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JOURNAL OF THE TRANSACTIONS
OF
THE VICTORIA INSTITUTE

VOL. LXXV

1943

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THE TRANSACTIONS
OF
The Victoria Institute
OR
Philosophical Society of Great Britain

VOL. LXXV

1943



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ERRATUM

Instead of "the first year of Jehoiakim" in line 7 of page 94 of the "Journal of Transactions of the Victoria Institute," Vol. LXXIV (1942), read "(xxv. 1) the fourth year of Jehoiakim . . . that was the first year of Nebuchadrezzar king of Babylon."

*** 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 1942,

TO BE READ AT THE

ANNUAL GENERAL MEETING, MAY 24TH, 1943.

1. *Progress of the Institute.*

With this Seventy-fifth Annual Report, completing the seventy-eighth year, the Council wish to extend to Authors their appreciation of the papers read or published, and to others whose participation in the discussions have contributed to their effectiveness.

2. *Meetings.*

War conditions having rendered it impracticable to hold ordinary meetings in January and February, the first four papers of the Session were circulated to subscribers and discussed by written communication. Six ordinary meetings were then held. In all, eleven papers were published, as under :—

(Circulated and published.)

“Reason and Revelation,” by the Rev. Principal H. S. CURR,
M.A., B.D., B.Litt., Ph.D.

“Apocalyptic Portents in the Light of Modern Science,” by
R. E. D. CLARK, Esq., M.A., Ph.D.

“What the Animal Fossils tell us,” by DOUGLAS DEWAR,
Esq., B.A., F.Z.S.

“Let There be Light.” “A comparison of Genesis i, 3-5, and
John i, with root-meanings of certain very ancient words,”
by A. COWPER FIELD, Esq.

(Read and published.)

“The Enigma of Darius the Mede.” “A way to its Final Solution,” by HERBERT OWEN, Esq.

Sir Frederic Kenyon, G.B.E., K.C.B., D.Litt., LL.D., in the Chair.

“The Debt of Science and Medicine to a Devout Belief in God; Illustrated by the work of J. B. van Helmont,” by WALTER PAGEL, Esq., M.D.

Professor S. Nevin, M.D., B.Sc., in the Chair.

“Psycho-Analysis,” by the Rev. J. COCHRANE CONN, M.A., Ph.D. (being the Dr. A. T. Schofield Memorial Paper, 1942).

Rev. D. M. Lloyd-Jones, M.D., M.R.C.P., in the Chair.

“The Christian World View,” by the Very Rev. Professor DANIEL LAMONT, D.D.

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

“Can Germany be Cured?” by EDWYN BEVAN, Esq., O.B.E., D.Litt., LL.D.

H. Wilson Harris, Esq., in the Chair.

“The Genius of the Language of the Old Testament,” by W. J. MARTIN, Esq., M.A., Ph.D.

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

(Published only.)

“Some Arguments against the Hypothesis of Human Evolution from any Animal Species,” by Sir AMBROSE FLEMING, M.A., D.Sc., F.R.S.

3. Council and Officers.

The following is a list of the Council and Officers for the year 1942 :—

President.

Sir Ambrose Fleming, M.A., D.Sc., F.R.S.

Vice-Presidents.

(Limited to seven.)

Lieut.-Colonel F. A. Molony, O.B.E., late R.E.

A. W. Oke, Esq., M.A., LL.M., F.G.S.

Prof. A. Rendle Short, M.B., B.S., B.Sc., F.R.C.S.

Sir Charles Marston, J.P., F.S.A.

Trustees.

Alfred W. Oke, Esq., M.A., LL.M., F.G.S.
Robert E. D. Clark, Esq., M.A., Ph.D.

Council.

(Limited to twenty-four.)

(In Order of Original Election.)

A. W. Oke, Esq., M.A., LL.M., F.G.S.	Lieut.-Col. L. M. Davies, M.A., Ph.D.
Lieut.-Col. F. A. Molony, O.B.E., late R.E.	D.Sc., late R.A., F.G.S., F.R.S.E.
Lieut.-Col. T. C. Skinner, late R.E., F.R.	Wilson E. Leslie, Esq.
Met.S.	Percy O. Ruoff, Esq.
Rev. Principal H. S. Curr, M.A., B.D.,	Robert E. D. Clark, Esq., M.A., Ph.D.
B.Litt., Ph.D.	Group Captain P. J. Wiseman, R.A.F.
Douglas Dewar, Esq., B.A., F.Z.S.	W. H. Molesworth, Esq., C.E.
	Prof. S. Nevln, M.D., B.Sc., M.B.C.P

Honorary Officers.

W. H. Molesworth, Esq., C.E., *Treasurer.*
Lieut.-Col. T. C. Skinner, late R.E., F.R.Met.S., *Secretary.*
Rev. Principal H. S. Curr, M.A., B.D., B.Litt., Ph.D., *Editor.*
Lieut.-Col. F. A. Molony, O.B.E., late R.E., *Papers Secretary.*

Auditor.E. Luff-Smith, Esq., *Incorporated Accountant.***Assistant Secretary.**

Mrs. L. L. M. E. Malcolm-Ellis.

4. Election of Officers.

In accordance with the Rules the following Members of the Council retire by rotation: Rev. H. S. Curr, M.A., B.D., B.Litt., Ph.D., Lieut.-Col. L. M. Davies, M.A., Ph.D., D.Sc., F.G.S., F.R.S.E., W. E. Leslie, Esq., P. O. Ruoff, Esq., W. H. Molesworth, Esq., C.E., of whom the first three offer (and are nominated by the Council) for re-election.

The Council nominate the following gentlemen for election to the office of Vice-President, viz.: Sir F. G. Kenyon, G.B.E., K.C.B., D.Litt., LL.D., F.B.A., W. Bell Dawson, Esq., M.A., D.Sc., M.Inst.C.E., F.R.S.C.

The Council nominate W. E. Leslie, Esq., to the office of Honorary Treasurer, to fill the vacancy created by retirement of Mr. Molesworth. They also nominate Mr. Leslie for election as a Trustee.

Messrs. Luff, Smith and 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 regret to announce the deaths of the following Fellows, Members and Associates :—

Professor J. Gresham Machen, G. P. H. Maynard, Esq., Rev. H. Temple Wills, Rev. C. H. Basil Woodd, Rev. J. R. S. Wilson, Sir Flinders Petrie, Major H. R. Kindersley, Dr. C. G. Trumbull, Dr. G. K. Paterson.

6. *New Fellows, Members and Associates.*

The following are the names of new Fellows, Members and Associates up to the end of 1942 :—

FELLOWS : Capt. H. W. Uffelin, B.A., M.Th., Rev. E. W. Hadwen, B.D., Rev. J. O. Kinnaman, M.A., Ph.D., D.D., Bernard G. Harrison, Esq., Newman Watts, Esq., Rev. Peter Wiseman, D.D., Keith Alsop, Esq., B.Sc., Brigadier N. M. McLeod, D.S.O., M.C., H. J. Orr-Ewing, Esq., M.C., M.D., B.S., F.R.C.P., Rev. E. Corr, J. W. Harmer, Esq., M.A., F.R.A.S., A. W. Langford, Esq., M.A., M.D., B.Ch., M.R.C.S., L.R.C.P.

MEMBERS : W. A. Hill, Esq., F.S.I., L.R.I.B.A., Rev. R. J. B. Eddison, M.A., Rev. F. Martin Argyle, M.A., Rev. C. W. Cooper, F.G.S., T. J. Lawson, Esq., B.A., Robert T. Sharp, Esq., M.B., Ch.B., H. L. Alexander, Esq., F. T. Bendall, Esq., H. F. Sandford, Esq., E. W. Siddans, Esq., M.A., B.Sc., D. C. Mandeville, Esq., B.A., C. W. Gunn, Esq., Rev. L. Barrowcliff, Rev. W. E. G. Cringle, B.D., R. A. Sankey Fraser, Esq., B.Sc., Rev. M. Ruston, M.A.

ASSOCIATES : G. K. Lowther, Esq., N. S. Denham, Esq., D.Litt., J. R. W. Stott, Esq., A. E. Coombe, Esq., Henry Chadwick, Esq., B.A., Peter Swinbank, Esq., B.A., G. H. L. C. Cutler, Esq., J. A. W. Spurgin, Esq., Roy C. Brewer, Esq., G. M. Toplas, Esq., Herbert Owen, Esq., W. K. Payne, Esq., W. S. Barrett, Esq., Rev. F. Ockenden, Rev. A. K. I'Anson, D. E. Prismall, Esq., R. H. Priestnall, Esq., Capt. D. Ramsay Smith, Miss M. L. H. Taylor.

7. *Membership.*

Life Fellows	...	...	...	18
Annual Fellows	...	...	...	87
Life Members	...	...	...	27
Annual Members	...	...	...	218
Associates	...	...	...	62
Library Associates	...	...	...	41
Total Nominal Membership				453

8. *Donations.*

J. C. Scott, Esq., 13s. ; Lieut.-Col. F. A. Molony, £1 19s. ; Rev. H. T. Rush, £1 17s. ; Peter Hill, Esq., £2 2s. ; H. H. Goodwin, Esq., 9s. 6d. ; Dr. G. B. S. Baronsfeather, £1 1s. ; Major H. R. Kindersley, 7s. 6d. ; Sir Charles Marston, £100 ; A. Cowper Field, Esq., 10s. ; A. W. Oke, Esq., £2 2s. ; Gp/Capt. P. J. Wiseman, £2 10s. ; Mrs.

M. L. Farquharson, 10s. ; B. B. Knopp, Esq., £1 1s. ; W. Wardle Sales, Esq., £10 ; C. W. Gunn, Esq., 15s. ; Lieut.-Col. T. C. Skinner, £2 2s. ; S. H. Flook, Esq., £1 1s. ; C. Howkins, Esq., 8s. ; G. H. McKenzie, Esq., £1 1s 6d. ; R. S. Timberlake, Esq., 10s. ; Chas. J. Young, Esq., 16s. ; J. Laing, Esq., £10 ; other sums, 10s. Total, £142 5s. 6d.

9. *Finance.*

The war adversely affects finances of the Institute in at least two ways, (a) by increasing costs and (b) by making it difficult for many subscribers to maintain their connection with the Society. Apart from a large increase in membership—towards which all subscribers are invited to co-operate—and with working expenditure already cut down to minimum, the only practicable mode of adjustment open to the Council is the drastic one of a reduction of the syllabus from ten papers to six.

This they had undertaken in the year under review, but obviously the full effect could only be realised in subsequent years, and hence, notwithstanding generous donations amounting to £142 (including one of £100 from our President) and a small saving effected by omitting publication of the usual matter at the end of the Transactions, the 1942 account shows a net increase in adverse balance of about £33 over the previous year.

On the other hand, thanks to the devoted efforts of a few, the Council are happy to be able to report that, after allowing for all losses by deaths, retirements, etc., in 1942, there has been an actual gain in *effective* membership, which argues well for future years under improved conditions.

In humble gratitude your Council offer thanks to Almighty God for continuance of the privilege of service in these days.

P. J. WISEMAN,
Chairman.

BALANCE SHEET, 31st DECEMBER, 1942.

LIABILITIES.				ASSETS.			
	£	s.	d.		£	s.	d.
SUBSCRIPTIONS PAID IN ADVANCE			13 3 6	CASH AT BANK :—			
SUNDRY CREDITORS FOR EXPENSES			285 4 4	Current Account		37 0 11	
LIFE SUBSCRIPTIONS :—				“Gunning” Prize Account		91 1 6	
Balance at 1st January, 1942	370	0	0	“Langhorne Orchard” Prize Account		4 12 8	
Less amount carried to Income and				“Craig” Memorial Trust Fund			
Expenditure Account	10	0	0	Account		12 10 10	
			360 0 0				145 5 11
“GUNNING” FUND (<i>per contra</i>)			508 0 0	CASH AND STAMPS IN HAND			1 14 3
Balance at 1st January, 1942	73	4	9	SUBSCRIPTIONS IN ARREAR :—			
Add Dividends and Interest received	23	19	0	Estimated to produce			97 2 6
			97 3 9	INVESTMENTS :—			
Deduct Expenses	6	2	3	“Gunning” Fund :—			
			91 1 6	£673 3¼ per cent. Conversion Stock at			
“LANGHORNE ORCHARD” FUND (<i>per</i>			200 0 0	cost	508	0	0
<i>contra</i>)				“Langhorne Orchard” Fund :—			
Balance at 1st January, 1942	31	9	1	£258 18s. 3¼ per cent. Conversion Stock			
Add Dividends and Interest received	9	3	7	at cost	200	0	0
			40 12 8	“Schofield” Memorial Fund :—			
Deduct Prizes and Expenses....	36	0	0	£378 14s. 6d. 2¼ per cent. Consolidated			
			4 12 8	Stock at cost	220	0	0
“SCHOFIELD” MEMORIAL FUND (<i>per contra</i>)			220 0 0	“Craig” Memorial Trust Fund :—			
Balance at 1st January, 1942	2	16	8	Investments realised		398	0 6
Add Dividends received	9	9	4	Income receivable		22	16 0
			12 6 0	Expenses repayable		6	7 0
Deduct Prize	10	0	0				
			2 6 0				

"ORAIQ" MEMORIAL TRUST FUND (*per contra*)

400 0 0

INCOME AND EXPENDITURE ACCOUNT :—

Balance at 1st January, 1942 451 16 7

Add Excess of Expenditure over

Income for the year 1942 175 10 9

627 7 4

Deduct :—

Donations received 142 5 6

485 1 10

£2,084 8 0

£2,084 8 0

We report to the members of The Victoria Institute that we have audited the foregoing Balance Sheet dated 31st December, 1942, and have obtained all the information and explanations we have required. We have verified the Cash Balances and Investments. No valuation of the Library, Furniture or Tracts in hand has been taken. 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. The Craig Memorial Trust Fund now consists of £376 7s. 4d. War Stock 3½ per cent. purchased for £400 on 30th March, 1943.

Drayton House,
Gordon Street,
London, W. C. 1.
12th April, 1943.

LUFF, SMITH & Co.,
Incorporated Accountants.

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST DECEMBER, 1942.

EXPENDITURE.				INCOME.										
				£	s.	d.								
				£	s.	d.	£	s.	d.					
To Rent, Light, Cleaning and Hire of							By SUBSCRIPTIONS :—							
Lecture Room	73	0	5	Fellows	....	....	....	187	11	0	
„ Salary	169	0	0	Members....	....	....	....	204	9	0	
„ Pension—A. E. Montague	52	0	0	Associates and Library Associates	....	....	....	46	6	0	
„ National Insurance	4	2	4	„ Proportion of Life Subscriptions	—	438	6	0
„ Printing and Stationery	299	16	1	„ Sale of Publications	....	....	....	21	17	5	
„ Postages	53	3	6	„ Craig Memorial Trust Fund	....	....	....	22	16	0	
„ Audit Fee	3	3	0	„ BALANCE, being Excess of Expenditure	....	....	....	492	19	5	
„ Insurance....	2	9	6	over Income for the Year 1942	....	....	....	175	10	9	
„ Sundry and Office Expenses	11	15	4		....	....	....	—	—	—
				668	10	2								
				£668	10	2								
							£668	10	2					

THE ANNUAL BUSINESS MEETING
OF THE
VICTORIA INSTITUTE

WAS HELD IN ROOM 19, LIVINGSTONE HOUSE, WESTMINSTER,
S.W.1, ON MONDAY, MAY 24TH, 1943, AT 4.30 P.M.

THE PRESIDENT, SIR CHARLES MARSTON, J.P., F.S.A., IN THE
CHAIR.

The Minutes of the Annual General Meeting of May 18th, 1942, which, being published in the 1942 Volume of Transactions, were accordingly taken as read, were confirmed and signed by the Chairman.

The Annual Report of the Council and Statement of Accounts for the year 1942 having been circulated to all, were taken as read.

The *First Resolution* as under was then read and explained, the Chairman then calling upon the Rev. A. W. PAYNE to propose and Mr. R. DUNCAN to second it :—

“ That the Report and Statement of Accounts for the year 1942, presented by the Council, be received and adopted ; and that the thanks of the Meeting be given to the Council, Officers and Auditors, for their efficient conduct of the business of the Victoria Institute during the year.”

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

The *Second Resolution* as under was next read and explained, the Chairman calling upon Mr. DOUGLAS DEWAR to propose and Mr. E. H. BETTS to second it :—

“ That the Rev. Principal H. S. Curr, M.A., B.D., B.Litt., Ph.D., Lt.-Col. L. M. Davies, M.A., Ph.D., D.Sc., F.G.S., F.R.S.E., and W. E. Leslie, Esq., retiring members of the Council be, and hereby are, re-elected. Also that Messrs. Luff, Smith & Co., Incorporated Accountants, Drayton House, Gordon Street, W.C.1, be, and hereby are, re-elected Auditors, at a fee of five guineas.”

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

The *Third Resolution* as under was next read and explained. The Rev. A. E. HUGHES then proposed, and Mr. E. LUFF-SMITH seconded it :—

“ That the President, Sir Charles Marston, J.P., F.S.A., the Vice-Presidents, Lt.-Col. F. A. Molony, O.B.E., A. W. Oke, Esq., M.A., LL.M., F.G.S., Prof. A. Rendle Short, M.B., B.S., B.Sc., F.R.C.S., and the Hon. Secretary, Lt.-Col. T. C. Skinner, F.R.Met.S., be, and hereby are, re-elected to their offices; that W. E. Leslie, Esq., be, and hereby is, elected Hon. Treasurer, vice W. H. Molesworth, Esq., C.E., resigned; that W. E. Leslie, Esq., be also elected a Trustee; and that Sir F. G. Kenyon, G.B.E., K.C.B., D.Litt., LL.D., F.B.A., and W. Bell Dawson, Esq., M.A., D.Sc., M.Inst.C.E., F.R.S.C., be, and hereby are, elected Vice-Presidents.

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

The Chairman then announced Mr. E. H. Betts, B.Sc., as winner of the 1943 Gunning Prize Essay Competition for his paper on “The Contribution of the Sciences to Religious Thought,” and the prize (a cheque for £40) was then presented to Mr. Betts amid applause.

At the invitation of the Chairman, the Hon. Secretary then gave a brief statement of the present position of the Institute, tending to show that notwithstanding the unfavourable war conditions, the Society was progressing both in respect of Membership and in the quality of the papers published.

A hearty vote of thanks to the Chairman, proposed by Group-Capt. P. J. Wiseman and seconded by Mr. W. Poynter Adams, terminated the Meeting.

War conditions having rendered it impracticable to hold an Ordinary Meeting on January 18th, 1943, the Paper for that date was circulated to subscribers and is here published, together with the written discussion elicited.

The Rev. S. Runsie Craig Memorial, 1943.

In accordance with the terms of the Trust the Council have selected for the 1943 Memorial the paper on "The Sources of the Gospels," presented to the Society on January 18th, 1943, by F. F. Bruce, Esq., M.A., as affording strong confirmation of the genuineness of the "Faith once delivered to the Saints."

THE SOURCES OF THE GOSPELS.

BY F. F. BRUCE, ESQ., M.A.

