of them singles out these particular questions for discussion in a major work, it calls for our most careful consideration. There seems, therefore, to be ample justification for confining attention this evening, as I propose to do, to Niebuhr's account of historical processes in his newly published work, *Faith and History*. I have in any case ventured to comment on other occasions on much of Niebuhr's earlier writings; and the publisher furthermore assures us in a note on the dust-cover that Niebuhr offers us in this book "a re-examination of beliefs until recently regarded as axiomatic, and . . . a positive, if not actually exhaustive, statement of his position."

There are two views which Niebuhr seems especially anxious to avoid, designated by him respectively "the Classical View" and "the Modern View." It is by contrast with these two views that he develops his own position; and we must therefore give a brief account of them.

Both the Classical and the Modern view of history, as they are understood by Niebuhr, regard historical changes as being fundamentally intelligible. But they do so in very different

ways. According to the Classical view the world of historical change can only be made intelligible in relation to a world of changelessness which is altogether beyond it. The former participates somehow in the latter and is significant solely in relation to it. It is the intelligible patterns exhibited in the course of history that are therefore important, the problem of the recalcitrant intractable stuff of things and their embarrassing particularity being shelved in favour of a concentration of attention on the 'form and structure,' "the Nous or Logos which forms chaos into order and gives the unformed matter or Hyle its form. This version of the creation of the temporal world makes the sensible world intelligible by reason of its relation to the world of eternal forms; which means it is not intelligible in and for itself. Thus the mystery of creation or of the relation of time to eternity is banished. In this simply intelligible world the mystery of dynamis, of the propulsive force from past to future is obscured and the question of the origin of the stuff which is formed by NOUS is left unanswered."[1] The participation of the world of change in the changeless intelligible world takes place through 'a cycle of changeless recurrence,' in this way excluding the emergency of novelty in the world. For Aristotle, for example, "God as Prime Mover is required to explain the world of movement and change; but the temporal process makes eternal potencies actual in endless recurrence. Aristotle does not deny the emergence of contingent elements in temporal order; but they are not subject to scientific knowledge. Only that which is necessary is subject to such knowledge; and the necessary, according to Aristotle 'must be cyclical—*i.e.*, must return upon itself. It is in circular movement and cyclical coming-to-be that the absolutely necessary is to be found.'"[2] Greek naturalism, in spite of some glimpses—in the case of Lucretius, for example—of a progressive view of history, adhered very closely to these "cyclical concepts of history."

There are two main objections to this view. The first is that it hardly conduces to a high regard for the way our lives are lived in the present existence. In its more estimable forms it offers at best a strenuous asceticism, in which the present world is persistently foresworn in the attempt to liberate ourselves altogether from its toils. The aim should be to draw the soul away

[1] *Faith and History*, p. 45.
[2] *Op. cit.*, p. 45.

from the world of becoming towards the supreme unchanging reality of Pure Being. Plato's thought is the clearest example of this derogatory view of the world of change and the asceticism in which it culminates. But Aristotle's position is in some ways even more significant. For although his interest in the historical is more robust and induces him to find in historical institutions some tentative approximation to the cosmic order, this is very finally transcended in the superior worth and completeness ascribed at all points to the life of pure contemplation in which the merely human is transcended and the divine achieved. " We must not follow those who advise us, being men, to think of human things, but must so far as we can, make ourselves immortal."

Here, according to Niebuhr, " we have the clearest final rejection of the realm of the historical, so characteristic of classical thought. It is also quite clear that the fulfilment of life requires emancipation from the historical and that the possibility of such emancipation lies in a dimension of a rational freedom which is in man and yet not of man. It is the gift of NOUS which relates him to the immortal world. This rigorous dualism, which modern culture persistently but erroneously ascribes to Christianity, is the price in classical culture for the construction of a realm of intelligibility in two dimensions : one for rational man above the flux of time and one for history reduced to the dimension of natural time.[1] The wholeness and unity of the life of man is altogether imperilled by this kind of intelligibility.

The second objection to the classical view is that it has no room for mystery. It seeks to " resolve life's mysteries into rational intelligibility."[2] This, however, needs some qualification. For there is an important mystical aspect, for example, to the philosophy of Plato. The ' Form of the Good ' is ' beyond being and thought,' for rational explanation can never be quite exhaustive. Some questions remain, and the final initiation into supreme reality must take the form of a glimpse or noesis in which understanding as such is transcended. This, however, does not substantially affect Niebuhr's present view. For Plato acknowledges mystery only at the end of a rational quest, and not in any way intertwined with the stuff of history itself—much less is there any revelation of supreme reality in any intractable

[1] *Op. cit.*, p. 70.
[2] *Op. cit.*, p. 42.

residuum which the particularity of things presents. Individuality as such is never a positive medium of enlightenment. It is a surd that has no significance in the ultimate scheme of things, and it tends to be wholly overcome in "Plato's faith that the universe is filled with every kind and form of living thing required to explicate the goodness of God. Thus the irrationality of the givenness of things is completely overcome and all things are brought into the realm of the rationally intelligible."[1] There is thus no significant mystery which is written into historical processes as such.

The Modern view does, however, find the historical process significant. Indeed, its characteristic feature is that it finds nothing else meaningful. Historical existence explains itself. There is thus no need to postulate any mystery within the processes of history, nor to refer them, for their final explanation, to any transcendent or eternal reality. All that we need to do is to allow sufficiently for genuine process and the emergence of novelty. In its final fulfilment the factor of growth within history itself, so much neglected in classical culture but stressed in Modern thought and Christianity alike, will present itself to us as "the clue to the mystery of the origin and the end of life."[2]

This confidence in the intelligibility of the world in time was mainly due, in the first instance, to the discovery that natural forms are subject to mutation. But it has been much reinforced by the rapid advances of modern science, both in the way of providing more exhaustive explanation of natural phenomena, thereby increasing the prestige of natural causation as an explanatory principle, and also by heightening man's confidence in his power to wrest her secrets from Nature and subdue her to his purposes. Sometimes this confidence took a religious form, but religion itself is so attenuated in this case that an exhaustive rational account of it is possible in terms of the historical process. "In Hegel's thought time is not God; but God requires time to become truly God," and L. T. Hobhouse carries this further by conceiving of "the world process as a development of organic harmony through the extension and control of mind, operating under mechanical conditions, which it comes by degrees to master."[3] "This is clearly a new temporal version of the old

[1] *Op. cit.*, p. 44.
[2] *Op. cit.*, p. 47.
[3] *Op. cit.*, p. 49.

classical concept of the creative power of Nous over chaos."[1] "The growth which gives meaning to both the natural and the historical process is the growth of reason," and the mystery of the end is also resolved by regarding God "as the mystery of the culmination of the process."[2] "In so far as God is what we must rely upon it is time that is God."[3] This presupposes also that evil can be regarded as representing "life and nature's provisional fragmentariness and that the growth of reason gradually overcomes all that is contradictory and at cross purposes in nature or history."[4]

This view also is very open to objections which have been made very obvious to us of late. It overlooks the fact which has been so much stressed by theologians recently that there is a "realm of mystery which is at once the beginning and the end of any system of meaning."[5] "Nothing in the world should be considered absolute"[6]—not even the time process itself—and it is thus altogether mistaken "to interpret the penumbra of mystery which surrounds every realm of meaning as nothing but the residual ignorance which the advancing frontiers of scientific knowledge will gradually obliterate."[7] No advance of science will ever eliminate "the depth of reality where mystery impinges upon meaning."[8] There are, furthermore, many specific ways in which the attempt to rationalise the process of history throughout is unsuccessful. There are many set-backs and disasters which do not fit easily into any scheme of inevitable development—much less a development where everything subserves some over-riding purpose. It is by no means as evident as was supposed at the turn of the century that inclusive purposes will steadily supersede the narrow ends which natural necessity prompts. New triumphs bring new perplexities and new possibilities of evil and disaster. Selfishness, if frustrated at one level, can take on subtler and more sophisticated forms. Technical advance does not guarantee cultural progress, and as Niebuhr shrewdly notes, there is observable in some regards "a law of diminishing returns in the relation of technics to culture."[9]

[1] *Op. cit.*, p. 49.
[2] *Op. cit.*, p. 50
[3] *Op. cit.*, p. 51.
[4] *Op. cit.*, p. 49.
[5] *Op. cit.*, p. 52.
[6] *Op. cit.*, p. 54.
[7] *Op. cit.*, p. 60.
[8] *Op. cit.*, p. 52.
[9] *Op. cit.*, p. 81.