THE quest for Christian origins has been eagerly pursued almost from the dawn of Christianity itself. Early in the second century A.D. we find Papias, bishop of Hierapolis (in Asia Minor), gathering information about the origin and authorship of the Gospels from Christians of an earlier generation than his, men who had conversed with the Apostles themselves.¹ And men have pursued the quest from his days to our own, and never with such concentrated application as in the last 150 years. Whether the assured results of all this study are commensurate with the toil expended on it may be doubted, but none can doubt the perennial interest of the quest.

One danger must be guarded against. The quest for Gospel sources may prove so fascinating and their hypothetical reconstruction so engrossing that the student is apt to forget that the actual four Gospels as they have come down to us are much more important than any putative sources, if only because they are not speculatively reconstructed documents but individual works of literature which have been transmitted to us from the first century of our era. Each had its own characteristic viewpoint and its own immediate circle of readers, though it is the

¹ See Eusebius, *Ecclesiastical History* iii, 39, where the fragments of Papias quoted in this paper are preserved.

one Christ and the one Gospel that all four present. And it is these four Gospels, and not any hypothetical sources, that have come down to us from early days with the general consensus of Christians as the divinely inspired fourfold record of God's culminating self-revelation to men, when "the Word became flesh, and dwelt among us." While this paper deals with the production of the Gospels on the human side, it is written in full acceptance of the Christian doctrine of Holy Scripture, which acknowledges God as its *auctor primarius*.

Source-criticism, interesting as it is, is at a disadvantage as compared, for example, with Textual Criticism, in that it has necessarily to admit a much larger subjective element. The following words of caution are worth heeding by all who apply Source-criticism to the New Testament documents, the more so as they come from one who himself achieved no mean eminence in the field of New Testament criticism, the late Professor F. J. Foakes-Jackson :—

"In the New Testament, especially, scholars recognise a variety of sources for the Gospels and Acts. As their predecessors had done in regard to the Old Testament, they have realised that earlier documents were employed to produce the Hebrew and Christian books as we now have them. But what these sources were is purely a matter for conjecture; and symbols have been invented to express what each one is supposed to have been. Ingenious and even scientific as much source-criticism has undoubtedly proved, it is after all hypothetical, as it is possible only to hazard a guess as to what documents were used, and to imagine the method adopted by the writers or redactors in producing the present books of the Old and New Testaments" (*Josephus and the Jews*, p. xiii).

For purely historical purposes, however, there is this much to be said in favour of an inquiry into the sources of our Gospels. Even as they stand, they were written at no very long space of time after the events they narrate. The Crucifixion of Christ took place c. A.D. 30; the four Gospels existed in Greek within 70 years from that date. Dates commonly accepted in this country for the writing of the Gospels are: Mark, A.D. 65; Luke, 80-85; Matthew, 85-90; John, 90-100. Personally, I agree with Harnack and others that there is no good reason for dating any of the three Synoptic Gospels much, if at all,

later than A.D. 70¹. The shortness of the space of time separating the events from their recording is a matter for satisfaction to the historical student. If, however, it can be shown that these records themselves depend in whole or in part on records written at a still earlier date, the position from the historian's point of view is still more satisfactory.

To begin with, we may look at the first three Gospels called, since Griesbach's day, the "Synoptic" Gospels, since they lend themselves readily to arrangement in the form of a synopsis, *i.e.*, a form in which the three may be viewed together. It requires no very detailed study to discover that these three have a great deal of material in common, and that each pair has also a certain amount of common material not found in the other one. In particular, it appears that Matthew and Luke (1) have a large amount of material which is also found in Mark, (2) have a fairly large amount of material in common which is not found in Mark, (3) have each a fair amount of material not found in any other Gospel. On the other hand there is very little in Mark the substance of which does not appear in at least one of the other two Synoptists.

These are the phenomena; how are they to be explained? Sometimes the common material in two or more of the Synoptists is so verbally identical that the identity can hardly be accidental. In this country the explanation commonly given last century was that the similarity or identity was due to the fact that the Evangelists reproduced the language of the primitive oral Gospel as proclaimed in the early days of the Church. You will find this view, for example, in Alford's *Greek Testament* and in Westcott's *Introduction to the Study of the Gospels*. It subsequently became unfashionable, because it was discovered that many of the data could be better accounted for by positing documentary sources; but the "oral theory" was by no means devoid of truth, and has reappeared in our own day in a somewhat different form in the approach known as Form Criticism.

¹ A. Harnack *Date of the Acts and the Synoptic Gospels* (1911), pp. 116 ff.; F. Blass, *Philology of the Gospels* (1898), pp. 21 ff.; W. C. Allen, *International Critical Commentary on Matthew* (1907), pp. lxxxiv f., etc. More sweeping still is the verdict of C. C. Torrey: "At the annual meeting of the Society of Biblical Literature and Exegesis in New York City, in December, 1934, I challenged my New Testament colleagues to designate even *one* passage, from any of the Four Gospels, giving clear evidence of a date later than 50 A.D., or of origin outside Palestine. The challenge was not met, nor will it be, for there is no such passage." (*Our Translated Gospels*, p. x.)

Form Criticism aims at recovering the oral "forms" in which the Apostolic preaching and teaching were originally cast, even before the circulation of such documentary sources as may lie behind our Gospels. This method of approach has won much favour since the War of 1914-18, and its value has been exaggerated in some quarters, but at least two conclusions of importance emerge from it. The first is that the universal tendency in ancient times to stereotype the "forms" in which religious preaching and teaching were expressed is clearly to be traced in our Gospel material¹; and this in itself would help to preserve the original record and guarantee its accuracy. The second is that this classification of the Gospel material according to "form," while not perhaps the most useful classification, does at least provide us with a fresh cross-section of this material, showing it to be pervaded by a consistent picture of Jesus as the Christ—the same picture as we find no matter what groupings of the Gospel-material we examine.² Thus Form Criticism has added its contribution to the overthrow of the "liberal Jesus" of pre-1914 theology—a figment of humanist imagination, essentially different from the Figure of the Son of God portrayed for us in all four Gospels.

The Gospel of Mark, because it was shorter than the others, and contained little that was not to be found in them, was unduly neglected in ancient times. Augustine, for example, calls Mark "as it were the abbreviator and lackey of Matthew"³—a description which can be corrected by anyone who looks at a synopsis of the Gospels in parallel columns, for in most of the passages which Matthew and Mark have in common, it is Matthew and not Mark who does the abbreviating. Closer study of the linguistic and literary details of the Gospels in more recent times has, on the other hand, led many to the conclusion that Mark was actually the earliest of our three Synoptic Gospels in their present form, and that it was a source, if not the principal source, of Matthew and Luke. This "Markan hypothesis," as it is called, was first set on a stable basis by Lachmann in 1835, when in the review *Studien und Kritiken* he showed that the common order of the Synoptists was the order of Mark. The Markan hypothesis is still the regnant

¹ See E. Norden, *Agnostos Theos* (1913); F. W. Grosheide, "The Synoptic Problem," in *The Evangelical Quarterly*, Jan., 1931, pp. 57 ff.

² See E. Hoskyns and N. Davey, *The Riddle of the New Testament* (1931), pp. 162 ff.; C. H. Dodd, *History and the Gospel* (1938), pp. 91 ff.

³ *De Consensu Evangelistarum* 2.

hypothesis, though it has been assailed by several writers of ability, notably by Dom John Chapman, who in his able and scholarly work *Matthew, Mark and Luke* (1937) turns the hypothesis on its head and argues for the dependence of Mark on the Greek Matthew. The strength of the Markan hypothesis cannot be conveyed in a sentence or two; the evidence is cumulative, and can best be appreciated by studying it with the help of a good Greek synopsis, together with the linguistic data as marshalled in Sir John Hawkins' *Horae Synopticae* (2nd ed., 1909). The late Professor J. H. Ropes calls it "the only assured result of the vast amount of incessant labour which has been expended on the so-called Synoptic Problem in the whole of the past hundred years and more."¹

Whether we accept this conclusion or not, it is not so surprising as some might think to find Mark—or something very like it—as a source of the two other Synoptists, when we consider what Mark is. The earliest statement we have on the composition of Mark is a fragment of Papias, preserved by Eusebius:—

"Mark, having become the interpreter of Peter, wrote down accurately all that he [Peter] mentioned, whether sayings or doings of Christ, not however in order. For he was neither a hearer nor a companion of the Lord; but afterwards, as I said, he accompanied Peter, who adapted his teachings as necessity required, not as though he were making a compilation of the Sayings of the Lord. So then Mark made no mistake, writing down in this way some things as he [Peter] mentioned them; for he paid attention to this one thing, not to omit anything that he had heard, nor to include any false statement among them."

This information Papias says he received from one whom he calls "the Elder," possibly the same person as he elsewhere calls the Elder John. It has received welcome illumination from a new angle in recent years. Some Form Critics, attempting to get behind the postulated documentary sources, have envisaged Mark as consisting simply of independent stories and sayings which had been orally transmitted in the Church, fitted together by a sort of editorial cement in the form of generalizing summaries possessing no historical value of their own. This, for example, was maintained by Professor K. L. Schmidt in 1919 in *Der Rahmen der Geschichte Jesu* ("The Framework of the Story

¹ *The Synoptic Gospels* (1934), p. 93.

of Jesus"). In an acute examination of this thesis, Professor C. H. Dodd pointed out that these "generalizing summaries," far from being mere editorial inventions, proved when read together to be a consecutive outline of the Gospel narrative, comparable to those Gospel outlines which we find in some of the sermons in Acts and in one or two places in the Pauline Epistles.¹ These outlines in the Acts and Epistles cover the period from the preaching of John the Baptist to the Resurrection of Christ, exactly the period covered by Mark. The outlines in Acts are probably summaries of what the early preachers actually said. At any rate, it appears that Mark is, by and large, a statement of the Gospel story as it was proclaimed in the earliest days of the Church; and in view of Papias's reference to Mark as the interpreter of Peter, it is noteworthy that the chief preacher of the Gospel in the early chapters of Acts is Peter. The view that Mark underlies the other two Synoptic Gospels is thus not so very different after all from the older view that the common element in the three is the oral preaching current in the early Church. Oral it certainly was at first, and no doubt the language in which it was couched became stereotyped at an early date both in Aramaic and in Greek; but the form in which it underlies Matthew and Luke seems to be the form given to it by Mark, who not only acted as Peter's interpreter (from Aramaic into Greek), but also wrote down the substance of the Gospel story as he heard it from the lips of Peter. Probably some of the material in our Mark was derived from another source, but of this more anon.

The Gospel as preached in those early days emphasized what Jesus *did* more than what He *said*. The message that proved effectual in the conversion of Jews and Gentiles was the Good News that by His death and rising again He had procured remission of sins for all believers. But once they were converted, they learned much more, and in particular they were taught the wonderful Sayings of Jesus. Now it is striking that the greater part of the material common to Matthew and Luke, but not found in Mark, consists of Sayings of Jesus. This has led to the conjecture of another early document on which Matthew and Luke drew for their common non-Markan material, the document usually referred to as "Q." But it is safer to regard "Q" not as the name of a hypothetical document, but as a convenient symbol for the non-Markan material common

¹ *The Expository Times*, June, 1932, pp. 396 ff.

to Matthew and Luke. There is evidence in the Greek of this material that it has been translated from Aramaic,¹ the language which our Lord and His Apostles seem to have habitually spoken, and which in the New Testament is not distinguished from the sacred language of the Jews, both being called "Hebrew." Now we have evidence of an early Hebrew or Aramaic document in another fragment of Papias :—

"Matthew compiled the Logia in the Hebrew tongue [*i.e.*, most probably Aramaic], and every one translated them as he was able."

Various theories have been put forward in explanation of this term "Logia," which literally means Sayings or Oracles ; but the most probable is that suggested by Schleiermacher in *Studien und Kritiken* for 1832 and 1834, that the reference is to a collection of our Lord's Sayings, lying behind much of the common non-Markan material of Matthew and Luke. Sir William Ramsay² argued that this collection was made during Christ's lifetime ; Professor B. S. Easton³ suggests that He Himself directed that His discourses should be memorized. In another connection, the suggestion that shorthand notes were taken of our Lord's addresses was made by Dr. Rendel Harris.⁴ All this fits in with the evidence of Papias, for among the Twelve Apostles none was more likely to act as the Master's shorthand reporter than Matthew the former tax-collector ; and the internal evidence that these Sayings were first written down in Aramaic accords not only with the high probability that this was the language that our Lord normally spoke, but also with Papias's statement that Matthew compiled the Logia in the Hebrew or Aramaic tongue. Papias's further statement, that every man translated these Logia as he was able, suggests that more than one Greek translation of the Logia was current, and this serves to account in part for some of the differences in the Sayings of Jesus preserved in the First and Third Gospels ; for in many places where the Greek of these Gospels differs, it can be shown that one and the same Aramaic original lies behind the variant Greek renderings. I am persuaded myself that a study of Aramaic origins will reveal more about the background of our

¹ See Harnack, *The Sayings of Jesus* (1908), p. 247 ; T. W. Manson in *The Expository Times*, Oct., 1935, pp. 7 ff.

² *Luke the Physician* (1908), p. 89.

³ *Christ in the Gospels* (1930), p. 41.

⁴ *The Expository Times*, Jan., 1937, p. 186.

Gospels than either Source or Form Criticism, though this may be simply the prejudice of one who is by training and inclination a philologist rather than a literary critic.

Beside the discourses in Matthew which have some parallel in Luke, there are others occurring in the First Gospel only. These also betray an Aramaic origin, and are ascribed by B. H. Streeter in *The Four Gospels* (1924) to another source, which he calls "M." It seems to me unnecessary to ascribe them to a different source from "Q"; I incline rather to follow the view expressed over 30 years ago by W. C. Allen,¹ and more recently by Professor Easton,² that both "M" (the discourse-material peculiar to Matthew) and "Q" belong to the same collection of Logia. Luke's omission of "M" may be sufficiently explained by the more definitely Jewish references of "M," which would not serve the wider purpose for which the Third Gospel was written. On such evidence as is available, the "Logia" document may be envisaged as consisting of Sayings of Jesus set in a narrative framework, and perhaps including the Old Testament quotations characteristic of the First Gospel. Professor Easton and others have pointed out that Mark drew on these Matthaean Logia for part of his Gospel, and has shown that while most of Mark—the Petrine material—is abridged in Matthew, where Mark depends on the Logia it is Mark who abridges. This suggested dependence of Mark on the Aramaic Matthew (or "Proto-Matthew," as I should like to call it), and again of the Greek Matthew on Mark, presents, to quote Easton, "a problem of great complexity that certainly will always defy final solution; but we should not forget that the problem exists."³

The First Gospel in its present Greek dress is an expansion of this "Proto-Matthew," through the incorporation of the substance of the Apostolic preaching as preserved by Mark, along with some other material. The plan of Matthew is clearly based on the distribution of the discourse-material, which is divided into five main sections, each ending with some such phrase as, "And it came to pass, when Jesus ended these words . . ." (cf. Matt. 7, 28; 11, 1; 13, 53; 19, 1; 26, 1). Dr. P. P. Levertoff explains this arrangement by the view that Matthew circulated among the Jewish Christians as a new

¹ *Oxford Studies in the Synoptic Problem* (1911), pp. 233 ff.

² *The Gospel before the Gospels* (1928), p. 26; *Christ in the Gospels*, p. 16.

³ *Christ in the Gospels*, pp. 19 f.

Torah, divided like the Mosaic one into five parts ; “ the sequence of events as described in Matthew corresponds chronologically with the Jewish liturgical seasons.”¹

While some of the Sayings preserved by Luke are almost verbally identical with their Matthaean counterparts (cf. Luke 10, 21f, with Matt. 11, 25-27), others show considerable differences, and it is unnecessary to suppose that these depend on the same document. For example, it is unlikely that the Matthaean and Lukan versions of the Beatitudes are drawn from one and the same written source. We have Luke's own statement that many had undertaken to draw up a narrative of the Gospel story,² and it is unnecessarily narrowing the field to suppose that all the non-Matthaean material common to Matthew and Luke must have been derived from one source. To all appearances Luke was acquainted at a relatively early date with the Matthaean Logia, apparently in one or more of its Greek versions. But he had other sources of information, from some of which he derived the material peculiar to his Gospel, the material which gives the Third Gospel its special charm and beauty. This peculiarly Lukan material may be conveniently designated “ L.”

If Luke was, as early tradition asserts, a native of Antioch,³ he had opportunities of learning many things from the founders of the Church there ; he may even have met Peter during his visit there (Gal. 2, 11ff). He shows a special interest in the Herod family ; was this due to Manaen, foster-brother of Herod Antipas and one of the teachers in the Church of Antioch (Acts 13, 1) ? Then he must have learned much from Paul. Though Paul had not followed Jesus in the days of His flesh, he must have made it his business later to learn as much about Him as he could. What did Peter and Paul talk about during the fortnight they spent together about A.D. 35 (Gal. 2, 1) ? As Professor Dodd says, “ we may presume they did not spend all the time talking about the weather.”⁴ Again, Luke seems to have spent two years in Palestine during Paul's last visit to Jerusalem and detention in Caesarea. These years afforded him unique opportunities of increasing his knowledge of the

¹ Gore's *New Commentary : New Testament*, p. 129.

² Luke i, 1.

³ Anti-Marcionite Prologue to Luke (c. A.D. 170) ; Eusebius, *Ecclesiastical History*, iii, 4.

⁴ *The Apostolic Preaching and its Developments* (1936), p. 26.

story of Jesus and of the early Church. In particular, Harnack¹ and others have argued convincingly that much of the information in the Third Gospel and Acts was received from Philip and his family in Caesarea; Eusebius² tells us on the authority of Polycrates, Proclus and Papias that Philip's four daughters were later famed in the Church as authorities for the history of its earliest days. The Nativity story in Luke, told as plainly from Mary's point of view as Matthew's Nativity story is told from Joseph's point of view, may have been received from the Virgin Mother herself, or perhaps from the beloved disciple who took her to his own house after the Crucifixion. Of the three Synop- tists, it is Luke who shows most points of contact with the Fourth Gospel, as has been shown especially by G. W. Broomfield in *John, Peter and the Fourth Gospel* (1934); this is best accounted for if he was indebted for some of his information to the Apostle John.³

Then, after these two years in Palestine, we find Luke in Rome along with Mark (Col. 4, 10, 14), a fact sufficient to explain his evident indebtedness to Mark's narrative. This summary of the way in which the Third Gospel may have been built up accords very well with the internal evidence based on literary criticism which, as presented in the writings of B. H. Streeter and Dr. Vincent Taylor, suggests that Luke first expanded his version of the Logia by means of the additional information acquired from various sources and especially in Palestine (*i.e.*, "Q" was amplified by "L"), and that later this first draft, or "Proto-Luke," was amplified by material derived from Mark, especially where the Markan narrative did not overlap the material he had already gathered.⁴

As for the Fourth Gospel, though the problems which it raises have given scope for endless debate, the question of its sources is relatively simple. It presupposes the existence of the first three, but is not dependent on them, though here and there it may have borrowed a phrase or a turn of words. The pre- dominant source of information behind the Fourth Gospel is the personal reminiscence of the beloved disciple, who is described in John 21, 24 as "the disciple which beareth witness of these

¹ *Luke the Physician* (1907), pp. 153 ff.

² *Ecclesiastical History*, iii, 31, 39.

³ See also J. A. Findlay, *The Gospel according to St. Luke* (1937), p. 14.

⁴ Streeter, *The Four Gospels* (1924), pp. 199 ff.; Taylor, *Behind the Third Gospel* (1926); see also D. M. McIntyre, "The Building of the Third Gospel," in *The Evangelical Quarterly*, April, 1929, pp. 130 ff.

things, and wrote these things," and who, in spite of all the controversy that has raged over the authorship of this Gospel, is by far most satisfactorily identified with the Apostle John. Some of the difficulties which have been felt in this traditional ascription of authorship may be removed if, as Professors C. F. Burney¹ and C. C. Torrey² have shown weighty grounds for believing, the Fourth Gospel was originally composed in Aramaic. If John the Apostle wrote it in Aramaic, then the work of turning it into Greek may perhaps be ascribed to his namesake John the Elder. The question of the historic truth of this Gospel does not strictly fall within the purview of this paper; suffice it to say that if the wonderful words preserved in this Gospel are not the words of Jesus, then a greater than Jesus is here. We believe rather with the Archbishop of Canterbury that "the mind of Jesus Himself was what the Fourth Gospel disclosed,"³ and with John Calvin that "this Gospel is the key, which opens the door to the understanding of the others."⁴

Though fashions in criticism change from age to age, the Gospels themselves are ever with us. We have suggested that behind them we can trace several lines of transmission, derived from first-hand evidence, independent and trustworthy, agreeing in their presentation of the historic facts upon which the Christian faith is founded. But spiritual discernment has always penetrated behind even these, to see as their ultimate Source the Spirit of Him whom all four Evangelists proclaim, by whose inspiration the selecting, recording and interpreting of the narratives and sayings were controlled with a view to the special purpose of each Gospel. And therefore our Gospels provide much more than first-rate material for historical study; the words of the last are true of all four, that "these are written, that ye may believe that Jesus is the Christ, the Son of God; and that believing ye may have life in His name" (John 20, 31).⁵

¹ *The Aramaic Origin of the Fourth Gospel* (1922).

² *The Four Gospels* (1933); *Our Translated Gospels* (1936).

³ W. Temple, *Readings in St. John's Gospel* (1940), p. xxxii.

⁴ *Argumentum in evangelium Ioannis*.

⁵ Considerations of space and time have made it necessary in this paper to state several conclusions without detailing the arguments leading up to them. This gives some statements an air of dogmatism as unintended as it is unwarranted. For a fuller treatment of most of the questions reviewed here I may perhaps be permitted to refer to a series of articles entitled "Some Aspects of Gospel Introduction" which I have contributed to *The Evangelical Quarterly* for July, 1942, and subsequent numbers.

WRITTEN COMMUNICATIONS.

Air Commodore P. J. WISEMAN wrote : Our thanks are due to the author for his scholarly and reverent paper. The quest for the sources of the gospel narratives have been interminable ; they have been subjected to a minute and continuous scrutiny by " Form critics " and " Source critics," much of it on the assumption that the Spirit of God was not concerned either with their compilation or transmission. It is good, therefore, to read in this paper such a statement as that in the final paragraph, " the ultimate source is the Spirit of Him whom all four evangelists proclaim." If the promise made by their Master immediately before His death means anything, it surely implies that the Spirit of Truth would, in such a matter, guide these men into all truth. As human agents they would have to use all normal and proper means available to them of ascertaining and verifying the material at their disposal, but it is not sufficient to assume that they were left to the trustworthiness of their own or other people's memories. He had promised to bring all things to their remembrance.

The literature on this subject has grown to immense proportions, and a great deal of it assumes that the writers are competent to judge the motives of our Lord, and to state with almost infallible certainty that this or that saying or action, could not have taken place in the circumstances or at the time stated in the gospels. There is also a tendency to assert that if two gospels record an action taken or words spoken, and one gospel gives a different setting to the other, one must be in error. Is it not possible that similar acts were done and words spoken on more than one occasion ?

There are very few words in the gospels which date them. Dr. Hart considers that Mark x, 38, indicates that this gospel was written by A.D. 43, when the martyrdom of James took place. In all that has been written of late about the date of Luke's gospel, there is no better evidence of date than that the last dated event in Acts, his second work, is A.D. 59. As the second part of a work is later than the first, this date implies an even earlier date for the Gospel. Jerome's argument still holds good, that had Luke written later than A.D. 59, he would not have ended the Acts where he did.

May I mention one piece of evidence as illustrative of the selective and guiding process of the Spirit of God in the compilation of the

four Gospels. It is that the apocryphal or excluded "gospels" place an unnatural emphasis on the childhood of our Lord. They record at great length false and meaningless miracles which they allege that He performed. The four Gospels have been delivered from this error.

Mr. W. E. LESLIE wrote : With the unfortunate methods employed by literary critics of the Old Testament before them, some may be disinclined to consider sources in the Gospels. But it is for us to ask how it has pleased God to reveal Himself, rather than to lay it down that He must have done so in this or that manner. We find several copies of letters from kings and others included in the scriptures. God could have revealed the text of these letters to the writers of the different books ; but are we justified in supposing that He did for them what, with proper diligence, they could do for themselves ? So with the genealogies and many of the "Songs." There has been an inspiration of selection and record as truly edifying and instructive as the revelation of matter which could not be known to the writers. It is, then, for us to use our best judgment as to the mode of inspiration employed in each case.

I suggest that the five groups of Logia mentioned on page 9 are arranged as follows. The first contains the proclamation of the Laws of the Kingdom in the hearing of the multitude. After its rejection its future history is revealed in private in the last group. The second group concerns the Disciples in their relation to those to whom they were sent ; the fourth gives their relation to each other. The middle group contains both public and private teaching concerning the Kingdom in a veiled form. This is an excellent example of the inspiration of selection, not an artificial attempt to imitate the Pentateuch.

Major R. B. WITHERS wrote : This is a temperate and useful summary of the available information regarding the dates of the Gospels.

I think, however, it is a pity that the author did not take more notice of the verdict of C. C. Torrey, which he quotes in a footnote. We are all too timid ! The Paraclete brought these things to the remembrance of the disciples. What could be more natural than that some of them should commit their remembrance to writing

forthwith? If so, we can date Matthew immediately after Pentecost, Mark with the Apostle Peter's ministry some time before the call of the Apostle Paul, Luke shortly after, and John at about the same time.

"Mere subjective preference," someone may say. Well, when few objective data exist, we have to fall back on subjective preference; and we might as well hold an opinion which is, at any rate, in accord with human nature and common sense. There is a tendency to forget that these people were civilised, and quite as intelligent as ourselves.

The objection that the disciples were expecting the immediate end of the world and would therefore not bother about written records, cannot be sustained. It depends on a mistranslation—the end of the *Age* is the expression used.

"Proto-Matthew" need be no more than Matthew's personal contribution to the common tradition. Why should not Matthew and Mark have done the same as Luke, whose account is certainly a unity and equally certainly dependent on a number of sources, as clearly stated in the preface?

Finally, I would suggest that this laborious search for sources leads us nowhere. Even if we could reach the goal, we would be no better off. The time thus spent would be far better devoted to minute synthetic comparison of the accounts themselves, the study of each author's special contribution to the whole of the information we have, and the harmony of each account with the special aspect of the Lord Jesus Christ which it was designed to portray.

Rev. Principal H. S. CURR wrote: I wish to add some footnotes to Mr. Bruce's admirable survey of a problem which, as he reminds us, has engrossed an enormous amount of attention from New Testament scholars since the beginning of the nineteenth century. The points, to which attention will be called, are mentioned in the paper, but they seem to be worthy of a little more emphasis and explanation.

One concerns the paucity of literature in the Apostolic Age. I do not dispute that there was a great deal of writing done, but we are very apt to transfer to these distant days the conditions with which we are so familiar at the present hour. For one thing, it is

certain that the percentage of illiterates in Palestine was very much larger than with us. Again, the poverty of the peasants made the purchase of books, which had all to be prepared by hand, prohibitive. In these circumstances the life and work and teaching of Our Lord would have to be made known by oral channels and methods alone, in the same way as is followed on the modern mission field. That would inevitably result in the stereotyping of such reports by sheer force of repetition.

In addition, the retentiveness and accuracy of the ancient Oriental memory must be kept in view. A great deal that Our Lord said and did must have been transmitted so effectively as it has been by reason of this factor. Further, His words and works would make an indelible impression on all who heard and saw them. They must have been unforgettable.

A third point is concerned with the comparatively slight quantity of information regarding Jesus Christ which has survived in view of the famous statement in the last verse of the Fourth Gospel, "And there are also many other things which Jesus did, the which, if they should be written everyone, I suppose that even the world itself could not contain the books that should be written" (xxi, 25). Making full allowance for the somewhat hyperbolic form of this statement, it may still be regarded as furnishing adequate evidence that the reminiscences of Our Lord's public ministry were voluminous in extent. In the same strain we find Luke referring in his preface to many chronicles of Our Lord's sayings and doings (i, 1). In these conditions it seems strange that the permanent sediment is so small as it is. But God's thoughts are not our thoughts.

Still another reflection prompted by Mr. Bruce's discussion is concerned with the words of Our Lord in regard to the mission of the Holy Spirit, "But the Comforter, which is the Holy Ghost, whom the Father will send in my name, he shall teach you all things, and bring all things to your remembrance, whatsoever I have said unto you" (John, xiv, 26). This declaration is, perhaps, our best guarantee that we have received all that we need for Christian faith and practice, nothing more, and nothing less, and nothing else.

Col. A. VAN STRAUBENZEE wrote: The Companion Bible shows us clearly that the Four Gospels are four distinct presentations of

the Messiah, and together form one perfect whole. In these Gospels the Ministry of Our Lord is divided not into years, but into four subjects: Proclamation of the Kingdom, v. 306; Proclamation of the King, v. 964; Rejection of the King, v. 901; Rejection of the Kingdom, v. 782.

Mr. LAURANCE D. FORD wrote: Mr. Bruce very ably introduces us to the phenomenon of "common" and "special" material present in the three Synoptic Gospels and attempts an explanation. The basic idea in his explanation seems to be that there was a reservoir of pre-existing written or oral material, and that the three Synoptic Evangelists drew their matter from this reservoir, and, with certain additions which varied with each evangelist, presented the results to their immediate circle of readers in the form of their respective Gospels.

Personally I do not like this theory as it makes these precious Writings too much like the writings of you and me.

Mr. Bruce adduces the authority of Papias in support of his theory and claims that Papias' reference to Mark being the interpreter and amanuensis of Peter suggests that Mark's writings enshrined the oral teaching of the early Church and became the basis for Matthew's and Luke's Gospels.

For myself I am unable to accept Mr. Bruce's theory. My reading of Papias as quoted by Eusebius (Book III, chapter xxxix) does not go beyond the fact that Mark was the interpreter of Peter and was an accurate writer. Papias does not state that these writings of Mark were used by the other Evangelists as their raw material, and I do not see why this should be asserted. The orthodox view which has appertained from the beginning, I take to be, that the Gospels are the work of Divine inspiration, the Holy Spirit bringing to the Apostles' remembrance all things that the Lord had said to them (John xiv, 26). If it be objected that Mark was not an Apostle and had never heard the Lord's words, then the comment of Papias may (or may not) apply, when he says that Mark received his matter from Peter, who was an Apostle and had heard the Lord's words.

With regard to Matthew we know that he was one of the twelve and therefore is within the scope of Our Lord's statement above quoted.

The case of Luke is special, he not being an Apostle, but happily here we have from his own pen the largest bibliographical reference found in the Gospels. I refer to Luke, i, 1-4.

So far from these verses being in agreement with Mr. Bruce's suggestions, I feel that they demolish the whole structure of editors, redactors, sources, etc., of the moderns.

Luke refers (i, 1) to uninspired writers (the many) who have attempted *ἐπεχειρήσαν* to set in order a relation of the things most fully believed amongst us, as the Apostles (the eye-witnesses and ministers of the word) had delivered them to us (the non-inspired writers, the Church and Luke himself). There is no reference to these "attempters" drawing their matter from a body of oral tradition, but of receiving the matter direct from the apostolic eye-witnesses. The "many" writers were deficient in that they lacked Divine inspiration and also were only able to give a partial record in each case. St. Luke comes along next with no reference to any previous inspired Evangelist (which incidentally does not support the notion that Mark was first in the field) and informs us of his intention of writing in order *καθεξῆς*, that is, without gaps and with due regard to the proper sequence of narrative, though not necessarily pledging himself to an exact chronological consecution which might defeat his purpose of moral instruction.

He tells us the grounds for his superior performance are that he has followed everything accurately from the start. This does not mean that he was present all through but that he became perfectly acquainted with everything through the "ministers of the word" before referred to, and disposes of the notion that he was indebted to a common oral tradition current in the early Church (if such existed). His access to special and inspired sources for his information is the qualification for his purpose, which is that Theophilus might know the certainty of the things concerning which he hitherto had only received oral instruction.

So far is St. Luke from being indebted to oral tradition that he is writing so that Theophilus can be independent of oral tradition.

For my part I am perfectly satisfied to rest in the Divine origin of the Gospels and feel that the phenomena of the striking similarities between them and the no less striking differences are only fully explained by the fact of a common origin, and that being the Holy

Ghost, who dictated down to the last jot and tittle (or their Greek equivalents) the words we now possess and treasure as the Four Gospels.

The fact that Papias states that Matthew compiled his history in the Hebrew dialect may be (1) untrue, (2) no reference to his Gospel. If his statement is true, and it is also true as he states, that every one translated it as he was able, I am quite satisfied that the Hebrew original is utterly lost and in its place we have one only Greek translation, which as far as I have heard never had a rival or rivals either for a part of it or the whole. In this case I am satisfied that the Hand of Inspiration is as much in our present Greek Matthew's Gospel as in the other three Gospels, and a watchful Providence has safeguarded it from all dubiety and rivalry as in the case of the other three. Else, what should the righteous do ?

Mr. Bruce touches great things and holy things, and as the Book of Job says : " For we are but of yesterday, and know nothing " (Job viii, 9).

AUTHOR'S REPLY.

The contributors to this discussion have dealt with my paper more leniently than it deserves, and have emphasised several important points.

I am in entire agreement with Group-Captain Wiseman on the date of Luke's writings.

Mr. Leslie's illuminating remarks on the Matthaean groups of Logia add force to the suggestion I quoted from Dr. Levertoff. I am glad he drew attention to this example of " inspiration of selection " ; for it is chiefly this form of inspiration that gives each Gospel its individual character.

It is interesting to compare the communications of Major Withers and Principal Curr, and to note how they present the case for early written documents and early oral transmission respectively. We have to combine both views in order to get a clear picture of the circumstances in which our Gospels took shape. I should explain that my reason for not taking more notice of Professor Torrey's dating was because his dating is closely bound up with his view that all four Gospels as such were originally written in Aramaic and then translated into Greek. There was no room to go into this

question at length, though I consider the study of Aramaic origins to be more interesting and fruitful than the usual lines of source and form criticism.

The division of the contents of the Gospels quoted by Col. van Straubenzee is interesting ; our estimate of its value will perhaps depend on our opinion of the special viewpoint of the learned Editor of the Companion Bible.

Mr. Ford's communication shows how different readers can attach quite different meanings to the same documentary data, *e.g.*, the Prologue of Luke and the fragments of Papias. The relation between the Aramaic original of Matthew and the Gospel according to the Hebrews has not yet been cleared up and demands further study. In a study such as this we each need to remember Cromwell's exhortation to the Presbyterians and think it possible that we may be mistaken. Happily, while we may differ in our apprehension of the *means* by which the Gospels were inspired, we are at one with regard to the *fact* of their inspiration.

The Gospels, like the rest of the Bible, have both a Divine and a human authorship. The Divine authorship is assumed in this discussion ; it is the major premiss of all who have taken part in it. Our subject has been the production of the Gospels on the *human* side. Those who believe most firmly in the Divine authority of these writings will welcome most confidently the application to them of all reasonable tests, just as the Apostles invited the closest scrutiny of the truth of their message. The man who *knows* that an article is pure gold will not hesitate to have it tested. So, no matter how searchingly we analyse, compare, cross-divide and classify our Gospel material, we may be sure that the more accurately we trace the course of all things, the greater will be our certainty regarding those things wherein we have been instructed.

War conditions having rendered it impracticable to hold an Ordinary Meeting on February 15th, 1943, the Paper for that date was circulated to subscribers and is here published, together with the written discussion elicited.

*THE WHOLESOMENESS OF CHRISTIANITY, AS
SHOWN IN THE UNITED STATES, NEW ZEALAND
AND CERTAIN PACIFIC ISLANDS.*

By Rev. PROF. A. K. RULE, PH.D.

BY the term "wholesomeness" as applied to Christianity in this paper, we shall mean its tendency to produce and to maintain social health. We would agree that Christianity also has a tendency to promote individual health, but for the present we confine our attention to social health. Our method must be, not a speculative deduction from the nature of ideal Christianity, but a frank survey of the actual outcome of Christian influences in certain definite geographical areas. These areas are chosen, negatively, because other areas have been or will be dealt with by other writers, and, positively, because this writer possesses a combination of first and second hand acquaintance with them that perhaps justifies a judgment. The historical facts which we shall cite are perfectly straightforward and well known, requiring no defence; but to characterize a tendency as "wholesome" is to pronounce a value judgment, and that is a very different matter. Value judgments, if seriously challenged, are notoriously difficult to defend. We can only endeavour to confine ourselves to judgments that will not be widely or stubbornly gainsaid. In short, we must appeal to common sense for our social evaluations.

The Pacific Ocean areas with which we shall deal are New Zealand, the Hawaiian Islands and the Fiji Islands. They offer some striking points of agreement and of difference sufficient to enable us to make a loose employment of the Joint Method of Agreement and Difference and thus to reach a fairly definite decision. There can, I think, be little doubt as to the splendid social health of any of the three. Judged by any of the standards by means of which social health is ordinarily estimated, or by all of them, each of these areas would rank high. In all of them

life is pleasant ; education is free and compulsory, and literacy is common ; crime is relatively infrequent ; the administration of justice is impartial and progressive ; the institutions of social mercy are adequate ; the now famous " four freedoms " are valued and enjoyed. When these three areas are compared, in these respects, with many another region, they stand out so clearly that some explanation of their high social achievement is imperatively demanded. Whatever it is, it must be something that is common to these three areas and that is lacking in less successful places. What can it be ?

It will perhaps be readily granted by all, except those who are bound to acknowledge only economic explanations of social facts, that a full explanation cannot be found in the common prosperity of these three areas. That all three were favoured by Nature, that they are now relatively prosperous, and that this has contributed something to their achievement of social health will not, we assume, be denied. But it would not be difficult to point to other regions that compare favourably in natural advantages and in actual prosperity but have made a very different record in respect to social health. It seems clear that the difference in this kind of achievement between the unnamed areas and those that have been mentioned must be due to some differences in the human factor. What might they be ?