Accumulation of historical knowledge does not always guarantee a better imaginative grasp of the events recorded. In politics the ' methods of force ' are not obviously giving way to ' methods of mind.' There is no consistent emancipation of culture from irrational authority. Niebuhr also holds that the development of man's inherent rational faculty is slower and more limited than the collective cultural achievements which are elaborated by these capacities.[1] And although there are also factors in the present situation of mankind which lend a brighter hue to our prospects and encourage optimism, there are surely few to-day who would look upon the course of history itself as an absolute guarantee of the ultimate triumph of reason and the negation of evil. There is in any case one final proof of man's creaturely limit in " a fact of his individual life : his death."[2] No triumph of man over nature overcomes his involvement in this respect in the ' coming to be and passing away of nature.'[3] " This is the final and most vivid expression of the paradox of the human situation."[4]

If, therefore, we are not to represent the process of history as fully explaining itself, but as pointing for its explanation to something altogether beyond the temporal sphere, and if, at the same time, we cannot represent this more ultimate reality as itself an entirely distinct intelligible sphere which lends exhaustive rationality to the historical process which it somehow governs, we have to conceive of some transcendent reality which is at the same time immanent in history and which, by its very transcendence, complicates the meaningfulness which it lends to history. How is this possible ? This is the problem to which Niebuhr attempts to provide the answer.

The answer is thought to turn largely on the nature of freedom, and much of Niebuhr's book centres on this topic. But his account of it is by no means clear.

On its negative side, the freedom of man seems to mean for Niebuhr emancipation from natural necessity. This is taken to be guaranteed mainly by our exercise of memory, and Niebuhr accuses other thinkers of under-estimating the importance of memory. In this I think he is mistaken. The account of consciousness, for example, in Kantian philosophy, and in the

[1] *Op. cit.*, p. 84.
[2] *Op. cit.*, p. 87.
[3] *Op. cit.*, p. 84.
[4] *Op. cit.*, p. 87.

idealism which takes its start from it, turns largely on an analysis of memory and its implications. And Niebuhr's own account of our freedom as consisting in our power to rise 'above the flux of events' because we have memory of past events and anticipations of the future, is in important regards reminiscent of the views, in some ways much derided by Niebuhr, which dominated European thought until quite recent times. The view that "time is in him as surely as he is in time"[1] is very markedly reminiscent of nineteenth-century idealism[2] and not nearly as startling or original as Niebuhr supposes. But it must be added that Niebuhr seems to think that something more is involved in the freedom which memory renders possible than ability to rise above the immediate promptings of the present by giving it a wider meaning in relation to a fuller understanding of our situation made possible by memory and anticipation of the future. For the memory of the past is thought to be memory of events that were themselves free and unique because of their freedom, and this suggests more than that the past decisions themselves involved memory of earlier events. And this is, I think, Niebuhr's view. Although he sometimes writes as if freedom could be identified with the mere coherence of thought and conduct which provides some "structure of meaning which will give various events a place in a comprehensive story,"[3] he seems in the main to be thinking of freedom as involving more than this, and in one place he actually speaks of "freedom to choose between new alternatives"[4] which are presented to us by our survey of the facts that have led to a particular situation. On this view the power of memory is only "one of the facets of man's freedom."[5] And that is, I think, Niebuhr's real view, but I do not think he takes very seriously the 'choice between alternatives' to which he pays incidental tribute in the words just reproduced. There is no real freedom of choice in Niebuhr's conception of human action, but there does seem to be something involved over and above integrated action.

It is worth stressing further at this point that the view of freedom as coherent conduct is totally inadequate to the sense of freedom which is involved in moral responsibility. There has,

[1] *Op. cit.*, p. 20.
[2] *cf.* Bosanquet, *Essentials of Logic*, p. 17: "In one sense I am in space, in the other sense space is in me."
[3] *Op. cit.*, p. 25.
[4] *Op. cit.*, p. 22.
[5] *Op. cit.*, p. 20.

in fact, been much confusion over these matters. The freedom which is required in art or pursuit of truth consists essentially in the ability of the individual to take up into the unity of his own personality such external influences as determine his experiences and actions. This means that experiences so determined cannot be properly predicted in the same way as events in nature can be anticipated accurately by the scientist. There can be no strict science of mental processes because these cannot be resolved sufficiently into separate factors each with its assignable independent force. This is why idealist thinkers spoke so much of 'self-determination,' determination through the transmutation within ourselves of such forces as influence us, a process which is realised in part in the way an organism assimilates its nourishment. Niebuhr himself in a passage where he leans heavily towards this 'idealist' view of freedom puts this point well. He writes: "History is thus comprised of causalities and sequences, coherences and structures which are not easily comprehended as meaningful. They are too varied and unique to fit into any simple patterns of meaning. The freedom of the human agents of action results in diverse and novel modes of behaviour and action which make scientific generalisations, based upon the observation of recurrence much more dubious and hazardous than the generalisations which constitute the stuff of natural science."[1] We may, however, allow that the coherence of rational experience is of this peculiarly incalculable kind, and thus very different from the sequence of events in nature, but this does not really make them less, but, on the contrary, more meaningful. They are more shot through themselves with meaning, and for this reason they are, in spite of their uniqueness, more obviously inevitable in themselves than processes which are determined more mechanically. This is one reason why Niebuhr, in another highly ambiguous feature of his theory, urges that our conduct involves freedom and necessity. But what I wish to stress now is that just because freedom conceived in the present fashion is also necessity, it does not give us the freedom required in ethics.

This is because moral worth is entirely different from æsthetic value of the worthwhileness of knowledge. There is plainly a combination of freedom and necessity in these latter. The artist has to create in a certain way, he is moved, possessed, inspired;

[1] *Op. cit.*, p. 63.

and the thinker does not think at will but rather as the laws of thought require. But just because these activities are of this kind the ideas of guilt, blame, remorse, do not apply. We commiserate with the artist who fails and we are sorry for stupid or inartistic people ; we regret our own failures, but we do not censure ourselves because we fail to produce works of art or to understand some scientific theory. But censure is appropriate when we fail to do good works, and this is just because we have a very different and much more genuine sort of choice here. It is a choice to do or not to do an action such that it is our own fault if we fail. And, however much the two have been confused, as they most certainly have been again and again, the freedom of rational self-determination which is present as much in thought and artistic activity as in morally responsible choice, falls very far short of the absolute freedom which makes us morally responsible.

But to return, I do not think that it is the more traditional coherence theory of freedom that Niebuhr wishes to put forward, much though his own view would have benefited by closer study of the various forms which that theory takes. We shall get closer to Niebuhr's main point if we note now his insistence that there is " a bewildering mixture of freedom and necessity in every historical concretion."[1]

Now this might mean merely that physical factors enter into human action at every point, and there are many passages where Niebuhr seems to understand our immersion in " the world of change and temporal flux "[2] simply in this sense. He writes of " the interpenetration of a unique human freedom with the impulses of history "[3] and refers to the persistence, albeit in a transmuted form, of animal gregariousness and the sex impulse in human life. He observes that " no spiritual transfiguration of man's sexual life can either negate or obscure the natural root from which it is derived. Significantly, when the mystics, seeking to renounce natural impulses for the sake of obtaining a pure equanimity of spirit, make a report of their state of bliss they find difficulty in eliminating tell-tale notes of eroticism from the account."[4] But if this is all that Niebuhr has in mind, it is a very trivial and artificial way of speaking of the combination

[1] *Op. cit.*, p. 20.
[2] *Op. cit.*, p. 17.
[3] *Op. cit.*, p. 18.
[4] *Op. cit.*, p. 19.

of freedom and necessity. Nor is it strictly accurate. For the physical impulse is not strictly a part of our action. It is something we ourselves can control in the exercise of our free choice and as such is no more than a factor in the total situation within which we have to act. It does not, therefore, of itself point to necessity in human action.