It will be acknowledged that the native peoples in New Zealand, Hawaii and Fiji have proved to be good stock, and that apart from their natural capacities no such achievement of social health would have been possible ; but, on the other hand, it cannot be admitted that a sufficient explanation of the social success is to be found in the native characteristics of the aborigines. The natives of Hawaii and of New Zealand are Polynesians, and it has been demonstrated that, under certain conditions, people of this stock are capable of splendid social achievement ; but the high achievement must be attributed to the combination of their natural capacity and the proper conditions, for, under different conditions, no marked achievement of social health has appeared. The Fiji natives are of a different racial origin. It would not be difficult to point to other native peoples, of similar racial origins, who have failed thus far to achieve high and healthy social goals. It thus appears that, though the native capacity of the aborigines in New Zealand, Hawaii and Fiji has undoubtedly been a condition of the splendid

social achievements in those areas, it does not constitute a sufficient cause.

Shall we say, then, that the splendid social health achieved in these areas is due to the impact of white civilization, under favourable economic conditions, on a capable native people? The facts make it evident that, with such a statement, we are approaching the explanation that we seek; for, though social health on a primitive level characterized these native peoples before the advent of the white man, their present high achievement clearly depends on white influences. But the statement as it stands cannot be accepted as adequate. Some of the white influences have been almost disastrous; others have been wholly good. At certain times, and in some other Pacific areas inhabited by natives of similar racial stocks, white influences have been bad or only moderately good. That being so, it ought to be possible to employ a Method of Concomitant Variations and thus to isolate the element or group of elements in the white influence that has been responsible for the high social achievement which we are seeking to explain.

The fact that stands out so clearly that it cannot be mistaken, is that white influences in all the Pacific areas have been socially constructive when, and in proportion as, they have been permeated by the spirit and principles of Christianity. Christianity has exerted its influence both directly and indirectly. We may say roughly that the direct influence has been exerted through Christian missions, through regular church organizations subsequently set up in these areas, and through the conscious efforts of people, working individually and through various social institutions to bring all of life into conformity with the teachings of Christ. The indirect influence has been exerted through the pervasive pressure of a society that has, to a large extent and often without realizing it, been Christianized. This indirect influence is made effective, not only through a Christianized society in general, but also through special institutions. Through their efforts to promote fair and progressive legislation, to administer justice, to secure adequate educational opportunities for all, to support works of mercy, to keep business practices on a high plane, and in numerous similar ways, the "secular" British and American governments, for example, are constantly serving as indirect agencies for the Christianizing of life in these areas. Now, our contention is that the achievement of social health in the areas under consideration, and the application of

these direct and indirect Christian influences, have varied together so closely that there must have been a causal relation between them. More specifically, the wholesomeness of life in these areas is the result of Christian influences, working directly and indirectly on native peoples who had a capacity for high living, and under economic and other circumstances that were, on the whole, favourable.

That the social health and the Christian influences have varied together there can be no doubt. In the Hawaiian Islands, direct Christian influences were brought to bear very early. As the islands developed economically the missionary families largely controlled that development, and they did so with wisdom and fairness. When conditions threatened to snatch the control of Hawaiian life out of such Christian hands, the American government was called in; and through it indirect Christian influences were mustered to supplement the good work of the earlier direct Christian influences. The outcome is an open book. A wholesome social life was developed in Hawaii from the first, and it has been maintained there in spite of a subsequent "flooding" of the Islands with people from non-Christian environments.

In New Zealand and Fiji the experience has been somewhat different. In their case, the direct and indirect Christian influences were somewhat tardy. The first effective contacts were through sailors and traders; and, in each case, social chaos rapidly appeared. Any student of New Zealand history will name, without doubt or hesitation, the event which brought about the change of social tendency in New Zealand. It was the coming of the Reverend Samuel Marsden, the first Christian missionary. His good work was continued and expanded by that of other missionaries, by the establishment of fully organized churches on a non-missionary basis, and by the indirectly Christian influence of the British government. That story has subsequently been reinacted in Fiji. And, as if to leave no possible doubt that it was something specifically Christian that brought such desirable results, and not simply an economic improvement, one incident in New Zealand history is particularly impressive. In an effort to deal fairly with the Maoris it was early decided that the purchase or renting of their land would be handled through the government. This action brought economic prosperity to the Maoris, and should have resulted directly in an improvement of their social health if the economic

theory of history is adequate. But as a matter of fact it resulted disastrously. Economic improvement is probably a necessary condition of high attainment in social health, but it is not a sufficient cause, and, by itself, may have exactly the opposite effect. The historical facts seem to justify the conclusion that the splendid social results achieved in Hawaii, New Zealand and Fiji are attributable to the broad, direct and indirect, impact of the Christian way of life on a people of good stock under favourable economic conditions.

In discussing the effect of Christianity on social health in the United States of America, we would claim (1) that this country has enjoyed certain advantages, as compared with the older countries of Europe, but has also presented some unusual obstacles to the achievement of social health; (2) that, partly for that reason, Christianity has here developed within itself certain characteristics which may have hampered it in its efforts to produce and maintain social health; and (3) that, for all that, the social history of this country as a whole, and numerous dramatic occurrences within it, prove the effectiveness of Christianity in producing and maintaining social health.

The great advantages enjoyed by this country were (1) a fresh beginning by men, the leaders among whom were motivated by the highest Christian idealism and guided to some extent by the record of successes in Europe which they might emulate and failures which they might avoid; and (2) an unusually fluid social condition which made promising experiments possible and mistakes remediable. It is recognized, of course, that these are not unmixed blessings, but it is claimed that, on the whole, these have been favourable aspects of the situation.

Among the handicaps we would mention first the great intermixture of peoples in this country. That, of course, has not been entirely a handicap, and it will probably prove, in the long run, to have been a very great blessing. But its blessed aspects appear only if, and in so far as, the obstacles which it presents are overcome. In itself it threatens social chaos, and, especially in its more recent form, it offers a great opportunity to certain other anti-social forces. That more recent form appeared along with the industrial revolution, which fostered the growth of large cities and the concentration in slum areas within them of unassimilated national and racial groups. This form of heterogeneity was bad enough in itself, but it also offered opportunities for vicious forms of economic and political

exploitation, poisoning the social organism and greatly hindering the development of social health. It is doubtful whether any other country has had to face this problem in as intensified a form.

A second handicap, or group of handicaps, has arisen out of the experimental nature of social life in general, and of political life in particular, in this country. Of course, all governments are to some extent experimental, if they are in any way progressive, and the government of Great Britain is notably of this character. But on your side of the Atlantic, experiments have been much more guided and restrained by a sense of continuity with the past. The Americans have not ignored the lessons of the past, of course, but they have often been much more strongly motivated by a desire to get away from the past, and so their experiments have been freer and more risky. As we indicated above, we believe that, on the whole, this characteristic of American life has been socially advantageous; but not all of the experiments have been accompanied by safeguards which a greater attachment to the past might have suggested, and the price has had to be paid. For example, the desire to give to the accused a greater assurance of justice than they seemed to be getting in Europe has brought about conditions that unduly favour criminals. Again, as a measure of assurance against governmental tyranny, the right to possess arms has been constitutionally guaranteed to the people. These two conditions, both due to high principles which were not adequately safeguarded, are the main reasons for the comparatively high incidence of violent crimes in America. Once more, the desire to afford to every man his rights in a democracy has opened the way for the "spoils system" in a particularly unabashed form. Here, again, we find a noble intention leading to disastrous moral results through lack of adequate safeguards. These and many another unfortunate result of the experimental nature of American social institutions have hindered the achievement of a splendid social health in the United States.

A third important handicap to the attainment and maintenance of social health has been the proximity, in space and time, of frontier conditions. Frontier conditions make for an individualism that all too readily develops into lawlessness. Something of the lawlessness of the frontier tends to seep back into adjacent areas that are more settled; people in the latter areas who resent the restraints of organized life tend to move to

the frontiers to avoid discipline or to live loose and undisciplined lives at home with the idea that, if they finally get into difficulties there, they can always escape to the frontiers. In these and other ways, the proximity of a frontier fosters restlessness and a certain shiftlessness. This is also the probable reason for the prominence of "revivalism" in an extreme form in American religious life and for the large number of "fad" religions which flourish in this country.

But, in spite of the peculiar handicaps, a very healthy social life has been attained in America; and it is generally admitted that religion has made an indispensable contribution to this achievement. It has done so through its steady, unspectacular, pervasive influence, and it has done so in certain dramatic movements. The latter, of course, are much easier to point out in a brief paper such as this, but something ought also to be said of the former.

The original Anglo-Saxon settlement in America was an outcome of a vast social revolution in England, and religion was perhaps the stimulus, certainly the focus, of that revolution. Thus, even if it be true, as has been claimed, that a majority of the original settlers had little religious interest, and that commercial motives were really uppermost in the founding of these colonies, it is still true that religion played a large part in the beginning of the English occupation of this country. One result was that definite efforts were early made to elevate the religious and social life of the Indians, with a degree of success that was not as slight as some historians would have us believe. Such work among the Indians has continued with decidedly happy results. A recent visit to a Navajo mission in Northern Arizona enables me to testify to that fact from personal observation. It is a fact, too, that the church was the social centre of most of the early communities, as it still is in many country districts and in numerous areas within our big cities. From these churches and from the schools which were often directed by them went forth into the communities almost the only influences of an elevating character to offset the drabness and coarseness of frontier life. The beneficent influence of the Sunday School movement, the Chatauqua movement which was its offspring, the Young Men's and Young Women's Christian Associations, and of similar religiously motivated movements has been of incalculable amount in American life. Until the various states were ready to originate and maintain secondary schools the

churches filled the breach with their academies and parochial schools. Most of the colleges in America were founded by the churches, and many of them are still maintained by the church. Church people played a large part, too, in founding some of the State Universities. They have supported all the movements for social amelioration, and many of these movements have had little support from other sources. Such service on the part of the church has been much more pervasive than is sometimes supposed. For example, the first Medical School in the State of Illinois was a department of a church college, and a considerable number of the grade and high school teachers of America get both their general and specialized training in church supported colleges. The churches have flooded the country with religious periodicals, with devotional literature of various kinds, with missionary magazines. They taught America to sing, and hymns and sacred songs still form a sizable part of the musical expression of the American people. In ways like these, but too numerous to list exhaustively, religion has from the beginning exercised a pervasive, steady influence, raising the tone of social life and helping mightily to attain and maintain social health.

Among the more dramatic contributions to social health may be mentioned certain well-known revival movements and the movement indicated by the expression "the church follows the frontier." As the frontier swept across America from East to West, such socially healthy institutions as schools, libraries, hospitals and even law courts lagged behind, but the church kept pace with her itinerant missionaries, her settled missions and organized congregations, and presently her schools and colleges. The story is a thrilling one; the contribution to social health is undeniable and incalculable.

The best known of the revival movements are the Great Awakening which took place along the Atlantic seaboard about the middle of the eighteenth century, the Cumberland Revival which began about 1800 on the borders of Kentucky and Tennessee and spread through the surrounding territory, and the work of D. L. Moody at the close of the War Between the States. There has been a widespread tendency in recent years to decry revivalism, and in that interest much has been said of the exaggerated emotionalism of these and other revivals and of the impermanence of their results. That such criticisms are well founded cannot be gainsaid, but they do not tell the

whole story. There is something else about these revivals that cannot be denied either. In each case they were preceded by periods of extremely low moral and spiritual tone; and in each case the improvement which they wrought was unmistakable. If we had only the testimony of ministers for those claims the weight of such testimony would be impressive; but it might perhaps be dismissed or largely discounted by the cynical. But the dry and impartial court records substantiate the testimony of the clergy. Again and again, in the history of this country, periods of moral and spiritual lassitude which were produced now by one combination of circumstances and now by another, and which the churches were unable to prevent, have been terminated by energetic action on the part of the churches. These facts show what institution it is that has the power of producing social health. It is organized religion, and no other to anything like the same degree. And, while religion has not succeeded in preventing the occurrence of these periods of moral and spiritual lapse, few students of American social life would deny that the general trend of social health has been upward.

In America, as in the Pacific areas which we studied, religion has proved itself to be socially wholesome.

DISCUSSION.

Lieut.-Col. F. A. MOLONY said: The Victoria Institute is much indebted to Dr. Rule for his careful paper. A notable contribution to the series, which certainly has brought before us very strong evidence of the wholesomeness of Christianity under very varied circumstances.

We ought to take special note of what he says about the effect of U.S.A. laws regarding carrying firearms on the prevalence of crimes of violence in their country. His testimony regarding the wholesomeness of Christianity in Pacific islands is also noteworthy, being based on experience.

WRITTEN COMMUNICATION.

Rev. Principal H. S. CURR wrote: The dominating place held by the Christian faith in the creation and maintenance of well-being in that unique organism, the body politic of the United States of America, seems to be demonstrated so effectively in Professor

Rule's paper that no impartial student can do otherwise than to concede his contentions which are stated with admirable moderation and modesty. A case like his gains by under-statement, and loses by extravagant emphasis.

There is an aspect of America's debt to Christianity which can never be overlooked. Professor Rule refers to the character of the Pilgrim Fathers who may be legitimately described as the founders of the great trans-Atlantic commonwealth. It is always desirable to remark that they were Puritans to the core, both in theology, piety, and morality. Their settlements were established on that foundation, and for a prolonged period these retained the principles of Puritanism as their guides and ideals. It is true that Puritanism no longer influences American religion and morals as it once did, but that does not imply its exhaustion or extinction. Men and women have a remarkable way of returning to their origins. Like Jacob, they are always going back to Bethel. That is illustrated very clearly in the story of the United States. The basic Puritanism which has been derived from the fathers and founders is always manifesting itself, although it is as invisible as the Gulf Stream, while equally potent. There may be times and seasons when it might seem hard to produce much convincing evidence of such a contention, but these are followed by other times and seasons which illustrate once again that profound and powerful saying of Our Lord, " Verily, verily, I say unto you, Except a corn of wheat fall into the ground and die, it abideth alone ; but if it die, it bringeth forth much fruit " (John xii, 24).

Two illustrations, strangely contrasted in character, will illustrate my meaning. One is drawn from the succession of American Presidents. Nothing is further from my thought than to suggest that all the occupants of the White House have been champions of the Puritanic ideal. But when they are compared with the succession of British Prime Ministers in the same period, a certain justification for this argument may be found. The other is based on the prevalence of Fundamentalism in the United States. That movement, whose genius is the defence and diffusion of the historic orthodoxy of the Christian Church, is much stronger in America than in Europe. This may well be due to the perseverance of the Puritan tradition, the savour of religious and moral salt in the life of nations, and, perhaps, in international affairs as well.

War conditions having rendered it impracticable to hold an Ordinary Meeting on March 15th, 1943, the Paper for that date was circulated to subscribers and is here published, together with the written discussion elicited.

THE ATONEMENT AND PSYCHOLOGY.

By Rev. Prof. J. G. MCKENZIE, M.A., D.D.

INTRODUCTION.

PSYCHOLOGY, as a science, is still suspect in many theological and philosophical quarters. To Barthians it is almost anathema; while to many others it seems to be an attempt to explain away the objectivity of religious experience rather than an aid to its explanation.

Nevertheless, there can be no question about the intimate relations between theology and psychology. Psychology describes and analyses the experiences; theology formulates its doctrines in relation to the objects of those experiences. Psychology has no technique whereby it could validate or invalidate the doctrine of God, the Incarnation, the Atonement or the Resurrection; but it does accept as psychological fact that men have experiences which they relate to these doctrines. "I saw God high and lifted up" is an experience; "I live, yet not I but Christ liveth in me" is an experience; "Therefore, there is now no condemnation to them that are in Christ Jesus" is an experience. Every one of these experiences involve theological dogma; the concepts on which the dogmas are built may be true or false, but the experience is nevertheless psychologically real.

The central and indeed the crucial experience of the Christian believer is that of being reconciled to God, of being at one with Him, of sins forgiven, of being right with God. His experience of forgiveness and of being reconciled to God are immediate in exactly the same sense as I have an experience of a patch of colour. I may be wrong in referring my experience to an external world; or granting an external world, I may be mistaken as to the object to which I refer my experience of the patch

of colour ; but there can be no question as to the reality of the subjective experience. Even if my experience be an hallucination, the experience is nevertheless subjectively real and must be accounted for. So with my experience of forgiveness and reconciliation ; I may be wrong in my reference of those experiences to something that happened on the Cross ; nevertheless, the experiences would not be invalidated, but only the reference ; the experience would still be psychologically real.

Personally, I believe the psychologist can go further than this. In my analysis of the patch of colour I find that the feeling of externality is a true part of the experience. In other words, the actuality of the external world is given, not inferred ; externality is an experience and not an inference. I may be all wrong in my notions regarding the nature of the external world I experience through the senses, but that will not invalidate the experience of externality. And the study of dreams and hallucinations does not even appear to contradict this experience of externality. All we can infer from such a study is not that a doubt can be thrown upon the reality of the external world, but that dreams and hallucinations are both subjective and *private* ; whereas my experience of the external world is subjective but open to all.

Analogously, I might argue that the experience of objectivity in my religious experience is part of the experience and not an inference. And I do not see how you could confute me except on grounds that would involve the denial of the external world and all moral and æsthetic values as objective.

THE PSYCHOLOGICAL AND THEOLOGICAL APPROACHES TO THE PROBLEM.

Be that as it may, the psychological approach to the problem of the Atonement is through the analysis of the experience of forgiveness, beginning with the conviction of sin, the sense of alienation from God, the acceptance and realisation of forgiveness and reconciliation through my repentance. The theological approach, on the other hand, is through the intellectual concepts of the nature of God, the nature of man, and the nature of sin.

Now, there is a fundamental difference between these two modes of approach to the problem of the Atonement. The theological approach may involve nothing more than an intellectual insight into the relations between my concepts of God,

the nature of man and the nature of sin. Intellectually I may recognise the inevitable relation between retribution and sin, and yet never experience the conviction of sin in myself, never realise the sense of alienation from God and man which sin involves. For an adequate theory of the Atonement to be formulated experience and reflection must go hand in hand. Just as sensation without thought is blind, so experience without reflection is not likely to yield the *modus operandi* of Atonement. On the other hand, thought must have experience on which to reflect; otherwise it is divorced from reality. If religion is "an experience of reality," a sharing of the life of God, then it would seem to follow that theology cannot afford to neglect the psychological analysis of religious experience.

Here, then, is the psychologist's justification for intruding into the realm of theology. It is as a necessary co-labourer with the theologian that he attempts to elucidate the experience of the forgiveness of sins. To do his share of the task well he should have no presuppositions; he should have no preferences for this theory or that. Naturally, when he has finished his task he will have a preference for any theory which takes account of the psychological facts.

PSYCHOLOGICAL QUESTIONS THE PROBLEM RAISES.

What, then, is the experience of sin and its forgiveness? What as an experience does it mean to be reconciled to God? In the analysis of the experience does the psychologist find any hint as to why forgiveness is always linked in Christian experience with the Cross? Any hint as to how God is able to forgive sin? What is it sin violates? What has to be removed before reconciliation can take place?

These are formidable questions; they should not, however, be beyond the psychologist's competence to answer.

Space will not permit me to enter deeply into the psychological nature of sin. It must suffice to state conclusions whose grounds I have given elsewhere.* "Sins" are symptoms, or better still expressions of a principle that characterises a "sinful nature." The principle of Sin is ego-centricity. As I have said elsewhere; Ego-centricity denotes the type and cause of the type of personality which consciously or unconsciously "makes himself his

* "Psychology, Psychotherapy, and Evangelicalism," published by George Allen and Unwin.

own main purpose." In other words, everything and everybody is just grist to his own mill. Ego-centricity, which is Sin and not a sin pollutes the whole activity of the individual to such a degree that it is the principle of that individual's personality. What is lust but the ego-centric desire to use another for the gratification of one's own pleasure? What is greed but the ego-centric desire to seek the things that others cannot share? Pride, envy, unholy anger, covetousness, gluttony, sloth, lust—all these deadly sins of catholic moral theology can be explained without remainder by the principle of ego-centricity. Ego-centricity corrupts everything it touches. In a true sense it is *original sin*.

Hence it follows that it is the sinner who has to be forgiven more than the sin. Professor H. R. Mackintosh is on good psychological ground when he writes: "The psychological fact that in repenting the best Christians ask pardon, not only for what they have done, but even more for what they are, signifies the truth that 'sin' is predicable, strictly and in the ultimate sense, of the *self* rather than isolated acts. *We are sinful.*"

Such a definition shows us at once where we must look for the essence of the effects of sin. Sin disturbs the spiritual relations existing between personalities. That disturbance of spiritual relations is automatic. A gulf is created from both sides. It is not simply that by his sin an individual alienates himself from the one wronged, but the wronged becomes alienated from him. Hence the real problem of the Atonement is not how the sinner can be made to repent—the aspect on which the moral theories lay stress—but how the wronged person can overcome his inevitable tendency to withdraw himself from the wrong-doer. In other words, something must happen in the wronged person if forgiveness is to be real. Forgiveness involves something happening in both the wrong-doer and the wronged. It is never a one-sided affair.

PSYCHOLOGICAL CONDITIONS OF FORGIVENESS.

That brings us to the psychological conditions of forgiveness. And from what has been said the inference follows that only personal wrongs can be forgiven because it is only against persons we can sin. Sin operates within personal relations. When we speak of a person sinning against the law we are really using a figure of speech. The law, in so far as it corresponds to the

moral law, is the expression of the Will of God ; it is not something standing over against God and the sinner which the latter must obey, and which God must see is fulfilled. Even when we break the law of society it is society-persons we wrong. Psychologically forgiveness cannot be a juridical or a forensic term.

The way is now clear for a consideration of the psychological conditions of forgiveness. These conditions are not one-sided. We have seen that both sinner and sinned against are alienated. It is difficult to see how it could be otherwise in sin against God. Something must happen in God as well as in the sinner before forgiveness can become a reality ; and the crux of the problem of Atonement is : what does happen in God ? And the further question arises : how does it happen ?

It is here, I think, the theologian and the psychologist tend to take different paths. Apart from those who hold "moral theories" of the Atonement, the theologian almost invariably brings in a juridical element. Professor Mackintosh and Dr. Denny are quite emphatic on this point, and they both lay great emphasis on the inevitability of God's hostile reaction to Sin and to the necessity of retribution. They do not seem to be able to dissociate retribution from a juridical process. The former writes : "The point is that the Divine character is such that whenever it encounters moral evil in saint or sinner it cannot but react against it with repelling and retributive force. Love that is worthy to be called love, confronts the evil thing with an inevitable and intrinsic purity. If God did not chastise sin in the very act of forgiveness, and in the persons forgiven as a sequel to forgiving them, He would not be more loving than He is ; He would cease to be God." Dr. Denny found that "From a very early time—perhaps from the time of St. Paul himself—the sense that reconciliation was a great achievement involving effort or tension of some kind on the part of God, has played a considerable part in theologising on this subject. In forgiving sins, it might be said, God takes sides against Himself ; He has a right to exact something from us, and for our sakes foregoes that right. His justice impels Him in one direction and His mercy in another and in this very act of pardoning men and reconciling them to Himself He must reconcile these divergent attributes." Dr. Denny freely admits that this conflict between the attributes of justice and mercy is not part of the experience of forgiveness ; the idea he thought was speculative and not experimental.

From the psychological point of view there can be no question of the fact that tension has to be overcome on the part of God. The tension, however, is not between attributes of justice and mercy, nor between a natural retributive force that must exact retribution and the love that would forgive; the tension is within the love-sentiment itself. Holy love which by its very nature must be repelled by sin is at the same moment under inevitable compulsion to "draw us sinners in." Love cannot but be "hurt" when the loved one has outraged the love; nor can love desire anything but the restoration of the sinner.

In other words, my contention is, that any analysis of forgiveness will show that it is never automatic; it is never spontaneous in the sense that there is no tension to be overcome within the sentiment outraged. That tension must be expressed, and it must be overcome from within the personality; and nothing done to "appease" or "propitiate" could induce forgiveness. In fact, true forgiveness is never induced from without; it must come from within the person forgiving.

Hence it seems to me, that the psychological analysis of forgiveness gives grounds for the intuition of the Church from the very beginning, that the Atonement involves an objective element, that is to say, involves something happening in God before forgiveness could have been possible. Overlooking a fault or wrong-doing is not forgiveness; "forgetting" is not forgiveness. True forgiveness is only possible when the wronged person experiences the hurt or wound to his love sentiment, overcome the inevitable sense of alienation created between him and the wrong-doer, and identifies himself with the wrong-doer as though the sin were his own. Forgiveness is truly object-centred; it is motivated by the wrong-doer's need. One does not forgive merely from pity for the wrong-doer, nor because one cannot bear to be alienated from another. It is a truly spiritual act, involving effort and must come entirely from within the one who forgives; it is a matter of grace.

From the psychological point of view, then, forgiveness involves, what Bushnell in his amended theory of the Atonement outlined in *Forgiveness and Law*, termed "cost" on the part of God. God cannot be indifferent to sin; His forgiveness cannot be automatic on the repentance of the sinner. Man's repentance does not induce forgiveness; it is the condition of our acceptance of it. God suffers for man's sin; His love is wounded and outraged by it; He is alienated from the sinner;

He is repelled by the sin ; the spiritual relation between Himself and the sinner is disturbed.

The whole problem, from the psychological point of view, is : How can God overcome His revulsion to man's sin ? How can He express this revulsion and the suffering it causes to Him ? How can He bridge the gulf which separates Him from the sinner ? That is the psychological problem from God's side. On man's side, the problem may be formulated thus : What induces repentance ? Can anything but a perfect repentance receive forgiveness and make reconciliation possible ? How can we explain the age-long feeling that the expiation of sin is necessary ?

THE PSYCHOLOGICAL CONDITIONS OF FORGIVENESS FROM MAN'S SIDE.

Before I link up the Cross of Christ with Forgiveness let me analyse the psychological conditions of forgiveness from man's side. It has been usual in the theory of the Atonement to insist on the necessity of a sense of guilt as a pre-requisite of repentance, If what is meant is that a man must feel his sin as *Mea Culpa* and as proceeding from a sinful nature, no objection can be taken by the psychologist. But every practising psychologist knows that a sense of guilt instead of leading to repentance is always a moment in the downward thrust of repression ; and instead of leading to repentance and a true change of heart and will-*metanoia*, may lead to regression. This is what happens in all cases of neurosis and psychosis in which a sense of guilt is a prominent symptom. I doubt if any true repentance contains any element of fear of punishment, although there may be the fear of the loss of the love of God. Bitter shame and remorse, a true realisation of the sinfulness of our nature ; an unqualified acceptance of responsibility for our sins ; a consciousness of its outrage against God's love, and a profound realisation of alienation from God caused by our sins, are all inevitable elements in a true repentance that leads to *metanoia*. Without the *metanoia* there is no deep reconciliation to God. It is very probable that in all repentance there is a struggle in the subconscious mind of the sinner to repress these personality-disturbing emotions ; and in the neurotic and psychotic this tendency to repress the conflict and emotions into the unconscious is more or less successful ; so that instead

of a penitence leading to *metanoia* we get a penitence leading to regression of the offending tendencies. In such a case the ego-centricity and offending tendencies are left unmodified and no true relation with God can be established. In a true repentance the consciousness of the outraging of the love of God is far more prominent than any concern of the sinner with his own fate. Even in the sinner's sense of alienation, if there is true repentance, there is no despair.

True repentance is elicited by the realisation of one's sin, and that sin outrages God's Holy love. In so far as the conviction of sin refers to the personality as a whole and not merely to particular sins, the repentance is deeper and the *metanoia* involves a change from ego-centricity to God-centricity. To the degree this change occurs to that degree there is real reconciliation; the spiritual relations between the soul and God are restored and become a conscious factor in the life of the individual believer and the "joy and peace in believing" are real and lasting. Though the individual may fall into sins, *the soul does not consent*, and consequently the spiritual relations are not disturbed.

THE MEANING OF THE CROSS.

The question now arises : How is the sinner's conviction of sin and repentance to be elicited ? How is he to see the meaning of the Cross in relation to his sin ?

All schools of theological thought have seen the Cross as central to any theory of forgiveness. The various theories of the Atonement depend on what is believed to have happened there. It may be true that the life and teaching of our Lord have inspired the good life more than the death, as Rashdall argues ; but it is at the Cross that men and women have realised their own sin ; there they have felt the burden of it lifted from their conscience ; there they have seen God reconciled to man and man reconciled to God. Whatever theory of the Atonement is held the psychologist cannot but take into account the Church's experience at the Cross. There is, as Professor Burkitt puts it, something inevitable about the Cross ; it is linked with that grace that covers our sin ; and no psychologist can ignore what is linked with the deepest experiences of the believer.

Can the psychologist give us a hint as to what must have happened on the Cross from his knowledge of sin, the conditions of forgiveness and reconciliation ? Can he explain why it is that

all theories of the Atonement have their triumphs in giving men the assurance of forgiveness and reconciliation? I think he can.

Let us summarise what happens in the process we call forgiveness. First, there must be a recognition by both sinner and the one sinned against of the sin that alienates them from one another. That alienation is a positive experience. It is felt by the sinner as an inevitable separation from the one sinned against; it is felt by God as an inevitable revulsion, even repulsion of the wrong-doer. If that experience did not alienate God it would be difficult to see what forgiveness could mean. Spiritual relations are disturbed from both sides; they must be healed from both sides. The subjective theories of the Abelardian type admit the alienation on man's side, and for them the problem is: how can man become "forgiveable"? How can repentance be elicited? The objective theories see the alienation on God's side, and their problem is: What can ward off the repelling force? How is man to make retribution?

It would seem to me that the psychological analysis enables the theologian to synthesise the two views; it preserves the objective element and makes it creative of the subjective experience of repentance. On the other hand, no psychological analysis of the experience will give us a theory of the Atonement by itself. Theological presuppositions must enter into any theory. For example, no theory of the Atonement can be divorced from a theory of the Incarnation. However immediate the experience of forgiveness and reconciliation is, and it is immediate, no theory of how the experience is possible is given in the experience. Our beliefs about God, the nature of sin, and of the nature of man undoubtedly colour the experience itself as well as determine the theory acceptable. Every theory of the Atonement is an intellectual construct. There is no Revelation of a theory of the Atonement. If we differentiate between "dogma" and "doctrine" then one could say that there is a Revelation of the dogma but no revelation of the doctrine. Doctrine arises in the inevitable attempt of the mind to find an explanation of its experience. Experience is thus both creative and created. The experience is the reaction of the soul of the sinner to the Revelation of forgiveness; that Revelation is made through the Cross. But the experience is also creative and is the source of doctrine.

What I think can be inferred from the psychological analysis of the conditions of forgiveness is that the Cross reveals in time and

through the death of our Lord how God overcomes the conflict within His own love-sentiment for man. The Cross reveals that God suffers for man's sin, and that unless He could and did suffer He could not forgive. On that Cross He reveals the "cost" in suffering He had to endure. In human forgiveness it is the estrangement of the loved one that is most deeply experienced; the wronged one feels the alienation of the wrong-doer as though it were his own. In psychological terms he identifies himself with the wrong-doer, and suffers as though the sin were his own. Psychologically this is "vicarious sacrifice"; it is a suffering not *instead of the wrong-doer*, it is the necessary suffering on the part of the wronged without which he could not forgive.

Is it not this we see on the Cross? We are not beholding a sacrifice *to God*, but the sacrifice *of God*, whereby He reveals in the death of Christ through suffering how His heart has been kept open to receive the sinner. The Cross is the Revelation in time of God overcoming the tension in Himself caused by sin and at the same time identifying Himself with the sinner, experiencing the alienation of the sinner from Himself. No one truly forgives who is incapable of experiencing something of the alienation the sinner suffers through his sin. Take the little child who has done some wrong which makes mother "cross," and who is intelligent enough to see that mother is suffering because he *could* have done it. The mother cannot turn to the child's appeal, "I am sorry," without an effort, without tension having to be overcome. The child senses the alienation and suffering of the mother; the mother in turn experiences the suffering her alienation is causing the child, and her heart breaks in an agony of love which is forgiveness, which bridges the gulf the child's sin has caused. The experience of the mother's alienation from the child, and the suffering of the child when it senses the alienation on the part of the mother are two moments in the experience of repentance and forgiveness; and these two moments in the one experience lead to *metanoia*, the change in the child which makes the sin "abhorred," and the two are reconciled.

No illustration can adequately represent what takes place in God in the experience known to us as forgiveness. It is His Holy love which is outraged rather than His Holy will. He cannot forgive in the sense of remitting penalties against His Holy Will. Forgiveness, as we have already said, is not a juridical or forensic term. When we violate His Holy Will in the physical

sphere, His over-ruling providence may transform the penalty into a spiritual blessing, but it cannot remit it. The Prodigal had to eat the husks the swine did eat; his wasted substance could not be restored, and the memory of that experience would always bring sorrow—a sorrow that would make his fellowship with the father closer and deeper because of the gratitude for the restored relationship. Sin may have effects outside the sphere of personal relationships, and the effects must work themselves out. It is within the sphere of personal relationships that Atonement takes place; it is in relation to God's Holy love that forgiveness is assured. God takes the burden of healing these disturbed relationships between His Holy love and the sinner upon Himself. "There was no other good enough to pay the price of sin"; that price is paid not *to God* but *by God*. Nothing the sinner can do for and by himself could bring forgiveness; forgiveness can never be merited. Sin is not a debt; it is a trespass. Forgiveness is a debt from our side, a debt we can never pay for but must receive, and receive as a gift. Forgiveness is God's act; repentance conditions the sinner's capacity to receive it.

Hence the psychological analysis of the conditions of forgiveness allows us to preserve the two fundamental elements in the theories of the Atonement—the objective and the subjective. The moral theories demand the exclusion of the juridical and forensic elements from the theory of Atonement; they see truly the Cross as the manifestation of God's love in a supreme form; they know that Calvary induces repentance as nothing else can. But they take no account of the fact that it "costs" God something to forgive. The sinner and the truly repentant cannot but intuit that his sin has caused suffering to God, and he feels the alienation of God. He does not intuit why God must suffer, nor how He overcomes His alienation; he simply experiences that God has done so. And the very fact that Christian thinkers have always felt that a theory of the Atonement was necessary witnesses to the fact that man has always intuited the fact that something must happen in God before forgiveness is a reality.

I think that it is possible, psychologically, to infer that as both God and man, Christ experienced the outraged love of God, and the suffering which overcomes the revulsion caused by sin; and at the same time what man must feel about sin in a true repentance. He could not have experienced the conviction of sin, the personal shame and sorrow, all of which enter into a true repent-

ance ; nor could He have experienced a personal confession of sin. Vicarious repentance and vicarious confession cannot mean that He repented or confessed instead of man, and that God accepted His repentance and confession in lieu of man's perfect penitence and confession. Nevertheless, there is a sense in which Christ must have felt what man ought to experience. He saw sin in all its violence ; He felt how it alienated from God in a way the sinner could not himself experience. In any other sense, vicarious repentance and confession is psychologically impossible. I cannot repent for another although I can experience in virtue of the process known as identification all the pangs of Hell that a loved one of mine ought to feel and must feel before forgiveness can be a reality. My suffering may induce or elicit repentance in that loved one ; through sensing what I feel he may intuit and thus elicit what he ought to feel. It is in that sense, I think, that we may find some truth in the theories of McLeod Campbell and Moberley.

DOES GOD SUFFER ?

The fact, then, that God in Christ suffers because of the tension caused by man's sin, and has to overcome that tension through suffering, and also must suffer in so far as He experiences the alienation of man from Him, the question arises as to whether God is passible. Rashdall treats this question from the theological point of view. From the psychological point of view it would seem that love involves the capacity to suffer. If we say God is Love, that God forgives sin, we are really saying that God is capable of suffering and He does suffer. A love that was impassible is a love inconceivable by man ; and certainly it is contrary to all human experience. It is only as the heart is kept open to receive the wrong-doer that forgiveness is possible, and that can only be kept open through suffering. The Holier and deeper the love the greater the suffering. It would seem, then, that instead of God being impassible, He is the most passible Being, for He is pure Holy Love. And it is just because He is pure, Holy love that He can forgive absolutely. Moberley thinks that a perfect penitence alone must condition absolute forgiveness ; and thus he is compelled to posit a perfect penitence on the part of Christ for all men, which each one of us appropriates. Apart from the fact that such a demand for a perfect penitence as a condition of sin would be making forgiveness a

“transaction,” Moberley makes forgiveness depend on the penitence and not on God’s Holy Love. What I think we can say is that Moberley’s theory like all moral theories makes the whole process turn on man’s condition of forgiveness, not on God’s grace. Be that as it may ; what is certain is that the more perfect the penitence, the more sure is the *metanoia* ; but the forgiveness is absolute from God’s side if there is penitence which is real and not the morbid penitence which leads to regression. Just as when we are guilty we are hopelessly guilty, so when we are forgiven we are absolutely forgiven—there is no half-way house. A perfect penitence is not the same as a perfect repentance. Repentance includes both *penitentia* and *metanoia*. *Penitentia* may be sincere and deep and yet the *metanoia* far from perfect. That is why we fall into the very sins we have but confessed and for which we have been forgiven. To the degree that penitence is sincere and profound, to that extent the soul cannot consent to sin. St. Paul does not doubt his forgiveness nor the sincerity of his penitence although he was conscious of division in his soul : “ That which I would I do not, and that which I would not that I do.” The penitence was sincere and profound but the *metanoia* was not complete.