But although Niebuhr is obviously confused about these points, he has something more important in mind when he speaks of the combination of freedom and necessity. Nor is he thinking mainly of the combination of these two which we find, as already indicated, if we assimilate moral choice to experiences, like art, in respect of which we are not directly open to moral praise or blame. Niebuhr is certainly very prone to make this assimilation, and he is confused in his thought as a result, but this does not appear to be uppermost in his mind when he insists that "both freedom and necessity are involved in every human action."[1]

What he appears to have in mind, and what constitutes the crux of his theory as a whole, is that although, by the exercise of memory, we are able to rise above the promptings of immediate impulse and conceive of ever wider and more inclusive purposes in which the aims of other persons will be integrated with our own, man remains unable in practice to sacrifice his own interest to a greater good. He succumbs to "the self's persistent self-centredness,"[2] and disturbs "the order and harmony of human life by placing himself, individually and collectively, perversely into the centre of the whole drama of life."[3] So that, although in some respects this self-seeking is over-ruled with the growth of institutions which frustrate it and direct it into more co-operative activities, the selfish motive remains and finds expression in more sophisticated and sinister ways at another level of action. This is what the optimists who believed in inevitable progress and the elimination of conflict by the triumph of reason in human relations have overlooked according to Niebuhr. "The possibility that increasing freedom over natural limitations might result in giving egoistic desires and impulses a wider range than they had under more primitive conditions seem never seriously to disturb the modern mind."[4] But the beginning of wisdom, according to Niebuhr, is to give up that expectation.

[1] *Op. cit.*, p. 19.
[2] *Op. cit.*, p. 140.
[3] *Op. cit.*, p. 141.
[4] *Op. cit.*, p. 77.

It appears, moreover, that our being necessitated always to seek our own good is itself an essential part of our freedom. Freedom is very curiously held to depend on the combination of freedom and necessity, and this peculiar doctrine is, I think, to be understood in the following way. If our conduct were altogether rational, although it would thus exhibit freedom in one way, namely, by being coherent and harmonious, a sense of freedom which Niebuhr himself on occasion takes to be the fundamental one, yet in principle it would be capable of being understood throughout; there would be no irrational element in it. But our self-seeking does, it is presumed, provide some interruption of the otherwise smooth and essentially meaningful course of our conduct. It provides an irruption into our actions of a wild and incalculable element. If this were not tamed there would be no recognisable human action; at best there would be natural necessity. "If human freedom were absolute, human actions would create a realm of confusion." But "if the patterns and structures, whether natural or historical, were absolute, human freedom would be annulled."[1] And thus, although the term freedom is used in a number of very different ways, as our last quotation shows, the more persistent theme seems to be that man owes his freedom to this 'ambiguous' position in which he finds himself as a creature able to rise above natural necessity in a vision of purely rational purpose and yet unable to give effect to this vision because of his essential selfishness. He is "more than natural and less than purely rational."[2]

But this is a most astonishing view, a parody of all that freedom really means. For apart from the many subordinate confusions introduced into the theory by frequent equivocation in the use of the term freedom, it is evident that our action is no more free and unpredictable in principle because its motivation is essentially selfish, allowing for the moment that it is so, than it would be if we were guided always by reason; it is clearly no less determined, and in some ways prediction might be facilitated by knowledge of a selfish motivation. But even if this were not the case, if in fact our conduct was more incalculable in proportion as it was selfish, and if this could properly be described, as I am sure it can not, as an 'ambiguous' irrational character of human action, it is plain that this is not the

[1] *Op. cit.*, p. 65.
[2] *Op. cit.*, p. 64.

'ambiguity,' to use Niebuhr's own imprecise terms, which makes us free. Freedom is certainly not just irrationality; nor will *any* kind of 'ambiguity' provide it. It is true that a free action is not one that we can understand throughout or explain. So far Niebuhr is quite right, and the point needs stressing. But the reason for this is that the sort of freedom which makes us responsible is a freedom to choose one action or the other independently of the particular force of inclination at the time. We can describe the factors which made the choice possible, including qualities of our own character, and there is much in human action which we can foresee for this reason. But on the occasions when we have to make a truly moral choice, although the terms of it are prescribed and its scope thus limited, nothing prescribes the choice itself. The choice is a partial break in the natural continuity of life and conduct. And as such it is certainly not rational in the sense of fitting into any scheme or pattern of things. But it would be quite misleading to describe such choice as irrational; it is not blind or impulsive and it need not be opposed to what reason requires. Niebuhr is, however, taking a sense in which we cannot altogether rationalise freedom of choice and exploiting it in the interest of a view of freedom which does not allow of any genuine choice, as is evident especially in damaging admissions like the following:

"The real self, in its transcendent unity and integrity is involved in the evils, particularly the evils of self-seeking, which it commits. This self is always sufficiently emancipated of natural necessity, not to be compelled to follow the course dictated by self-interest. If it does so nevertheless, it is held culpable both in the court of public opinion and in the secret of its own heart. The self finds itself free; but, as Augustine suggested, not free to do good. The self seeks its own despite its freedom to envisage a wider good than its own interest. Furthermore, it uses its freedom to extend the domain of its own interests."[1]

Here we have it plainly. The self just is 'not free to do good.' And there can be no compensating for this by pointing to some other peculiar and freakishly figurative sense in which we may be said to have freedom. The dignity of man as a morally accountable creature is irretrievably lost if our freedom does not include freedom to do good.

---

[1] *Op. cit.*, p. 105.

There is, in fact, only one course open to anyone who holds Niebuhr's view of human nature, namely, to repudiate responsibility and all strictly moral notions. This is what Hobbes did in effect, and one respects the cynicism of Hobbes because of its frankness. But when precisely the same view as that of Hobbes appears in the guise of a theological work designed to recall us to the Christian faith it cannot but revolt us and invite the severest condemnation. Nor is this lessened by ostentatious assumption of prophetic roles. Obnoxious doctrines are not to be redeemed by the vigour with which they are trumpeted forth.

But far from being perturbed or daunted by his own cynicism, Niebuhr seems to take an obstinate courage from it. On the top of one page he writes:

The self "has some knowledge of a responsibility towards life beyond itself and a vagrant inclination to be loyal to it. But there is a 'law in its members' which wars against the 'law that is in its mind,' a powerful inclination to bend every new power to its own purposes and to interpret every situation from the standpoint of its own pride and prestige."[1]

But later in the same page Niebuhr denounces the naturalists who reduce human action "to the level of physical events to which no praise or blame can be attached because they have always sufficient antecedents." He urges that "the common sense of mankind has never accepted this ridiculous denial of a unique freedom in human life and of a consequent responsibility and guilt in human action. The life and literature of the ages is replete with condemnation of cowardice and self-seeking and of praise for acts of bravery and lives of selfless devotion. . . . Thus the responsible self (and the guilty self in so far as it always falls short of its highest responsibilities) peeps through even the most intricate and elaborate façade of modern thought."[2] We are also told that "the more consistent naturalistic versions of our culture are involved in the absurdity of ostensibly guarding the dignity of man while they actually deny the reality of the responsible self."[3] Niebuhr will thus have no truck with those who seek to rid man of his responsibility and "the fact of his guilt."[4]

But if it is perverse to attempt to save man's dignity at the

[1] *Op. cit.*, p. 106.
[2] *Op. cit.*, p. 107.
[3] *Op. cit.*, p. 112.
[4] *Op. cit.*, p. 113.

expense of his responsibility, it is much more perverse and much more sinister and unhealthy to preserve the ideas of guilt and shame and remorse and the 'Judgment of God' without the genuine freedom which makes them meaningful. Yet this is precisely what Niebuhr does. No sooner has he reaffirmed the need for 'moral censure' in consequence of man's guilt than he adds:

"The self is indeed divided. It would do the good but does not do it, it would avoid evil but finds an inclination more powerful than its will towards the evil which it would avoid. The power of this inclination to self-seeking is more potent and more mysterious than the natural impulses. The self in its totality is in the force of the inclination. Yet in moments of high reflection the self feels the inclination to be a power not its own but sin that dwelleth in me."[1]

Divided the self most certainly is on such a view, but not free. If 'the self in its totality is in the force of the inclination to evil' there is no self which can oppose itself to such inclination and control it. But I do not think Niebuhr minds that very much. He is quite happy to flagellate himself for sins he never committed, and this masochism is admirably matched by the sadism with which he chastises his fellows for evils which spring not from their individual actions but from some mysterious source in a vague 'human situation.'