A final word may be said as to why all theories of the Atonement have their triumphs by eliciting the intuition that God forgives. The dogma is intuited but not the doctrine. We must remember that under the conviction of sin the sinner is not seeking a theory of the Atonement but forgiveness. It is not the truth of the doctrine that elicits the intuition but the dogma ; that is to say the preaching of the dogma elicits the intuition that God forgives. The fact that the Penal theory still elicits the intuition that God forgives is due to the psychological fact that many people’s penitence is tinged with a strong feeling of guilt ; their punitive conscience always demands punishment, and in the case of sin, a punishment they cannot inflict upon themselves. Hence the attraction of the theory lies in the fact that it offers to the punitive conscience a substitute who has borne their punishment, and all that remains for them is to appropriate it. The Satisfaction theory can only grip those who can believe that the merit of one can cancel the debt owed by another ; while the moral theories will always appeal to those whose first movement towards a conscious relation to God was not motivated by any fear of sin or deep conviction of sin, that conviction growing with their growth in grace.

We conclude then that the psychological analysis of the conditions of forgiveness on both God's side and man's does not give us a theory of Atonement, but the material which the theologian may weave into a theory that synthesises both reflective thought and experience. I may go further and say that the Revelation of the forgiveness of sin, and the Revelation that the forgiveness is related vitally to the Cross are true to experience. In other words, the dogma finds a response in experience, and that the Church neglects at her peril the preaching of that dogma.

WRITTEN COMMUNICATIONS.

The Rev. Principal H. S. CURR wrote: Professor McKenzie has called attention in this paper to a phase of soteriology which has been neglected in a great measure. It is surely a matter of great importance that the experience of forgiveness should be analysed in the light of psychological doctrine, and his discussion has the merit of stimulating reflection on the subject as well as of providing a great deal of information regarding it.

I cannot help thinking that Dr. McKenzie fails to do full justice to what is known as guilt. There is a reference to it in the concluding paragraphs of his paper, but he does not seem to have grappled with the gravity of the problem which it creates. The classic cry for pardon is surely Psalm li. The burning words may be taken as they stand. The force of the argument is not affected by any critical enquiries as to the date, or occasion, or authorship of that great penitential lyric. With it one might be allowed to class the hymn "Rock of Ages." I do not suggest that it can be justifiably mentioned in the same breath as the Hebrew poem, but it gives classic expression to the soul's longing for an experience of pardon and cleansing which, to my thinking, differs very deeply from that which the writer of the paper seems to consider to be normal and necessary. Sins and forgiveness are here reduced to terms of outraged love, that word being interpreted with reference to God, not in the Biblical sense, but in that of modern humanitarianism. Was it Principal P. T. Forsyth who used to maintain that Divine Holiness and Divine Love are different names for the same Divine Attribute?

It is precisely there that the psychological argument enters. There are classic pictures of guilt in the Bible and in the worlds'

literature, whether produced in a Christian context, or otherwise, and the effect of these is tremendous. In such cases forgiveness is bound to be a marvellous and mighty experience, since, as it has been well said, nobody can be said to have entered into the joy and peace of forgiveness unless he is able to forgive himself. The voice of conscience must be silenced, not because it is stifled, but because it is satisfied. A simple analogy will make the point clear. Sin is often regarded as debt. Let us, then, take the case of a bankrupt. How can he gain self-respect again? He may pay a composition to his creditors in accordance with a legal decision. He may by herculean efforts pay off his indebtedness as Sir Walter Scott did. Some benefactor may pay his debts so that, like the famous figure in Longfellow's poem "he owes not any man." There is a healthy instinct in human nature which impels us to make amends when we have failed by omission or commission. That is satisfied in the Cross of Christ which Professor Burkitt so felicitously describes as inevitable. It is inevitable psychologically as well as in every other way. In these circumstances, I find myself unable to endorse Dr. McKenzie's sentences. "God takes the burden of healing these disturbed relationships between His holy love and the sinner upon Himself." "There was no other good enough to pay the price of sin; that price is paid not to God but by God." To my way of thinking the price is paid both to God and by God. In other words, God owed it to Himself, as we say in daily life with reference to men and their ways. The extent of God's debt to Himself may be measured in some degree by the fact that it could only be discharged by the death of His only-begotten and well-beloved Son, Jesus Christ. "But God commendeth His love toward us, in that, while we were yet sinners, Christ died for us" (Romans v, 8).

Mr. W. E. LESLIE wrote: While the paper raises an important question in a suitable way it has two marked defects.

We know that anthropomorphism is legitimate, for we could have no thought of God without it; but when Dr. McKenzie "psychologizes" God he is on very precarious ground.

The second defect is more fundamental. The author does not seem to be clear as to the nature of an "experience." In various places he equates "to experience" with "to sense," "to realise,"

“to feel.” He recognises the distinction between a subjective experience or feeling and its objective cause, but I think he nevertheless confuses them. Take his first example as an illustration (page 1) “I saw God (*sic*) high and lifted up” is *not* an experience. The experience is the vision of a high and lifted up being. The Seer adds the information as to the identity of that Exalted One. We believe that his explanation is correct. But it does not form part of what he felt. Many have told us that they have seen the Virgin Mary, etc. In their case we must accept their experience, but we probably reject their interpretation of their experience. I think that the theology of experience which the author builds up is really based upon this ambiguity.

Col. the Rev. F. J. MILES wrote: A worthy contribution to the reconciling of different theories of the Atonement, but a point might well be made under the caption “Does God suffer?” (page 33, line 18). It is obvious that the degree of resentment against sin is measured by the depth of love of the one sinned against for the one sinning. I may be but slightly affected by a sin against me by a stranger, while being cut to the quick and bitterly resenting a like sin against me committed by one I dearly love.

Dr. R. E. D. CLARK wrote: In his beautiful and thoughtful paper Professor McKenzie has argued that if God’s mind be like our minds, He cannot forgive without suffering. Yet the suffering to which these arguments lead us, is the suffering associated with an *internal* tension, it is the mental suffering in the heart of God to which the Old Testament prophets so often call attention. This, surely, is not to be identified with the suffering of the Cross.

The Cross does not merely show us a struggle within the heart of God, it reveals something much more surprising—the fact that man was allowed to inflict actual suffering upon his Maker. How shall we seek to understand this new feature—the fact that God was not content to make a self-sacrificing mental effort to love the sinner, but that he chose that His Son should be crucified by wicked men?

Here again psychology—the study of man’s own mind—does in part enable us to answer this very question. If a father watches

his son develop a character which is both cruel and loathsome and finds him heedless to advice and appeals, the time may come at length when every bond of sympathy and understanding will be broken. The father may begin to feel that hope itself is gone—that he must be content to abandon his son and think of him no more. Can human love do anything before lost hope severs the relationship between father and son for ever? Yes, there is one more thing it can do, though perhaps not one in a thousand of the best of earthly fathers would sink to do it. Such a father might contrive that his son, all unwittingly, should steal his father's goods, should buffet his father's body, should commit the sins of his everyday life upon his father. And then the hope that was being killed by disappointment would surely return again in the father's breast: he would know at last that some *new* thing had happened which in due time might suddenly and irresistibly bring home to the son the enormity of his crime.

Here, surely, we have as in a glass darkly a picture of the love of God to man—the love that sought to win us men not only by sending prophets and wise men to tell of the grief and tension in God, but the love which, undespairing of past failure, so ordained that in the fullness of time, we men should all unwittingly pour out our callous hatred on the One who loves us most. He died that we might dimly see what our cruelty, deference to public opinion, moral weakness and godlessness look like in the eyes of our Maker. He suffered that we, awaking at long last to see the horror of sin, might turn and be forgiven.

AUTHOR'S REPLY.

The most important criticisms I have to answer are those by Principal Curr and Mr. Leslie.

The Principal finds some difficulty in my interpretation of "guilt." I was careful, however, to use the phrase "the sense of guilt." Not for a moment does the psychologist belittle the wrong done to God by sin, indeed he deepens it. The 51st Psalm is indeed the classic expression of the state of repentance which is outlined in my discussion. "My sins are ever before me"—yes, but not as a barrier to the presence of God, but the dynamic urging him to seek the clean heart and the renewed mind. The sense of guilt, which the psychotherapist condemns, is that sense of sin whose content is

mostly fear of punishment and which inevitably tends to repress evil tendencies so that they are just as active in the unconscious mind as they were before conviction. A true repentance always seeks the clean heart and the renewed mind.

Forgiveness is always a "marvellous" experience, but it is God's forgiveness which makes it marvellous and not man's forgiveness of himself. I cannot think that a Christian can ever forgive himself for a wrong done; what keeps him from a melancholy state of mind is the expression of God's forgiveness. Certainly every forgiven sinner will want to make amends for wrong done as far as he is able; but that is a consequence of the gratitude for God's forgiveness, not because he has forgiven himself. I do not think, however, that the Principal and I differ in the fundamental sense, although I should not speak of God "owing a debt to Himself." That is psychologizing God much more than I have done, and for which Mr. Leslie pulls me up.

I next turn to Mr. Leslie's criticism. It is true that the psychologist is on precarious ground if "psychologizing" God. Here I think Mr. Leslie is making "psychologizes" equivalent to "psycho-analyze"!! There is no other way of treating the Atonement except by the attempt to understand God's reaction to sin, and that is "psychologizing." The theologian is psychologizing when he contends that God *hates* sin.

Mr. Leslie brings a more severe charge against me when he argues that I have confused his meanings of the word "experience." Everything that happens in our mind is an "experience." When we "sense," "realise" or "feel" something, we are undergoing an experience; but it is also part of experience to relate what we "sense," "realise" or "feel" to its cause—it is a cognitive experience. When Mr. Leslie says: "I saw God high and lifted up" is *not* an experience, and then immediately goes on to say that "The experience is the vision of a high and lifted up being," he surely contradicts himself. What I think Mr. Leslie is trying to get at is the differentiation between the facts of experience and the interpretation of the experience. I guarded against any ambiguity on page 31, and also guarded against the same ambiguity in a later part of the paper, where I say that the experience of forgiveness does not automatically give us a theory of forgiveness. The theory, the

cognitive side of the experience, is not immediate, but involves reflection and inference.

The main object of my paper was to try and synthesize the subjective and objective theories of the Atonement through a psychological analysis of the experience of forgiveness; and nothing in the discussion has shown any real defect in the synthesis. Naturally, in a paper one cannot go into all grounds for every position taken up, although I have tried to give grounds for my position in the volume, "Psychology, Psychotherapy and Evangelicalism."

851ST ORDINARY GENERAL MEETING

HELD AT THE ALLIANCE HALL, WESTMINSTER, S.W., ON
MONDAY, APRIL 12TH, 1943, AT 4.30 P.M.

DOUGLAS DEWAR, Esq., B.A., F.Z.S., in the Chair.

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

The CHAIRMAN then called upon Dr. R. E. D. Clark to read his paper entitled "Evolution and Entropy" (being the Langhorne Orchard Prize Essay, 1942).

The Meeting was later thrown open to discussion, in which Dr. Farmer and Mr. McAdam Eccles took part.

Written communications were received from Sir Ambrose Fleming, Lt.-Col. L. M. Davies, Rev. Principal Curr and Mr. E. A. Mobberley.

The following election has been made:—W. E. H. Stokes, Esq., Member.

EVOLUTION AND ENTROPY.

By ROBERT E. D. CLARK, M.A., PH.D.

(*being the Langhorne Orchard Prize Essay, 1942*).

AT first sight entropy and evolution appear to have little to do with one another. The one reminds us of the steam tables in the handbook of engineering, the other of the past history of life upon our planet. Yet, for all their dissimilarity, their interconnections form a fascinating study which is intimately connected with the philosophy of modern science.

Let us start by seeking to understand the meaning of entropy. Deep down in the subconscious minds of us all certain ideas lie enshrined, ideas which we have taken for granted as far back as we can remember, and which we have learned to include in the all-embracing term "common sense." These ideas are so much a part and parcel of ourselves that to most of us it seems the height of stupidity to drag them out into the open and seek by recondite reasoning to justify ourselves for accepting them uncritically.

Among a group of ideas of this kind—the idea that events are connected by cause and effect, that the outside world exists and is intelligible to our minds, and so on—there is one of more than usual importance, notwithstanding the fact that philosophers have often overlooked its existence. It is not easy to put the idea in words; simplified definitions have a way of omitting scores of exceptions, and making us doubt from the start the existence of the thing we define, while long involved statements suggest a complexity which we are apt to suppose resides in the things we describe, instead of in the words we use to describe them. So let us resolve the difficulty by reminding ourselves of a familiar

story. In the book of Genesis (xliii, 33) we read of a lord of Egypt who entertained eleven men who were brothers. The men so the story goes, " marvelled one with another " when they found themselves seated at table in the exact order of their ages.

Let us seek to face the question : why was it that they marvelled ? For answer we can only say that such an event seemed to contradict one of the basic ideas entailed in " common sense." The men had never heard of the laws of probability, of entropy, or of the second law of thermodynamics, but they rightly suspected that the long arm of coincidence would hardly have arranged them in just that way. Somehow, they guessed that intelligence was at work, though to all appearances this could hardly have been the case. In the end, so it would seem, they decided to trust to appearances instead of intuition. Nevertheless, they soon learned that their intuition had not deceived them.

Now let us span the centuries. We find at once that the same intuition has been at work in every age ; but while a majority of people have always taken it for granted, there have always been those who, like Joseph's brothers, have sought to bring it into consciousness, and then, with clever arguments, to convince themselves of its falsity. At this, however, we need feel no surprise. Every intuitive idea has suffered a similar fate ; philosophers have doubted causality, have doubted the existence of a physical world, have doubted interaction between mind and matter, have doubted every conceivable dictate of common sense. And so, right up to modern times, men and women are to be found who suppose that by the working of some inscrutable principle, nature is in the habit of producing order where chaos existed before.

This denial of a common sense intuition formed a part of the Platonic philosophy, which exerted an enormous influence on medieval thought.* For Plato, nature was ever tending to produce the ideal *eidōs* or form—that is to say, she was able to produce order of herself. It was this notion which for so long prevented the birth of modern science, and it is possible to trace the way in which science after science was able to come into existence only as the notion of the Platonic *eidōs* was overthrown. To-day it is difficult indeed to imagine ourselves back in a medieval world in which slime generated eels, flies, mammals and (so Aristotle said) even men, in which mice could be

* R. O. Kapp, *Science Versus Materialism*, 1940, p. 182 ff.

made from a soiled shirt and some flour, and fossils came into existence as a result of "formative virtues" in the rocks.*

The early scientists abandoned the medieval attitude. Again and again we find them dissatisfied with the idea of a self-ordering principle in nature. Instead, they make the tacit assumption that order does not arise of its own accord and that, in fact, if things are left to themselves, order may diminish, but cannot increase.

In the science of heat it was soon found that a hot body and a cold body, placed near to one another, both reached a uniform temperature; but it was quite impossible to take a body at uniform temperature and divide it into hot and cold parts. This, put in simple language, became known as the law of *entropy*, and it clearly showed that something irreversible took place in nature. Indeed, were this law to be proved wrong, perpetual motion machines would become possible.

Later, two important points became clear. First of all it was realised that the actual event taking place in nature when hot bodies warmed cold ones was a general disordering of the molecules; secondly, it was found that literally hundreds of well-known laws in physics and chemistry were reducible to the law of entropy, thus demonstrating the enormously wide scope of what had hitherto appeared to be a law in that rather specialised branch of engineering—the study of the steam engine.

It seems advisable, therefore, to extend the meaning of the word "entropy" so as to make it a synonym for "disorder." In this sense the "law of entropy" must be understood to mean the law that disorder will tend to increase, but that order can never arise spontaneously from chaos.† It is in this form only, of course, that the law is related to the theory of evolution.

Not only has the law of entropy been vindicated again and again in every science, but scientific workers of to-day almost invariably assume the law in their work, though they do not always notice the fact. So much is this the case that modern science makes no attempt whatever to explain natural phenomena *in general*, but only such phenomena as exhibit order, whether in

* As J. M. Mecklin has recently pointed out (*The Passing of the Saint* 1941, p. 36), it was generally supposed in medieval times that nature responded, almost automatically, to man's emotional needs—and naturally enough these required an organising power in the inanimate world.

† In order to avoid confusion with the specialised law of entropy of the physicist and engineer, it was suggested by the present writer (in 1936) that the wider law should be referred to as the *Law of Morpholysis* (*luo*= to loose; *morphe*= form). Prof. R. O. Kapp (*loc. cit.*) has recently suggested the term *adiathesis* for the same principle.

space or time.* If, for instance, a group of meteorites were seen to fall upon the moon, making craters in the arrangement shown :—



the precise arrangement of these craters would universally be regarded by astronomers as being at random, and no one would be concerned to discover why the crater A, for instance, was not situated slightly to the left or to the right of its actual position. If, on the other hand, a group of craters arranged in a precisely similar way had previously been formed upon the earth, the lunar craters would at once be recognised as possessing order, and so explanation would become necessary. Astronomers and mathematicians, knowing instinctively that the order could not have arisen by chance, would at once try to “explain it away” by proving that, for instance, the known laws of force between small free objects moving in space are such as to necessitate the very configuration which had been observed on the moon.

In short, the business of science is to explain instances of the apparent production of order which are observed to occur in nature. Moreover, this process of “explaining” is nothing other than “explaining away”; it is the attempt to show that in the last resort a given instance of order did not arise of itself, but because it was there already in nature in a latent form. In the world of physics chaos is constantly increasing, energy is becoming less and less available. But while some of the still ordered energy is turning into energy in a less ordered condition, it will chance now and again that groups of atoms will arrange themselves in what *appear* to be new ways. It will seem to the uninitiated as if atoms and molecules have arranged themselves and created something new; but the scientist tries to show that however startling the novelties that emerge, they were really present all the time: they are the logical and deducible consequences of what was already in existence.

* Prof. P. W. Bridgman (*The Nature of Thermodynamics*, 1941, p. 172) is one of the few writers who have realised this fact. “It is strange,” he writes, “that we do not seem to require any explanation for the tendency of a system of many members to increase in the disorder of its arrangement, but this tendency is such a universal property of the systems of ordinary experience that we know intuitively when to expect it and do not require any explanation, unless we are unusually critically minded.”

The simplest possible example of this is to be found in the steam engine, and since the physical explanation of the working of this machine is typical of all physical explanations of the production of new order, it is worth discussion in detail. The remarkable fact about the steam engine is that by its means we may convert the purely random movements of molecules of water into useful work—the ordered movement of a piston along a cylinder against an opposing force. It is as wonderful as if millions of fireflies, flitting aimlessly in any and every direction, should suddenly produce a stream of tiny points of light moving in the same direction and exactly parallel to one another. How is the miracle performed?

The physicist has found a simple and adequate answer. He has discovered that, despite appearances, the miracle is *not* performed at all. The cylinder and piston simply behave as a sorting machine. Molecules which happen to be moving towards the piston are alone able to give up their energy—the rest just rebound repeatedly from the cylinder walls until they too chance to be moving in the right direction. If the process stops before the whole of the energy of the molecules has been given up—before the absolute zero of temperature is reached—only a part of the energy of the moving molecules can be converted into useful work.

Again, if we watch a crystal in the process of formation, we see an apparently structureless liquid or vapour producing complex and beautiful patterns. How comes it that the molecules arrange themselves in this ordered manner?

Crystallisation takes place in two stages. Firstly, invisible “seeds” or “nuclei” come into existence and, secondly, these grow into larger crystals. There is no need to discuss the technicalities of the subject here. Suffice it to say that arrangements of the atoms or molecules in the crystal are determined wholly by their shapes, polarisability, and other properties. In a few simple cases (the rare gases) the crystal structure has been successfully predicted as a result of observations made upon a gas, and there is little doubt that in time this achievement will be accomplished in countless other instances. Thus the arrangement of the atoms or molecules in a crystal nucleus is *determined* before the crystal has come into existence. Just as the shape of a knitting needle determines the fact that knitting needles, when shaken together, will collect in long thin bundles, so the order of the crystal is already “present” in the liquid or vapour in the form of the properties of the molecules. The fact that, supposing we could see them, molecules do not “look like” the crystals

to which they give rise is, of course, irrelevant. In just the same way the sound track on a cine film does not "look like" the waves of sound which we hear as music or speech; but all would agree that the whole organisation of the resulting sound was ultimately present in the sound track. Or, to anticipate somewhat, chromosomes and genes do not "look like" full-grown animals—as the pre-formationists used to suppose—but they none the less contain the organisation of biological organisms.*

We come now to discuss the bearing of these ideas upon biology. Do biologists make the same presuppositions about order as do scientists working in other fields? Undoubtedly they do. Most modern advances in biology have been based upon the law of entropy. Hereditary factors, leading finally to the idea of physical genes, were postulated to account for the resemblance between offspring and parent, simply because the biologist could not believe that the organisation of an animal could arise *de novo* with each generation, but must have been present in some form in the egg or sperm. Subsequent research has vindicated this bold step; to-day it seems likely that genes have actually been rendered visible in the salivary glands of the drosophila fly. Biologists have sought to interpret the growth of the embryo with the help of the concept of a "field" for the same reason. Biological mechanisms by the score—the digestion of food or the circulation of oxygen by means of the blood—have been interpreted according to the rules of physics and chemistry, which in their turn depend upon the law of entropy. Biologists have themselves pointed out that the processes of growing old and dying are clear manifestations of the law of entropy.† And so the list might be continued.

The detailed study of evolution has again and again revealed the working of the same law. Many years ago Dollo formulated the generalisation that if, during the course of evolution, an organ was reduced it never again regained its original importance, while if it disappeared altogether it never reappeared. Even if an organ is lost which was valuable in a previous environment,

* The point of view here expressed is, of course, radically opposed to the philosophical doctrine known as *emergence* (C. Lloyd Morgan, *Emergent Evolution* 1923 etc.). It need only be said that this doctrine is wholly without factual evidence in its support and that scientific advance has ultimately depended upon its falsity.

† L. von Bertalanffy, *Das Gefüge des Lebens*, Leipzig, 1937, p. 116. H. Pictet (*Arch. de Sc. phys. et naturel*, 1915, pp. 181-200) believes that old age and death are connected with the progressive stabilisation of protein molecules with the consequent production of highly stable cyclic compounds.

and that environment is again restored, the organ does not reappear—at best some other organ takes its place.

More recent research has shown that Dollo's law applies not only to visible bodily structures, but to scores of biochemical and physiological adaptations. To cite but two striking instances: the Mexican axolytl has lived for centuries in iodine-free water, and has lost the power to synthesis thyroxine from this element. Since metamorphosis in amphibia is dependent upon the action of thyroxine, the axolytl has long since ceased to turn into a salamander. To-day the amphibian breeds true even when iodine is available, and will not metamorphise. When, however, it is treated with ready-made thyroxine, it turns into a salamander. Again, a culture of *Bacillus pyocyaneus* on one occasion lost its power to make the usual bluish-green pigment. For thirty-nine years the new strain was cultivated, but never recovered its original colour.

Dollo's law, in fact, has been found to hold both in anatomy and in biochemical mechanisms over an exceedingly wide range of species, nor has any definite exception to its operation been discovered.* Its relation to the law of entropy is manifest: complex structures naturally cannot arise by chance when they have once been lost.

Again, Blagovenschenki,† in an exceedingly interesting monograph, has shown that biochemistry is intimately related to evolution. Simple substances—amines, amino-acids, glycocoll-betaine, simple terpenes, etc.—are widely distributed in plants. Complex substances—alkaloids, resins, etc.—on the other hand, are very restricted in their distribution, but are formed by the condensation of simple substances into rings. Once formed, the latter are very stable, and are therefore no longer able to play a part in metabolism, so that they eventually cause the death of the plant and often of the species. The chemical evidence thus makes it possible to recognise in every phylogenetic series stages of juvenility, maturity and senility. In short, the evolutionary process always proceeds from the highly improbable—the long chain unstable compounds of simple structure—to the highly probable stable cyclic compounds which are ill-adapted to the life of the species, and often even cause its death. Blagovenschenki compares this to the process of disordering of energy in which free energy always diminishes in physical changes, that is to say, less stable arrangements become more stable.

* J. Needham, *Reversibility in Evolution*. *Biol. Reviews*, 1938, 13.

† A. V. Blagovenschenki. *Biologia Generalis*, 1929, 5, 427.

The evidence of genetics points in a similar direction, as modern geneticists have not been slow to point out. The remarkable changes which occur in the genes as a result of bombardment by X-rays, α -particles, electrons, quanta of ultra-violet light, etc., all appear to be of a destructive nature. That this *must* always be the case is generally regarded as a debatable question, but at least no known case of an increasing organisation as a result of mutations is yet to hand.* Moreover, the view that mutation followed by natural selection is the raw material of evolution is quickly gaining ground, and if this is so we have yet further reason for believing that evolution is consistent with the law of entropy. In this connection we must bear in mind that the types of mutations produced by artificial means are statistically identical with those produced by nature, showing, apparently, that artificial ways of inducing mutations only have the effect of hastening the natural process.

On the basis of this and similar evidence, some biologists have boldly identified the law of evolution with the law of entropy, though not all have realised the implications of this identification.

Taken at their face value, these facts seem to suggest that evolution is simply the unfolding of organisations which are already present and that, despite appearances, it cannot involve any real rise in the degree of organisation of an organism. As is well known, a number of biologists have stated this conclusion boldly. Eimer's original conception of "orthogenesis" involved the view that each species could only evolve along specified directions which were already determined by the structure of its germ plasm. Berg's famous work, *Nomogenesis*, involved the same view, which was supported by a wealth of research material. Lotka, whose *Principles of Physical Biology* is stated by Needham to be "one of the three or four greatest contributions to biological thought in the present century," simply denies that any rise

* Some instances are known in which a gene is *apparently* lost as a result of such bombardment, but may be regained again as a result of a later mutation. It is *possible* (with H. J. Muller, *Biol. Rev.* 1939, 14) to urge that the second mutation shows a rise of organisation, but more likely that the original gene was not, in these cases, destroyed at all but its development simply blocked. Muller is forced to admit that apart from these dubious cases, mutations involving a rise in organisation (*hypermorphic mutations*) have not been proved to occur. R. Goldschmidt (*The Material Basis of Evolution*, 1940), frankly abandons all hope that mutations of the ordinary kind will convert one species into another, but supposes that novelty may arise by a single very extreme (*systemic*) mutation. He produces no evidence that such mutations are possible, other than those involving loss of structure.

occurs in organisational level during evolution. H. F. Blum* openly confesses that, but for the fear of giving away ground to the theologians, such conclusions would certainly have had a far greater impact upon biological thought than they have, in fact, exerted. D'Arcy Thompson† shows how all the classical evolutionary changes found by the paleontologists can be connected together by slowly changing the geometrical co-ordinates and finally concludes that the great organisational gaps in evolution are to-day unbridged and likely to remain so for ever.

Now let us turn to see how far those who still believe in a rise in the organisational level during evolution have attempted to justify their position.

Following a very tentative suggestion by Eddington,‡ it has been asserted by many writers§ that the apparent clash between evolution and entropy is illusory. Just as a part of the energy of hot steam may be converted into highly ordered work at the expense of the remainder so, during the course of evolution, animals may in the last resort have obtained their organisation at the expense of the sun's energy which has been degraded on the earth's surface.

Though ingenious, this analogy will not bear examination. As we have already seen, the steam engine creates no order which was not there before; it merely makes use of molecules which happen to be moving in a certain direction. The analogy certainly shows that reproduction in biology is not inconsistent with physical principles, but it does nothing whatsoever to show how *new* types of organisation could come into existence in the first place.

The second analogy which has been invoked is that of the crystal. Here, at all events, it is urged that remarkable new structures can come into being of their own accord as atoms or molecules organise themselves into a crystal lattice. Some writers go further than this and assert that we may see a series of rises of organisation in nature: electrons and protons produce atoms, atoms produce molecules, while molecules produce crystals, or reach a still higher level in the living organism.

* H. F. Blum, *American Naturalist*, 1935, 69, 354.

† D'Arcy W. Thompson, *On Growth and Form*, C.U.P., 1942, p. 1093.

‡ A. S. Eddington, cf. Pres. Add. to Mathematical Assoc. 1931. *Nature* 1931, 127, 448. *New Pathways of Science*, 1935, p. 56.

§ For example, E. Schrödinger, *Science and the Human Temperament*, 1935, p. 39.

According to the doctrine of "emergence," new qualities turn up when complex structures are made from simple ones, and the coming of life is, therefore, merely the last stage in a series of transitions which are to be found throughout nature.

The doctrine of emergence has been singularly unsuccessful, in so far as it relates to the production of new organisation. Thus, crystal structures are determined by the properties of atoms, and in no sense do they represent the "emergence of novelty."

Modern research has shown that the absence of chemical equilibrium affords a criterion of novelty. Certain chemical and physical changes are, under suitable conditions, found to be reversible, while others are irreversible. Thus if hydriodic acid is heated, an equilibrium between this gas and its decomposition products, hydrogen and iodine, is rapidly attained, after which no further change occurs: on the other hand, if sugar is heated it undergoes complete decomposition, and no reversible equilibrium is established. In the first case, hydrogen and iodine can be built up to form hydriodic acid, but in the second water, carbon, etc., do not give sugar. The difference between the two cases is simply that hydrogen and iodine can only combine in one way, so that no true rise in organisation occurs when hydriodic acid is formed. On the other hand, there is no limit to the number of ways in which carbon and water can combine, so that a particular molecular structure, such as a sugar molecule, must be considered as an organised whole. It cannot be said to "exist" already in the atoms out of which it is made.

The production of atoms out of positive and negative charges, of molecules from atoms and of crystals from molecules are all cases of the first-mentioned type. In each case the constituents, on being placed together, can produce one or at best a very few combinations under particular physical conditions. If several possibilities arise all are formed; mixtures of many elements are, for instance, produced in the stars.

In all such cases parts themselves possess properties which determine the shape of the whole. Thus, as we have already seen, the shape of the whole is already present in the parts in the same sense that a cause may be said to contain the effects which it produces.

In the case of complex organisations, however, this is no longer the case. The individual words or letters of a page of print do not in any sense contain their final arrangement, nor is it conceivable that the intricate complexities of living organisms can be

necessary consequences of the amino-acid or carbohydrate molecules out of which they are constructed. If the evidence of "inconceivability" is doubted, we have the direct evidence afforded by organic chemistry that such compounds show no tendency to organise.

Biologists have sometimes compared biological organisms with atoms which, after they have lost electrons, soon regain them and so remake their original structures.

But as Kapp* has pointed out, no scientist to-day doubts the fact that the laws which govern the building of atoms, of molecules and of crystals are the same laws which govern all other phenomena in inanimate nature. This being so, it is hard to see why the biologist should seek analogies with atoms, molecules and crystals rather than, say, with the events which take place when a boulder disturbs the end moraine of a glacier. To do so is, in the last resort, to replace a fundamental distinction between dead and living matter by another equally fundamental distinction between processes of atom, molecule and crystal building and the rest of physics.

The analogy of the crystal may be carried one stage further. In rare instances crystal "seeds" come into existence as a result of the random motions of molecules, and when this occurs they can often grow and reproduce themselves. Is it not possible that in the same way genes may occasionally become more complex, and then likewise perpetuate themselves? But here again the study of the crystal reveals the difficulties such an hypothesis must meet. The difficulty associated with the building of a nucleus increases enormously with small rises in the complexity of a molecule, as every laboratory worker in organic chemistry is only too well aware. The fact that some very complex organic substances, such as proteins or certain viruses, crystallise relatively easily is not to the point, for investigation has shown that in such cases the organisation of the crystal by no means fully represents the complexity of the molecule, identical crystals being formed despite considerable changes in chemical constitution.†

* *loc. cit.*, p. 164.

† Thus Stanley (*Science*, 1936, **83**, 626) made derivatives of the crystalline tobacco mosaic virus by treating it with various reagents (formaldehyde, nitrous acid, ultra-violet light, etc.). The products differed greatly in their biological effects, but all gave mixed crystals with one another and with the original virus. The same phenomenon is very frequently found in connection with complex natural products. In such cases it is clear that the crystal form is substantially unmodified by changes in a part of a large molecule and so cannot enshrine all the organisation of the molecule.

Julian Huxley* attempts to avoid the difficulty by invoking natural selection. "Natural selection," he writes, "achieves its results by giving probability to combinations which would otherwise be in the highest degree improbable. This important principle clearly removes all force from the 'argument from improbability' used by many anti-Darwinians, such as Bergson." But molecular combinations are not made more probable if, when once they have been formed, they are enshrined in a species. The analogy of the crystal nucleus shows us the extreme limits of spontaneous ordering in nature, and it is an analogy which is unfavourable to the mechanistic evolutionist.

The fact is that the formation of molecular structures as highly organised as those in living matter is inconceivably improbable, and no suggestion has yet been made which will alleviate the difficulty.†

According to yet another suggestion,‡ the "order" of the entropy law and the "order" of biological morphology do not refer to the same thing—in fact, as the one diminishes, so the other increases, for while entropy rises, crystal patterns often come into existence.

But again this statement proves physically unsound on examination. As we have seen, the formation of a crystal pattern is most emphatically *not* the production of new order, but merely makes visible an order already possessed by atoms and molecules. While organisation is being lost it is not surprising if, during the process, that which still remains becomes more readily visible.

Thus the more carefully the matter is considered, the clearer does it become that the theory of the evolution of highly organised organisms from simple ones violates a fundamental principle of science.

At this point, however, having totally failed to reconcile mechanistic evolution with scientific principles, the biologist may urge that, at all events, an attempt to catch him on the horns of a dilemma is both unscientific and unfair. He is certain that evolution has occurred, for the highly organised mammals in existence to-day were certainly not in existence in remote geological time; but that is no reason why he should be forced to explain *how* it happened. The "how" may safely be left to future research; meanwhile, the facts must be accepted.

* J. S. Huxley, *Nature*, 1936, **138**, 573.

† R. E. D. Clark, *Jour. Trans. Vict. Inst.* 1936, **68**, 172.

‡ J. Needham, *Time: The Refreshing River*, C.U.P., 1943.

Though plausible enough, this evasion cannot stand. The theory of a rising level or organisation in evolution is so directly contrary to the presuppositions of all scientific thinking that it cannot be left to future discoverers to effect a reconciliation by "filling in details." If it is true that biology forces us to accept this interpretation of evolution—and all biologists are not convinced that this is so—then if no explanation is forthcoming, let it be admitted candidly that evolution has occurred in the face of all the laws of nature: let it be admitted that theologians are right in insisting that if the process took place at all it was God-guided and was, in fact, equivalent to a whole series of creative acts.

After all, the biologist has no grounds for adopting an attitude wholly dissimilar to that adopted by scientists in other fields. The mechanistic biologist is at pains to show that the laws of physics and chemistry are applicable to biology: he has, therefore, no right to postulate a law of increasing complexity in defiance of those sciences.

Nor is it relevant to reply that an overwhelming mass of evidence supports the theory of evolution, for in no other science has overwhelming evidence been permitted to jeopardise the very mental processes by which we seek to understand nature.

There are literally scores of instances in which direct experimental observations *apparently* violate the fundamental laws of science, but the laws are not called in question. Even in modern atomic physics the basic principles of science have in general remained untouched, save that in some cases the theory of probability has undermined the immediate usefulness of the principle of causality. In practically every instance, scientific explanation has had its greatest triumphs in its ability to explain away apparent exceptions.

Thus, when a stone falls to the ground it *apparently* gains energy, but no one uses this as evidence against the law of the conservation of energy; instead, the stone is said to have possessed the energy before in a *potential* form. Recently cinematographs of the sun's corona showed streams of matter constantly falling towards the sun, but no sign that they ever rose upwards to feed the "invisible hose." Thus direct observation seemed to support the view that matter could arise from nothing, but the conclusion reached by astronomers was that the matter rose upwards in an *invisible* form. This point of view has since explained several related phenomena.

When a piece of red-hot iron is allowed to cool it suddenly gets hotter (*recalescence*) at a certain stage in the process, but no physicist urges that therefore the law of entropy is violated. Repeated accurate measurements showed that the surface tension of mercury in a vacuum was raised by admission of air, though it was easy to prove from the entropy law that it ought to have been lowered. Physical chemists do not doubt the entropy law: they hold that the measurements were vitiated by the presence of dirt!* When radium was discovered it was found to maintain itself at a higher temperature than the surrounding air, and it was suggested in some quarters that an exception to the law of entropy had at last been discovered.† Rutherford saw the falsity of such reasoning immediately and, by assuming the truth of the entropy law, he was able to create and develop the science of the atom. At one time it was urged that since animals made energy with a greater efficiency than that predicted by Carnot's theorem for a reversible steam engine, the animal body violated the law of entropy. Clear-thinking physiologists saw that the evidence only proved that the mechanism of muscle contraction was not that of the reversible steam engine.

In face of these and many other examples, it would be reckless indeed to see in evolution a self-ordering principle of nature which runs contrary to the entropy law. If in other sciences observable events which seem to contradict this law are never taken at their face value, it is difficult indeed to see why a biological theory about non-observable events of past history should be given an altogether different status. Moreover, it is difficult to avoid the conclusion that previous attempts to make use of biological concepts in defiance of ordinary scientific thinking have been disastrous in the history of biology itself. One is reminded in particular of the fierce opposition of Haeckel and his contemporaries towards His and Wilhelm Roux who, at the end of last century, were trying to apply science to embryology and to build the new science of "developmental mechanics." His‡ tells us that the scientists of his day thought they had "better things to do in embryology than to discuss tensions of germinal layers and similar questions, since all

* R. S. Burdon, *Surface Tension and the Spreading of Liquids* 1940, chap. 3.

† J. Needham and W. Pagel. (Ed.). *Background to Modern Science*, 1938, p. 58.

‡ W. His, *Proc. Roy. Soc. Edin.*, 1888, **15**, 294.

embryological explanations must of necessity be of a phylogenetic nature." He continues: "This opposition to the application of the fundamental principles of science to embryological questions would scarcely be intelligible had it not a dogmatic background . . ." The same words can surely be applied to the doctrine of constructive evolution and for precisely the same reason.

It seems reasonable to conclude, therefore, that if in past ages complex organisms ever did evolve from simpler ones, the process took place contrary to the laws of nature, and must have involved what may rightly be termed the miraculous. For this reason the doctrine of evolution can never legitimately form a part of naturalistic philosophical or sociological thought, nor can it ever be rightly used to support such dogmas as the inevitability of progress.