In all this the victims have only one consolation offered them, and that only worsens the offence. We are reminded that we do *know* the better course which we are unable to follow.

"The real situation is that the human self is strongly inclined to seek its own but that it has a sufficient dimension of transcendence over self to be unable to ascribe this inclination merely to natural necessity. On the other hand, when it strives for a wider good it surreptitiously introduces its own interests into this more inclusive value. This fault may be provisionally regarded as the inevitable consequence of a finite viewpoint. The self sees the larger structure of value from its own standpoint. Yet this provisional disavowal of moral culpability is never invincible ignorance. It sees beyond itself sufficiently to know that its own interests are identical with the wider good."[2]

This plainly will not do. For while it is some concession to admit that we are not to be censured for what we do in sheer

[1] *Op. cit.*, p. 108.
[2] *Op. cit.*, p. 108.

ignorance, the position as a whole is hardly improved by assuring us that it is in proper knowledge of its nature that we embrace the evil we cannot escape.

But it is also plain that Niebuhr does not intend even the concession which he seems to make to be taken very strictly. For in spite of vague allusions to our discernment of a 'wider good' than our own he distrusts altogether our power to specify its requirements in particular situations in the form of reliable ethical judgments. He seems to have very little use for ethics as normally understood, and believes that the circumstances of the present time have put out of court altogether any ethical truths which we can accept on their own account; and this is for Niebuhr a further reason for distrust of human action. He writes:

"Furthermore, a culture which has learned to scan the vast varieties of social and cultural configurations in history is not certain that any law is adequate for all occasions. It is the more sceptical because it has learned to discount the pretensions of universality and eternal validity which have been made for various structures and forms of ethics in various cultures. It has learned, in short, that the so-called 'self-evident' truths in the sphere of morality usually cease to be self-evident under new historical circumstances and in new occasions. The modern moral temper is naturally and inevitably relativist."[1]

But there is here a whole 'nest' of fallacies, the most important of which is the failure to realise the sense in which ethical truths are, and the sense in which they are not, universal. There are few persons to-day who would claim that there are ethical principles about which all are agreed, and Niebuhr, I think, spends far too much of his time in attacking a man of straw when he rebuts the claims that there is unanimity in our ethical beliefs.[2] It is quite plain that there is no such unanimity except in the sense—a most important one—that the meaning of fundamental ethical ideas like ought and value remain the same in our differences of view about their specific applications. Even very primitive people, provided they are able to appreciate ethical distinctions at all, must consider observance of their own code to be required of them in the same sense as we feel obliged to conform to our more enlightened principles. It is about specific duties and standards of worth that we differ, and

[1] *Op. cit.*, p. 195.
[2] *Op. cit.*, pp. 195 ff.

here the difference is often superficially considerable. But we should remember that the differences are often differences about matters of fact, such as the actual effect of this or that course of action, rather than about strictly ethical evaluations. We do, however, differ in our views about strictly ethical matters, but this does not imply that ethical truths themselves vary with our opinions about them. Our eagerness to convict others of error implies that we believe that the truth does not vary with our opinions.

The case of science presents a close analogy to ethics here. Opinions are constantly changing in science, but we do not for that reason despair of advance or conclude that one opinion is as good as another. We believe that there is a truth to be known and that we may repose more confidence in the likelihood of certain opinions attaining it rather than others. No one is infallible, and we have therefore always to retain open minds even about well-established theories. For principles of very long standing have had to be discarded or modified. But there are ways of trying to make our opinions more probable, and there are many respects in which we can have all the certainty we need. So also in ethics. The absence of agreement on all points does not leave us at the mercy of every 'wind of doctrine.' We can have all the assurance that we need that many of our judgments do conform to independent ethical facts, and we have means of trying to reduce the likelihood of error.

It does, of course, often happen that we have to compromise in cases where other persons hold different views from ourselves, but this only makes ethics *indirectly* dependent on opinion, and is not in the least inconsistent with moral objectivity.

One may also readily admit that ethical requirements vary with circumstances. Niebuhr again makes a great deal of this. He urges that even the duty of keeping our promises may admit of exceptions—"There are situations in which contracts ought not to be kept."[1] We have always to be judging between conflicting claims. This is very true, and I believe that it still needs to be stressed. For we do not seem to have heard the last of 'inalienable rights' and unlimited freedoms. Few things have caused so much confusion in political and ethical thinking during the last three hundred years than the failure to appreciate how one claim—a claim to property, for example—limits others and is limited by them. American thought and practice has suffered especially in this respect, and we can perhaps account

[1] *Op. cit.*, p. 214.

for Niebuhr's preoccupation with these matters by the persistence in America to this day of attitudes springing from falsely abstract conceptions of right. But to insist that no right is absolute in the sense of holding without exception or in all circumstances is one thing. To conclude from this that moral objectivity is impaired by variations in the application of general principles to specific cases is quite another. There is, in fact, one course and no other which is finally binding upon us in any situation, and this is absolute in that specific situation.

We have, of course, to bear in mind that the moral worth of particular agents depends on their loyalty to the ideals that commend themselves to them. I am not to blame for what I do in ignorance, provided I have done my best to find out what is my duty. Admittedly these are matters about which we are very apt to be confused in times of change and transition, and Niebuhr is right in concluding that in one way or another scepticism spreads in periods of uncertainty and social upheaval. But there is nothing new here. It all happened in much the same way, for example, in Athens in the fourth century B.C., and much of the thought of the great Greek philosophers was designed to counter it. We are faced with a similar task to-day, and good men ought to bend their minds to it with great resolution.

But these are not matters which can be discussed in detail in this paper. There is not, in any case, anything new that I would wish to add to what I have said repeatedly in similar contexts in the past. The mistakes which Niebuhr and other theologians make are just those which could have been most easily avoided by due attention to careful discussions of moral objectivity in recent ethical writings. But these are the writings with which theologians seem most ostentatiously to refuse to grapple, in spite of their exceptional relevance to their own doctrines. They take their cue more from popular writers and psychologists who do not, as it happens, reflect at all the solid advance in ethical thinking in recent times.

It is peculiarly regrettable that this should happen since it brings the theologian into a most unholy alliance with the nihilist, as may be seen in Niebuhr's own insistence that the moral relativism which he finds unavoidable on the strictly ethical plane "frankly plunges into the abyss of nihilism."[1] To facilitate this plunge in the expectation of saving us from it

[1] *Op. cit.*, p. 196.

at the last minute by theological dexterity seems to me an altogether wrong-headed and irresponsible procedure, and one which is very far removed from a true discernment of the relation of saving faith to life and history.

But this brings us back to the question of the way in which Niebuhr himself conceives this latter relation and provides in that way an alternative to the Classical view and the Modern view of history as he conceives them. But here his theory is more than usually hard to follow. He seems at times to believe that there has been genuine advance in history, both in thought and practice. He assures us in his own rather curious terminology, that there are "tangents of moral meaning in history."[1] We are warned "not to deny the provisional meanings, the significant rebirths and the necessary moral judgments of history."[2] We must not "reduce historical existence to complete darkness illumined only by a single light of revelation."[3] We are assured that the eschatology which reduces "historical striving to complete frustration, relieved only by the hope of a final divine completion" is "as false as the optimism which it has displaced."[4] We must, therefore, not "negate the permanent values which appear in the rise and fall of civilisations and cultures." There are "facets of the eternal in the flux of time."[5] But apart from the very great difficulty of understanding how this more optimistic side of Niebuhr's thought is to be understood, and how his admission of 'permanent values' is to be reconciled with his strong partiality for relativism, the general tenor of his discuisson seems to reduce these brighter features of his thought into very thin and formal admissions which do little substantially to relieve Niebuhr himself from the pessimism he denounces in others.

We are told, for example, that, although there are "indeterminate renewals of life in history," "the total historical enterprise is not progressively emancipated from evil. The Christian faith expects some of the most explicit forms of evil at the end of history." Christian love is "normative for, but not tenable in history."[6] "There is no justification in revelation for any good man." Human history is "perpetually and on every level

[1] *Op. cit.*, p. 150.
[2] *Op. cit.*, p. 244.
[3] *Op. cit.*, p. 244.
[4] *Op. cit.*, p. 244.
[5] *Op. cit.*, p. 262.
[6] *Op. cit.*, p. 162.

of its achievements, in contradiction to the divine."[1] For although, in the words quoted with approval from Herodotus, men have "consciousness of much" they have "control over nothing."[2] We must, therefore, not bring Christ "into a system of simple historical possibilities,"[3] or forget "that the teachings of Christ have a rigour which point beyond simple historical possibilities."[4] History is the scene of conflicting claims, but the ethics of the New Testament seem "to imperil every discriminating concept of justice by which men seek to arbitrate conflicting claims." Christianity seems to be, in this respect at least, quite irrelevant to history.

This cynicism seems to be especially intensified in Niebuhr's appraisal of public and political action. He rules out altogether, for example, the possibility that a nation might "venture beyond its own interest into a system of mutual security." We are also told that "no one is particularly shocked by George Washington's dictum that a nation is not to be trusted beyond its own interest. That bit of cynicism is common currency in the affairs of mankind; and statesmen would be impeached if their policies ventured too far beyond its warning."[5] Whether Niebuhr believes it possible for nations to some extent to put their own interest second is not at all easy to determine. He speaks of "the responsible self in the collective life of mankind," and adds that nations "never adequately meet the wider claims of the responsible self,"[6] implying that they can do so to some extent. But the general impression is one of the futility of endeavouring to proceed on any principle other than that of self-interest in politics; and while this does represent a necessary reaction against unrealistic optimism in politics, it seems to come strange from a theologian in particular to take such a dim view of the possibilities of genuine public morality.

The conclusion that is forced upon us is a double one. On the one hand, it seems evident that Niebuhr is dissatisfied with the extreme and uncompromising kind of Protestantism which deprives human activity of all significance and worth. He wants to make some concession to the more liberal and 'Modern' views which emphasise 'growth' and achievement in history.

[1] *Op. cit.*, p. 163.
[2] *Op. cit.*, p. 176.
[3] *Op. cit.*, p. 188.
[4] *Op. cit.*, p. 192.
[5] *Op. cit.*, p. 107.
[6] *Op. cit.*, p. 110.

and he wants religion not to seem an escape from present reality but the transformation of it by infusion into it of spiritual forces. He deplores the tendency of certain Protestant versions of the Christian faith "to betray a defeatist attitude towards the social existence of mankind,"[1] and he condemns Luther for placing "the Gospel in Heaven and the law upon earth." But, on the other hand, Niebuhr is not able to provide an effective alternative to these gloomy views, and he has nothing to offer us in the way of a new understanding of the nature of revelation as the impact of the divine upon finite experience. All that we have, therefore, is a very desperate attempt to subject the traditional Protestant view to modifications, of which it does not really admit, and which compel Niebuhr not only to become extremely obscure and paradoxical in his thought, but to remain, for all practical purposes, no less distrustful of human action than any of his precursors.

It is indeed significant that Niebuhr should have felt the need to qualify the cynicism of the theological school to which he belongs, but this avails little, since he has not provided us with anything that takes us effectively beyond this sense of dissatisfaction. The concessions he makes to the more liberal view are formal ones which do not seem to touch the substance of human action. There is no genuine freedom of choice, nothing we can effectively relate to individual action, but only a substitute for this in the form of a curious metaphysical construction in which an alleged compulsion upon us to put our own interest first is itself some kind of necessary counterpart of the freedom claimed for action. But no amount of theoretical juggling, no presentation of old ideas in a new way, will avail to reintroduce freedom and individual responsibility into a system that has cut them out at the start. Nothing less than a genuine modification of the original presuppositions will suffice, but Niebuhr thinks the problem is solely that of being ingenious enough within the old scheme.

It is only in this way that we are to understand his contention that "the meaning of history is not completed within itself. It is completed only from beyond itself as faith apprehends the divine forgiveness which overcomes man's reluctance."[2] The completion from beyond is indeed affirmed to lead to new births in the present and to replenishment of life "by impulses of grace

[1] *Op. cit.*, p. 226.
[2] *Op. cit.*, p. 163.

in which there are no calculations of mutual advantages."[1] But it takes little effort to perceive that these admissions are not intended in any ordinary sense. What Niebuhr seems to have mainly in mind is the way we ourselves are able, by faith and revelation, to become aware of the sinful pride which inspires all our actions and, in this way, prepare for our redemption from it by way of a spiritual new birth which affects our experiences as a whole, without, however, preventing us from subjecting the visions of 'wider' claims set before us in this way to the selfishness and pride from which, it appears, we can never escape in the present existence. The worst forms of evil, both morally and outwardly, are expected to continue to the end of history, not merely in the sense that new triumphs bring in their train new temptations to which we *may* succumb, but in the sense that nothing we shall ever do will be free of the taint of our sin. Sin is universal and reveals itself, not in the wrongful choices of this or that individual, but equally in all human experiences and actions. But within the theoretical scheme which Niebuhr sets before us it is possible for him to have room for some kind of development whereby we become increasingly aware of the 'ambiguous' situation of freedom and necessity which he has described, our freedom being enhanced at the same time as the necessity which it presupposes is intensified. The eternal is thus made to seem relevant to the temporal and to penetrate it in a way that gives some kind of spiritual or eternal dimension to the process of historical growth itself, the latter not being in any way an achievement of man himself or reflecting any credit or finite activities as such. I do not pretend to understand all this, for I do not think it really makes sense. But it can be seen at any rate what it is that Niebuhr is attempting to do. He wants the temporal process to count, but he wants it to count as the scene of something which is at the same time eternal. His problem is thus real enough; it is the essential problem for a religious view of life, namely, how to bring the transcendent into significant relation to finite experiences. No solution of this problem is possible in the sense of a completely rational answer to it. But this does not warrant us in indulging in any irrationality we please. There are certain things which are incorrigible *for us* and which we must accept as essential factors in any solution of our problem. These include the

[1] *Op. cit.*, p. 210.

deliverances of the moral consciousness, and it follows thus that no solution of the problem of revelation, and of time and eternity, which sets these moral convictions at nought can be entertained at all. It is not enough to provide a mystery, or to set before us bewildering schemes which have nothing solidly to commend them beyond the bafflement of reason. The supra-rational aspect of religion is not at all a warrant for sheer disregard of reason. Our procedures need to be far subtler than that. Moreover, there is little in Niebuhr's scheme which really savours of the sort of mystery we find in religion. So far as his scheme can be accepted at all, it seems to be as easily acceptable to the non-religious person as to the man of faith, and the arguments which commend it consist in ordinary analyses which seem to require nothing of a specifically religious character beyond the extension to their incoherences of a licence to defy logic altogether in the name of religious mystery.

But if we are to turn our minds seriously to this crucial problem of revelation (and if we fail to do so it will be a sorry day for religious practice as well as religious thought) there is one condition which we must learn anew to respect, and that is to cultivate a truer sense of the worth and distinctiveness of the individual, as seen especially in his responsibility and freedom. Lip-service to the worth of the individual is not enough, and therefore any scheme which represents human life, as Niebuhr's does, as "not so much a contest between good and evil forces in history as a contest between all men and God,"[1] and which thinks of history as a kind of drama in the experience of some collective humanity, stands condemned at the start. Neither can we sacrifice distinctions of good and evil which we normally feel impelled to draw. It is these in the first instance that enable us to give distinctive meaning to human existence; but if, as seems to me inevitable, that meaning cannot be completed at its own level, we have then the properly religious problem of discovering how there can be apprehended within these limited finite experiences an absolute or eternal significance which does not annul the finite. If we succeed, we shall indeed find what Niebuhr also seeks, namely, a "mystery which enriches meaning," but I suggest that we shall find it, not in abstract conceptions but informing the particularity of individual things and events and flashing out at us from them in moments of high religious insight; and we shall find it most of all in moral

[1] *Op. cit.*, p. 141.

experience. To examine how revelation is written in these ways into the concretions of finite experience, to know how God has made himself known to individual men, and to consider how this, in turn, has affected and enriched other experiences will be a genuine and highly rewarding study. It will also be most exacting, and will summon us to much more than an effort of ingenious thinking; it will require the consistent exercise of religious imagination. This seems to me to be especially lacking in the theological writings which appear to have most influence to-day, especially on the Continent. It is in the travail of real imaginative thinking about religion, the thinking which requires to be itself informed by deep religious feeling that we shall come to understand the subtle way in which revelation comes to birth and acquires some pattern of its own within the very processes of history. I do not think we have really begun this study, but to undertake it will be one of the major ways in which we can make religious claims significant and relevant to-day; it is especially indispensable to due appreciation of the claim to uniqueness in the Christian revelation. But such a task requires much more radical reconsideration of theological assumptions than theologians are usually prepared to undertake. It will also require the very greatest respect for moral qualities. Any theology which jeopardizes these debars itself at the start from insights indispensable to its own work. Niebuhr has come nearer the truth than most in defining for us what the crucial problems of religion are, and in setting before us those problems which concern especially revelation and history, but he has blinded himself to the condition of their solution as effectively as anyone could.

Discussion.

The Chairman (The Very Rev. Dr. W. R. Matthews) said: The philosophy of history has moved into the centre of intellectual interest partly no doubt because of the need which many people feel to gain some understanding of the events which have shattered our former way of life. Christian thinkers have felt the need to restate and rethink the Christian view of history and we are indebted to Professor Lewis for his lucid exposition and criticism of Reinhold Niebuhr's contribution to the discussion of the meaning of history. There can be no doubt that Niebuhr is an important religious and intellectual figure in our times and we need a careful estimate such as Professor Lewis has provided.

In the main it would be true to say that Niebuhr represents a modern version of St. Augustine's position. Like Augustine he seeks to understand history from the point of view of Providence, and like Augustine he maintains that there is a radical evil in human nature as such. Professor Lewis is certainly not an Augustinian in his thoughts and I could not help reflecting that what he has to say in criticism of Niebuhr was very much what Augustine's opponent, Pelagius, would have said if he had been acute enough. I believe Pelagius was a Welshman, and it is appropriate that he should speak to-day as it were through the mouth of a contemporary Welshman !

The idea of original sin is often rendered more confused than it might be because we are satisfied with rhetoric and avoid definitions. Augustine cannot be accused of this fault. He says very plainly what he means, and I venture to think that no one is really prepared to accept his doctrine with all its consequences. Carried to its logical conclusion, in conjunction with his doctrine of predestination, it undermines all moral freedom and consequently all moral responsibility.

I believe that the chief cause of confusion is the failure to distinguish between two quite different conceptions—that of moral evil and that of guilt. It is obvious that a man may have evil traits in his character for which he is not responsible in the sense that he inherited a warped nature. The evil is really evil, but he is not the cause of it. He becomes guilty of course if he becomes aware of the evil in his nature and consents to it. In the traditiona doctrine of Original Sin moral evil and guilt are not distinguished and we have the monstrous consequence drawn that infants are damned because of inherited " guilt."

We ought to be grateful to Professor Lewis for his faithful dealing with Niebuhr on the subject of his tendency to ethical relativity. In my opinion one of the main interests of those who defend a religious and spiritual view of the world should be to maintain the objectivity of values and pre-eminently that of moral values.

Probably Professor Lewis has convinced most of us that Niebuhr's philosophy is very far from being satisfactory, and that most damaging criticisms can be levelled against it, but we should pay Niebuhr the tribute due to one who has discussed a large question

in a large way. He has the power to awaken thought in others, and I cannot doubt that he has stimulated many readers to reflect upon the meaning of history and the Christian answer to the question: Has it any meaning?

Dr. WATNEY said: What we have heard this evening seems to be the very antithesis of all St. Paul's teaching, which seems to have been quite forgotten by you, Sir, and the lecturer. Surely the very essence of Christianity is, as St. Paul writes, "Oh wretched man that I am! who shall deliver me from the body of this death? I thank God through Jesus Christ our Lord." Surely, Sir, this is the very heart of the Gospel which you and I delight to proclaim, and is the answer to all pessimism and self-effort. The glorious fact is that we are not alone to struggle in a losing battle with sin and all its consequences, but that we have always at our disposal and help God's Holy Spirit and His might to make us more than conquerors through Him that loved us and gave Himself for us.

Mr. W. E. LESLIE wrote: Professor Lewis is to be thanked for his outspoken criticisms.

Would he agree that when theologians discuss philosophic questions they ought to do their utmost to express themselves clearly, and avoid ambiguity and the use of what, in less exalted circles, would be called catch phrases and fashionable clichés? There is a tendency to use metaphorical terms in a loose way. Professor Lewis calls attention to Niebuhr's use of the word "tangent". The word "dimension" is often borrowed from physics and used obscurely.

AUTHOR'S REPLY.

I am grateful to the Dean for his generous remarks about my paper. I also heartily agree with him that we need to distinguish sharply between the sort of evil in which guilt is involved and other kinds of evil for which we are not directly accountable. I am sure that this is the way out of many confusions.

I also welcome the plea made by Mr. Leslie for greater clarity of expression in theological discussions. There are, it is true, matters which do not admit of very precise statement and which must be hinted at in some "sidelong" way, to use the late Evelyn Underhill's term. But where metaphorical language has to be used there lies upon us the grave responsibility of seeing that it does

convey the best impression we can give of the truth. In many cases, however, obscure language is used where quite ordinary expressions would be better, and in recent years especially a cult of obscurantism has been made the excuse for downright distortions of truth and evasions of simple objections to influential views. To exploit the difficulties of a subject in the interest of one's own view is a form of irresponsibility which theologians in particular ought to avoid.

The suggestion that my view is not in accord with the teaching of St. Paul would require another paper to answer effectively. The most that I will say now is that it has always seemed to me absurd to suppose that a denial of man's responsibility is a prerequisite of our acceptance of the notions of faith and grace as they appear in the New Testament. There are, moreover, many facets to the teaching of St. Paul and we must pay very careful heed to the precise religious context in which they must be understood. I think we are still very reluctant to do this, partly because we are still very far from appreciating properly the nature of religious truth.

894TH ORDINARY GENERAL MEETING

HELD IN THE CAXTON HALL, WESTMINSTER, S.W.1, ON MONDAY, 22ND MAY, 1950

ERNEST WHITE, ESQ., M.B., B.S., IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed and signed.

The following elections were announced :—Martyn H. Watney, Esq., M.A., M.B., B.Ch., M.R.C.S., Fellow ; Miss Myra Light, Fellow ; S. F. D. Orr, Esq., B.A., Member ; P. B. Bagnall, Esq., B.A., Member ; J. P. Cohen, Esq., Member ; D. C. Abbott, Esq., Associate ; B. M. N. Brown, Esq., Associate ; J. H. Jackson, Esq., Associate ; M. J. Turner, Esq., Associate.

The CHAIRMAN then called upon the President, Sir Frederic G. Kenyon, G.B.E., K.C.B., D.Litt., LL.D., F.B.A., to deliver his Presidential Address entitled " The Institute and Biblical Criticism To-day."

PRESIDENTIAL ADDRESS

THE INSTITUTE AND BIBLICAL CRITICISM TO-DAY

By SIR FREDERIC G. KENYON, G.B.E., K.C.B., D.Litt., LL.D., F.B.A.

I AM not sure that the time has not come when I should cease to offer you an annual Presidential Address. At the time of life which I have reached it is not likely that I should be able to embark on any new line of inquiry ; and I have already said most of what I have to say on the subjects with which of late years I have been chiefly concerned. What I say to-day will in part repeat what I have said already ; but there are a few points which I should like to emphasise once again. And I can at least promise to conform with the desire for brevity somewhat wistfully expressed by our late Secretary, Col. Skinner.

I am, however, encouraged to offer these remarks by two papers to which our members have had opportunities of listening within the present year. One was the survey of the early activities of the Institute, by Mr. Titterington, the other was the survey of Recent Trends in Biblical Archæology by Mr. D. J. Wiseman. The former of these recalled the circumstances under which the Institute came into being and the subjects with which it was then principally concerned ; the latter gave an exhaustive survey of the most recent problems of Biblical archæology which have occupied us recently, and which occupy us to-day. Between them, they show how the centre of gravity has shifted in our subject, and in what different ways we are now called on, in the words in which our objects were defined eighty-

five years ago, " to investigate important questions of Philosophy and Science, and to combat unbelief by directing attention to the evidences of the Divine care for man that are supplied by Science, History and Religion."

The main object of our existence remains the same, to vindicate against hostile criticism the validity and authority of the Christian religion; but what I especially wish to emphasise is the extent to which the conditions in which we have to fight have changed in our favour. In the latter years of the nineteenth century the champions of Christianity were mainly on the defensive. Natural science was in the heyday of the progress which took rise in the discoveries and doctrines of Darwin, and there were many who believed that Natural Science held the key to all the problems of existence and that the day of religious beliefs was over. At the same time, within the sphere of religious study itself, a school of thought asserted itself which questioned the authenticity and trustworthiness of the fundamental documents of Christianity and applied the utmost freedom of scepticism to their narratives. " Advanced " thought, as it called itself, flourished rampantly, and orthodoxy was pushed aside as an outworn tradition, discredited by modern science and by modern scholarship. And against this attitude the state of our knowledge of biblical archæology did not supply arguments which could effectively convince those who did not wish to be convinced. The advocates of the Christian faith fought at a disadvantage, and on the defensive.

Now all this is changed, and the point which I wish to make is that we are no longer on the defensive. It is no longer the Christian scholar that is out of date. The up-to-date scholars are now those who recognise the authenticity and authority of the Christian literature; it is the critics who formerly claimed to be " advanced " who are now belated and behind the time. The last half-century has been a period of wonderful, almost sensational, advance in our knowledge of the conditions under which our religion took its form and in which the books which contain its credentials were produced; and discovery after discovery has tended to establish the essential soundness of the traditions which, from the point of view of human scholarship, are the title-deeds of our faith.

I have dealt with parts of this sujbect in previous addresses, but the material is constantly growing, and it will do no harm to recapitulate it here, at least in summary.

With regard to the Old Testament, the great change came in the years lying around the turn of the century. Previously, our knowledge of the area lying between the Euphrates and the Nile was, except for the books of the Old Testament, practically a blank. It was the accepted view that writing was unknown in all this part of the world before the beginning of the first millennium. For Greece, Grote put its origin as late as the seventh century; and for the Hebrews, Wellhausen put it no earlier than the ninth. The Mosaic age was supposed to be far outside the scope of written record. The first shock to this established doctrine was given by the discovery of the Tell el-Amarna tablets in Egypt in 1887. These, though including no works of literature, proved the habitual use of writing in Palestine and Egypt as far back as the fourteenth century B.C., about the time of the entry of the Hebrews under Joshua into Palestine. But far more decisive were the discoveries made in Babylonia, where sites such as Telloh, Nippur, Ur, Kish, Warka and others yielded thousands of tablets dating back as far as the third millennium B.C., or even earlier. Among them were many literary or semi-literary works, including notably the Sumerian story of the Flood. Most remarkable, from the point of view of the early Hebrew literature, was the discovery in 1901–2 of the stele containing the Laws of Hammurabi, king of Babylon about the eighteenth century B.C., who, whether he was a contemporary of Abraham or not, was in any case far anterior to Moses. This revealed the existence in Babylonia of a code of laws as comprehensive and detailed as the Pentateuch, and containing many provisions of very similar character.

These discoveries established beyond question two things of vital importance for Old Testament scholarship—the early use of writing and the existence of elaborate codes of laws far beyond the age of Moses. These propositions have been amply confirmed in recent years. The blank areas on the map between Babylonia and Palestine have been filled up by excavations which have revealed the kingdom of the Canaanites at Ugarlt, the Mitanni on the Upper Euphrates, the Hurrians (or Horites) at Mari, lower down the river, and still more at Kirkuk and Nuzi, beyond the Tigris—while up to the north-west the discoveries at Boghaz-keui in 1906 revealed the archives of the great Hittite empire, the very existence of which had not been suspected until the last quarter of the nineteenth century.

All these discoveries have thrown a flood of light on the Old

Testament literature, and particularly on that part of it which was considered as historically the least reliable, namely, the Pentateuch. The laws of the Hurrians, of which we have evidence approximately contemporary with the books of Moses, are particularly illuminating in this respect. They contain not a few provisions identical or nearly identical with those of the Pentateuch, and are a decisive warning against ruling out any of their enactments as anachronistic. The boot is now, in fact, on the other leg. Instead of the Mosaic legislation being whittled down to a few verses and regarding all the rest as later accretions, the presumption now must be in favour of the antiquity and authenticity of the Mosaic legislation. Whether Moses was in fact its author is, of course, quite another question, on which archæology can throw no light: and reasons may be shown for questioning the antiquity of particular provisions; but the possibility of detailed legislation as early as the age of Moses is decisively established, as well as the antiquity of not a few particular laws and customs which used to be assigned to much later dates. The warning of the danger of dogmatic denials where our evidence is scanty is striking and decisive.

The discoveries at Ras Shamra of the archives of the kingdom of Ugarit touch another aspect of Old Testament history. They have given us a picture of the Canaanite religion from the Canaanite side. We now have knowledge of the Pantheon of El, Baal, Asherah and other Canaanite deities from the point of view of their worshippers, and not merely from that of their deadly enemies, the worshippers of Jehovah in the kingdoms of Israel and Judah. We can see its more attractive side, and the nature-worship often embodied in it, as well as the features which decisively differentiate it from the religion of Jehovah —its polytheism, its stories of unedifying strife between its various deities, and the total lack of morality in much of its outlook. When the discoveries of the Ras Shamra literature were first announced, there were those who eagerly claimed that here was the original of the religion which we find in the Old Testament, but the fact is just opposite. Here we have the authentic picture of the polytheistic religion of the Canaanites, of which the monotheistic worship of Jehovah was the irreconcilable enemy. But we can appreciate better than ever before the conditions against which the prophets of Israel and Judah had to struggle, and the beliefs which dominated nearly all the rulers of the northern kingdom and not a few of the southern.

All these discoveries have put us in a much better position than our ancestors to appreciate the perspective of the history covered by the Old Testament. We can see, as they could not see, that it is a history of development. To them it was a single picture; the enactments of the Pentateuch, the practices of the early chieftains and kings were as applicable to ourselves as the pronouncements of the great prophets. Anything that could be found "in the Bible" was regarded as immutably applicable for all time—though there was a tacit avoidance of certain features such as polygamy, and (though not always) of indiscriminate massacre. So ingrained had this belief in "the Bible" become in Victorian days that it was regarded as almost irreligious to substitute the conception of a *progressive* revelation, suitable to the intellectual and religious development of the people of Israel from the days of the Patriarchs down to the coming of our Lord Jesus Christ. It seems to me that one of the most useful services of our Institute would now be to act as the interpreters to the general public of the true message of the Old Testament in its historical development. It would then be easier for the ordinary student to realise the full benefit of the teaching of the great prophets and psalmists, without stumbling over the crudities of early civilisation which he inevitably finds in the narratives of the periods of the patriarchs and kings. And it enables the believers in Christianity to speak with their enemies in the gate, to meet scholarship with scholarship, and to challenge with a picture of progressive revelation the nihilistic doctrines of their critics.

Still more recently we have received illuminating evidence which strengthens our confidence in the reliability of the Old Testament as it has come down to us. I refer, of course, to the discovery of Hebrew manuscripts in a cave near the Dead Sea. These include a nearly complete copy of the book of Isaiah, which is assigned by those who have studied it to the late second or early part of the first century B.C. Hitherto the pedigree of the Hebrew text could be carried back no further than the so-called Synod of Jamnia, in the last years of the first century A.D.; and (in view especially of the not inconsiderable variations shown in the Greek Septuagint version) it was possible to doubt whether the Hebrew text had not suffered substantial editorial modification at that date. Now, if the pre-Christian date assigned to the Dead Sea manuscript by all who have worked on it may be accepted, that doubt is removed. The Septuagint

can no longer claim any considerable priority in date, and the evidence justifies us in believing that the meticulous accuracy which characterises the so-called Massoretic text dates back at least to a period some centuries earlier than the fall of Jerusalem.

It is therefore now established beyond question, first that written records go back in all the area between the Nile and the Tigris at least to the age of Moses, and in some parts much earlier; secondly, that legislation at least as elaborate as that of the Pentateuch dates back at least as far; we have now first-hand knowledge of the Canaanite religion of Baal; and our confidence in the Hebrew text of the Old Testament as it has come down to us is greatly strengthened. We may have still more to learn when the Dead Sea manuscripts have been more fully studied; but that is the picture as it now lies before us, and its character is encouraging.

In the case of the New Testament, the advance in our knowledge and the consequent strengthening of the traditional or orthodox position have been equally remarkable, though of a different kind. Here it is a question of the dates of our earlier manuscripts of the several books, and the consequent time available for the evolution of the books themselves. In the latter part of the nineteenth century, when the critical school was at its height, the earliest manuscripts of the New Testament were the Vaticanus and Sinaiticus, of the first half of the fourth century. This left a gap of the best part of two centuries over which the destructive critics could play with their disintegrating conjectures, although their style was somewhat cramped by the evidence of Irenæus in the last quarter of the second century. But within the last twenty years this interval has been very materially reduced. Primarily this was the effect of the discovery, announced in 1931, of the Chester Beatty Biblical papyri, including, in addition to several Old Testament manuscripts, copies of the Gospels and Acts, of nearly all the Pauline Epistles, and of the Apocalypse. All these are assigned by palæographers to the third century, the Pauline manuscript to the very beginning of the century or even to the end of the second, the Gospels and Acts to the first half of it, and the Apocalypse probably to the second half. So far, therefore, as the Gospels and Epistles are concerned, this cuts off a full century from the interval as previously fixed, and correspondingly reduces the period over which conjecture is free to plan. But this is not all. Both in the Gospels and the Epistles there has been time

for the development of various readings. The text has affinities both with the type of text found in the Vaticanus and Sinaiticus, and also (though to a less extent) with that of the Western group of authorities. No textual scholar would say that here is the uncorrupted original, from which all later authorities have diverged; on the contrary, it is evident that divergences have already come into existence, and the papyri have drawn their text from authorities of more than one type. How long a period must be allowed for this development it is impossible to say; but it is clear that the date of origin is being pressed further and further back.

But again this is not all. As you probably all know, in 1935 two discoveries were announced which have a most vital bearing on this subject. One was the discovery in the Rylands Library at Manchester of a tiny fragment of the Fourth Gospel, which had been there since 1920 but had remained unidentified. This was assigned by palæographers, both in this country and in Germany and in America, on purely palæographical grounds, to the first half of the second century. The second discovery, made among papyri recently acquired by the British Museum, was of some fragments of a new Gospel narrative, showing close verbal affinities both with the Synoptic Gospels and (what is especially significant) with St. John, and this also is assigned by palæographers to the first half of the second century.

The fact that these papyri are but small fragments does not diminish their significance. Where there are now only a few square inches there was once a complete manuscript; and (unless the judgment of the papyrologists can be disturbed) we must accept the facts (1) that the Fourth Gospel was not only extant but was circulating in Egypt in the first half of the second century, and (2) that it was sufficiently well known to be utilised in the construction of another narrative of our Lord's life. But if this is so, the date of composition of the Gospel itself is pushed back, at latest to the years about the beginning of the second century, and therefore to a period within the life-time of those who had known St. John, if not to the life-time of the Apostle himself.

I will apologise once again for repeating much of what I have said before and what many, if not all, of you know very well yourselves. But I would plead that repetition of important truths is permissible, and sometimes even necessary. It is so, I think, in this case, because these truths, which are of vital

importance, are not yet as universally realised as they should be. Otherwise we should not have had writers of distinction, in this country and abroad, ignoring the dictum of Harnack (uttered at the very beginning of this century) that the traditional chronological framework of the New Testament documents is in all essentials correct, and that all hypotheses as to the historical course of things which are inconsistent with this framework must be abandoned. Harnack, after all, was not an Anglican cleric who might be supposed to be bound by his Orders, but the most learned Biblical scholar of his generation. Nevertheless, not only have we seen his dictum ignored by those who should have known better, but also the more recent evidence as to the dates of the Gospels is passed over as though it were of no consequence. It is necessary, therefore, to repeat this evidence until, if it cannot be refuted, it is generally accepted. Its acceptance would not put an end to research into the origin and methods of composition of the Gospels; but it would bring the whole examination within the limits of the period when the apostles and those who had known them were living. Theories of *Formgeschichte* and hypotheses of repeated redactions and reconstructions are ruled out for want of time for such developments. We must go back to the face value of the documents and treat them as normal human compositions in a limited framework of space and time.

I would suggest, further, that the members of our Institute should regard themselves as the evangelists of the new, or rather the revived, doctrine. We are not now fighting a rearguard action against the forces of progress and scientific enlightenment. It is those who formerly claimed to be the torch-bearers of progress who are now the out-of-date obscurantists of fifty years ago. It seems to me to be the function of the Institute to be the interpreter of modern scholarship to the public which takes an interest in the subject but has not the technical knowledge which is the basis, or part of the basis, of belief. The extent to which modern discoveries have undermined the critical scholarship of the past is by no means fully realised. Whole masses of the literature of the last century have really and quite definitely to be relegated to the rubbish heap. Much of it may have served a good purpose for a time by compelling a closer and fuller examination of the evidence, but its conclusions, so far as they require a second-century date for most of the books of the New Testament, ought now to be finally abandoned.

I should wish, therefore, to see the Institute claiming a position in the vanguard of progress, and ceasing to be regarded as coming dangerously near the attitude which is generally characterised as "fundamentalism." The position of the Institute, as I see it, is to provide the scholarly basis for an up-to-date assertion of the authenticity and trustworthiness of the documents on which Christianity rests. But more than this: I would urge that the Institute should put all its weight behind the doctrine of the *progressive* character of the revelation of God to man embodied in the Old Testament. In this way we can restore the full value of the Old Testament, which was at one time thought to be imperilled by the claims of Science. We can now, in my belief, welcome the progress of natural science, without surrendering any jot of the territory which rightly belongs to religion; and we can claim to be in the vanguard, and not a recalcitrant rearguard, in the progress of Biblical study.

Dr. WHITE (Chairman) said: I am sure that I shall echo the thoughts of all of us when I say that we are very grateful to our President for the valuable summary he has given us of the present position of Biblical Scholarship, and for the lucid and concise way in which he has expressed his thoughts.

It is refreshing and encouraging to observe the optimistic note he sounds when he says that the conditions in which we have to fight have changed in our favour, and that we are no longer on the defensive. This is especially heartening as coming from the lips of one who speaks with the ripe experience and profound knowledge of an expert who has spent many years of his life in the study and contemplation of the subject with which he treats.

Sir Frederic Kenyon urges that "the Institute should put all its weight behind the doctrine of the progressive character of the revelation of God to man embodied in the Old Testament." We hope to have the opportunity of a discussion on this important subject which will be opened by a paper to be given by one of our Vice-Presidents, Rev. H. S. Curr, during the 1951 session.

It seems to me that for the main body of Christians who are neither scholars nor experts in Archæology, there are two extreme attitudes of mind between which we should steer a safe middle course.

There are those who close their minds to scholarship. Perhaps

they have heard something of the more destructive critical views current in certain circles a few years ago, and not altogether without advocates even now. Fearing and disliking what is called the Higher Criticism they reject all the results of scholarship, classing them together under the general heading of Modernism. They ignore the valuable contribution which scholars have made to the better understanding of the text of Scripture and to the historical background of the Biblical writings, especially of the books of the Old Testament.

At the other extreme are those who hail every new discovery and each new hypothesis as infallible truth, the rejection, or even criticism of which they regard as a sign of ignorance or obduracy. They fail to take into consideration that the conclusions at which scholars arrive are tentative, and always subject to modification by the results of further investigations and discoveries. The views and conclusions of scholars are in a constant state of flux, as the history of Biblical criticism over the last fifty years has clearly shown. We need to keep our minds open, to consider all the theories and discoveries in the light of the Bible itself, and to remember that truth is gradually revealed and errors discarded, only as we seek after knowledge humbly and in a spirit of patient enquiry.

After all, the Bible is God's message to man. It is a spiritual book spiritually discerned, and as Christians we do not need to be convinced of its truth as God's revelation to man. We need neither be alarmed by destructive critical theories, nor unduly elated by the impressive evidence of its accuracy and authority, for it is the "Word of God which abideth for ever."