DISCUSSION.

The CHAIRMAN (MR. DOUGLAS DEWAR) said :—Dr. Clark's paper is, I think, one of the most important that have been read to this Institute of recent years. It deals with a subject which, in view of its extensive implications, has attracted remarkably little attention. The word entropy was, I believe, coined in 1865, *i.e.*, 6 years after the publication of Charles Darwin's "Origin of Species." At the time of the appearance of this volume, physicists generally do not seem to have held the belief that our universe is running down like a wound-up clock; had they done so, presumably they would have looked askance at Darwin's theory, according to which one or more particles of matter not only suddenly ceased to disintegrate, but reversed the process, and began to integrate, having in some mysterious manner acquired the power of capturing heat and other forms of energy, which they utilised to grow increasingly complex. It is curious that, even when the law of entropy was enunciated, the theory of evolution did not fall into disrepute. Because, as Dr. Clark well puts it, "The fact is that the formation of molecular structures as highly organised as those in living matter is inconceivably improbable," and "the theory of the evolution of highly organised organisms from simple ones violates a fundamental principle of science."

These considerations, however, do not prove that the above astounding phenomena did not take place, but they call for the

production of very strong evidence that they did occur. Such evidence is not forthcoming. It is true that the geological record shows that for a long period there were no living organisms on the earth. Even so, the fact that the earth is now filled with them in no way helps the theory that blind forces of nature brought them into existence. It is true that Darwin said nothing about the origin of life. He was an adept at avoiding difficulties. The closing passage of his "The Origin of Species" runs: "There is a grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved."

This leaving the matter of the origin of life, so to speak, in the air did not appeal to many of Darwin's followers, such as Haeckel, Weismann and others.

Professor Oscar Schmidt wrote ("The Doctrine of Descent," p. 162): "In this concession, Darwin has certainly been untrue to himself; and it satisfies neither those who believe in the continuous work of creation by a personal God, nor the partisans of natural evolution. It is directly incompatible with the doctrine of descent, or, as Zöllner says: 'The hypothesis of an act of creation (for the beginning of life) would not be a logical but a merely arbitrary limitation of the causal series, against which our intellect rebels by reason of its inherent craving for causality.' Whoever does not share this craving is beyond help, and he cannot be convinced. To hold the beginning of life as an arbitrary act of creation is to break with the whole theory of cognition."

The notion that blind forces of nature converted non-living matter into living organisms arose at a time when the great complexity of the simplest organisms was not appreciated. Now that this is realised, Sir Gowland Hopkins may well be right in thinking that "most biologists, having agreed that life's advent was at once the most improbable and significant event in the history of the universe, are content for the present to leave the matter there."

Leaving out the question of origin, the evidence for the theory that all existing plants and animals are descended from simple one celled organisms is, to say the most for it, very meagre. It amounts to little more than that the earliest known fossiliferous

rocks contain no fossils of many of the highly-organised animals and plants now existing. Biologists to-day mostly assert that this fact renders it certain that these animals and plants had not come into existence when the rocks which lack their fossils were laid down. This may be the case, but it is not necessarily so. It may merely indicate that none of these organisms at that time dwelt in any of the many areas in which the rocks known to us were laid down. Two very important facts have been overlooked by men of science. First, that nearly all the marine rocks known to us contain matter derived from the land, showing that they were laid down at no great distance from the shore: thus the fossils they hold represent denizens of the shallow seas, and they tell little, if anything, of the creatures confined to the open ocean. Secondly, rocks exposed to the atmosphere are subject to continual erosion and in time become weathered out of existence, unless they become submerged beneath the sea and there protected from sub-aerial denudation. This submersion is likely to happen only to rocks laid down near the sea, or at low elevations. Therefore the fossils of the ancient land rocks that have been preserved are those of the inhabitants of the lowlands. Such rocks tell us little of the plants and animals of the uplands. Thus it is possible that the late appearance in the rocks known to us of the fossils of any group of animals is due to the fact that their early habitat was the open ocean or the highlands. The rocks thus certainly do not afford *proof* that the animals now living are descended from any of those of which fossils have been found in very ancient rocks.

But the fossils do tell us that a great many kinds of animals and plants have become extinct. If all the animals and plants now existing came into existence at the same time as those that are extinct, the present floras and faunas are meagre compared with those of the early ages of the earth, and this would mean that the organic world, like the inorganic, is subject to the law of entropy. At present this can be regarded only as a possibility—but it is one which should not be ignored. Evolution may be a myth. In this connection let me here repeat the dictum of Vavilov: “the ocean of knowledge is practically untouched by biologists.”

In conclusion, I ask you to pass a hearty vote of thanks to Dr. Clark for his most valuable paper; I am sure you will all agree with

me in expressing the fervent hope that he will favour this Institute with many more papers.

Dr. F. T. FARMER said: I think the Institute should be proud to have so fine a thesis as Dr. Clark has just presented. I have been greatly impressed by its scientific value, the large weight of experimental data of all kinds which is brought to bear on the subject, and the clear logical way in which Dr. Clark has put the ideas forward. I should like to add my warmest thanks to Dr. Clark.

One point of general character strikes me. The problem is one of life. And unfortunately, when all is said and done we haven't the slightest idea what life is—what it is that differentiates a certain complicated collection of atoms from a living cell. And it is this which has been the overwhelming barrier against which biologists have striven, as well as being the cloak which has covered their rather careless attitude to physical laws. Dr. Clark has shown how they have disregarded the second law of thermodynamics despite a large weight of evidence for its general validity; yet I think we don't always appreciate the line of thought which has led up to this.

Suppose, for instance, we see two identical ants walking along on a slope. One turns to the right up the slope and converts heat into work. The other turns to the left down the slope and converts work into heat. Why this divergence? There is no parallel in ordinary material systems, and biologists may, with some right, question the law of direction of energy change. Again, we look at two cells under a microscope. They seem exactly similar in every detail. Yet as we observe one will assimilate material from its surroundings and grow and divide; the other will just disintegrate—the one is alive, the other is dead. Again there is no parallel in the world of ordinary matter. Step by step it has been shown that physical and chemical laws govern more and more of the mechanisms of the body, such as digestion, etc., as Dr. Clark has pointed out, and he has given good reason to believe that wherever the processes of life can be unravelled, they conform to the entropy law. But let us be cautious in our statements regarding the general application of the law. Can we be *sure* that the element of *soul* and *mind* in a living cell, which in large scale living beings is alone capable of defying the entropy law, is not in

some mysterious way responsible for the ordering of matter that exists in it ?

One point further. The second law states that the entropy of a system cannot decrease. In practice it is always found to increase—there is always that little bit of friction or disturbance which makes a process thermodynamically irreversible. In biology it is the same. Dr. Clark has pointed out how even the molecular structure of living organisms tends to degenerate to a more stable form, resulting eventually in death. But there is one exception. The germ cells, which pass on the characteristics of a species from one generation to another, do not show any such decay or only the minutest amount even over hundreds of generations. The astounding thing to my mind is not that characteristics are changed by mutations from time to time, but that these changes are so infinitely small in relation to the whole complex organisation which the cells contain and pass on from one generation to another. Why do they not degenerate like the rest ? How do they stand up to the disordering influences that bear on all the rest of the body ? It seems that one thing may be concluded : that where life exists order *may* be preserved practically without loss ; as soon as life ceases the complex structures immediately lose their ordered state and degenerate at once to more typical and probable states.

WRITTEN COMMUNICATIONS.

Lt.-Col. L. M. DAVIES wrote : This is an excellent paper, most interesting and timely. In dealing with evolution theory from the standpoint of his own special knowledge of chemistry, etc., Dr. Clark offers a discussion of peculiar value to those who approach the same subject from other angles. Not being a chemist, I will offer no detailed comment on what he says ; but I can underline his reference to evolution as being “ a biological theory about non-observable facts of past history ”—a fundamental truth which should never be forgotten when discussing the subject—and express peculiar interest in the fact that he protests against biologists “ adopting an attitude wholly dissimilar to that adopted by scientists in other fields.”

It is perhaps significant that, without any knowledge of Dr. Clark's paper, Mr. Dewar and I have been similarly insisting that

the truth of evolution cannot be empirically established, since it concerns ancient history; and, after discussing the subject as zoologist and palaeontologist respectively, we have expressed the very opinion which Dr. Clark voices, namely, that evolutionary biologists adopt methods which are not scientific, and are never seen in other departments of research ("Science and the B.B.C.," by Dewar and Davies, *Nineteenth Century*, April, 1943, pp. 167-173).

It is of course only a coincidence that Dr. Clark's paper and ours should appear almost simultaneously; but those who regard evolution as proved might do well to study both Dr. Clark's arguments and ours, compare their totally different natures with their identical conclusions, and judge whether such convergence of testimony from different angles does not indicate the truth of the common finding, that the doctrine of organic evolution is not demonstrably true, and is not even founded upon scientific argumentation.

The Rev. Principal H. S. CURR wrote: While disclaiming all knowledge of science except in its most elementary forms, I may venture to make one or two observations on Dr. Clark's paper which is characterised by that lucidity and thoroughness which he has accustomed the Victoria Institute to expect from him. The perusal of the paper has been a source of abounding pleasure and profit.

The general argument seems to be an expansion and development of the truth expressed in the old saying that water cannot rise higher than its own level. In the same strain one recalls the Latin adage, *Ex nihilo nihil fit*. The consequences are but the unfolding of the causes. To my thinking, the principle needs a wider examination than it receives in the paper. The case of a corn of wheat falling into the ground and dying is a case in point. It bears much fruit, thirtyfold, sixtyfold, and a hundredfold. Dr. Clark is much better qualified than I am to do justice to these incredible returns, representing percentages which are simply staggering in their magnitude. Yet their origin, source, and sufficient cause is a single grain. Would it not be well to speak cautiously of possibilities and potentialities in view of such facts? A similar conclusion is reached when we contemplate the emergence of human genius. How is Plato, to whom the paper refers, to be explained by reference to his heredity or environment, even if these expressions be interpreted in the widest possible sense? The same may be said with even greater force of

Shakespeare or Bunyan. For myself, I am well satisfied with the doctrine that the hand of God may be traced in all these things. The applications of the doctrine of entropy to the unsearchable resources of the Creator offers food for edifying reflection.

I am separated at present from my library so that I am unable to state exactly Lord Kelvin's argument for the comparatively recent appearance of our planet on the grounds that such a theory was demanded by the second law of thermodynamics. If my recollections be correct, this line of reasoning has been used to invalidate the doctrine of evolution since it demands an immeasurable period for the production of the globe on which we live.

Dr. Clark has recalled attention to a profound truth in his reference to recalescence, the scientific designation for the fact that, when a piece of red-hot iron is cooling, it suddenly turns hotter at a certain stage, only to resume the former process within a short interval. That surely applies with even greater force to the moral and spiritual spheres. Thus one is tempted to wonder if the present war be not an instance of moral recalescence. In the personal and national affairs of all civilised nations, appeals to arms have long since been reduced to vanishing point. Duelling is now very uncommon indeed. One would fain hope in the interests of world welfare and happiness that there is a similar trend in international affairs, bending towards saner and surer modes of settling disputes, and that the present war is an instance of recalescence in the history of international relations.

Sir AMBROSE FLEMING wrote : This paper, in my opinion, is one of the most valuable and instructive that the Victoria Institute has received of late years. It opens up a new line of thought ; and one wishes it could be republished in some journal where it would certainly be read by all naturalists, especially those who believe in and advocate the theory of evolution. As Dr. Clark suggests, it is desirable to extend the meaning of the word " entropy " and make it synonymous with a tendency to " disorder " generally. In all our experience of natural phenomena we find a general tendency to disorder, but in no case a tendency for that disorder to cure itself and produce order or to overcome disorder in one field spontaneously by disorder in another. So firmly is this fixed in our experience that even the most unscientific minds would greet with ridicule any contradiction of it. The pebbles on a sea beach are of all colours,

shapes and sizes ; and that disorder tends to increase with time. If we were to find on any occasion these stones arranged in an orderly pattern, no one, capable of serious thought, would admit that this order was the result of the action, say, of the waves. They would at once say, " Who did this ? " and not " What did this ? " And there is a wide distinction between *who* and *what*.

The only agency which can overcome this " entropic " tendency in the phenomena of the universe is " intelligence." The little word " who " implies a personal intelligent agent which has the power of conception of order and power to create it and appreciate it. The tendency or effort of much biological thought and literature is to seek for originative causes which are non-intelligent but automatic, and, when applied to the universe as a whole, this denies the existence or necessity for a self-conscious and intelligent First Cause to which the appellation " God " is given. The convenient word " evolution " has been coined in past time to meet the requirement of language for a term which can convey the conception of an originative cause without any implication of intelligence in it. But when sufficiently considered, it will be seen, as Dr. Clark says, " It would be reckless indeed to see in evolution a self-ordering principle in Nature which runs contrary to the entropy law." Nothing can overcome the law of entropy but the order making power of intelligence, and to attempt to interpret the phenomena of Nature, whilst denying the necessity for intelligence in its origin and progress, is as impossible as it is to understand it properly if we deny the reality of energy, force or action in its manifestations.

This paper by Dr. Clark is then a most timely and useful contribution to the *Transactions* of the Victoria Institute because its philosophical character make it very acceptable to a Society the second title of which is the Philosophical Society of Great Britain.

Professor A. PIERSON KELLEY wrote : Dr. Robert E. D. Clark's paper on " Evolution and Entropy " is a valuable paper that, without attacking evolution, removes the foundation from under that hypothesis.

Dr. Clark very well says : " The mechanistic biologist is at pains to show that the laws of physics and chemistry are applicable to biology ; he has, therefore, no right to postulate a law of increasing complexity in defiance of those sciences."

I am glad that Dr. Clark calls attention to the abandonment, by Goldschmidt, among others, of belief in transformism by mutation. Several years ago Leonard Darwin called upon an infinitude of small mutations as the *dernier resort* of Darwinism ; and, as we all know, Darwinian evolution is the very cornerstone of the present Russian system of thought. Now, if mutations "of the ordinary kind" are proved non-existent, the effect on Darwinian evolution is self-apparent.

Weighing evolution as a philosophy, as Dr. Clark does in this paper, and as Hahn did long ago, is of the greatest value to those who are candid enough to value truth.

852ND ORDINARY GENERAL MEETING

HELD IN ROOM 19, LIVINGSTONE HOUSE, BROADWAY, S.W.1, ON
MONDAY, MAY 3RD, 1943, AT 6 P.M.

DR. F. T. FARMER IN THE CHAIR.

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

The CHAIRMAN then called upon Dr. Arnold S. Aldis to read his paper entitled "A Review of the New Scientific Outlook" (being the Dr. A. T. Schofield Memorial Paper for 1943).

The meeting was later thrown open to discussion, in which Mr. Leslie, Dr. Richmond Wheeler, Mr. McGavin and Mr. Ford took part.

Written communications were received from the Rev. Principal Curr and Mr. Belyavin.

The following elections have been made:—Paul Belyavin, Esq., Member; G. J. Herring, Esq., Associate; J. A. Silk, Esq., Associate.

REVIEW OF THE NEW SCIENTIFIC OUTLOOK.

By ARNOLD S. ALDIS, Esq., B.S., M.B., B.Sc., F.R.C.S.

(*Chairman: F. T. Farmer, Esq., B.Sc., Ph.D.*)

IN an age in which scientific progress is so rapid that the interested onlooker is apt to be left far behind, and the theories of the moment are quickly outmoded by some new advance, the word "New" which appears in the title of this paper requires some definition. Fortunately for the writer the important scientific discoveries which have led to the most remarkable revolution in scientific thought since the days of Newton have, almost without exception, taken place during the twentieth century, which therefore serves as a convenient criterion of modernity.

19TH CENTURY MATERIALISM.

The nineteenth century closed with the scientific scene dominated by a materialistic philosophy and a "world view" which was compassed by the rigid boundaries of mechanistic determinism. The scientific outlook was characterised by an overweening optimism, and the twentieth century was ushered in with a supreme confidence that, though science was not yet able to supply the answer to the riddle of the universe, this answer could not long be delayed. This attitude of mind was largely the result of the striking progress which had been made in the study of the life sciences following the publication of "The Origin of Species" by Charles Darwin in 1859. Up till that time, although the inanimate world was conceived of as being bound by the rigidly deterministic mechanics of Newton,

yet it was felt that the world of life introduced unpredictable and capricious elements which could not be included in such a closed system. With the introduction of the "Theory of Evolution" by Darwin, and more particularly following the contributions of T. H. Huxley and Haeckel, it appeared that life itself was losing its mystery and that the simple hypothesis of natural selection was able to explain the vagaries observable in nature without recourse to any idea of a Creator. At the same time certain aspects of physiology and some of the schools of psychology were apparently suggesting that the idealistic dualism of mind and matter was illusory and that mind itself was only a function of matter so that materialism was able apparently to engulf its own antithesis mentalism, leaving the field clear for the undisputed sway of the materialistic "world view."

THE NEW PHYSICS.

Signs were not lacking, however, that such a rosy and hopeful outlook was built on insecure foundations, and already there were disturbing facts which obstinately refused to fit in with the accepted theories. It was known for example that Newtonian mechanics failed accurately to predict the motion and orbit of the planet Mercury, and several expedients had been formulated to account for the discrepancy. The classical experiment of Michelson and Morley was performed in 1887, and the disconcerting result which was to lead to such a revolution in thought was already known; but, generally speaking, scientists either closed their eyes to such discordant facts in what was regarded as the perfect harmony of science, or sought for some means of explaining the awkward facts in terms of the accepted mechanics. However, all scientific minds were not closed to the implications of these and other facts, as was shown by the publication of Planck's Quantum Theory in 1901 and Einstein's Special Theory of Relativity in 1905. This was followed by the General Theory of Relativity in 1915, and the Quantum Theory was advanced by the publication of the Principle of Uncertainty by Heisenberg in 1927, and by the wave mechanics of Schrödinger. It may be said that during the whole of the twentieth century thus far, scientists have been engaged in trying to readjust their outlook to fit in with the revolutionary conceptions which these theories introduced, undermining as they did the apparently solid foundations of Newtonian mechanics. Many it must be confessed have as yet failed to adjust

their thinking to these advances, as can easily be seen in much of the contemporary writing which is based on the deterministic materialism of the nineteenth century. One important reason for this failure on the part of some to keep step with progress in thought is to be found, I think, in the fact that although the Newtonian mechanics has been shown to be inadequate to explain the universe, yet it can still be applied with sufficient accuracy to things in the "man-sized" world which is the concern of the great majority of scientists. The new physics only becomes important in the realm of the astronomically large or the infinitely small, the discrepancies either cancelling out or being unobservable in the ordinary measurements of science in the "man-sized" world. This point is excellently illustrated by the story of the discovery of isotopes. The conception of the constant immutability of atoms as forming the fundamental bricks of the universe was severely shaken when Aston demonstrated that chlorine exists in two forms with atomic weights of 35 and 37, and when this discovery was extended to many other elements, doubt began to be cast upon Rutherford's accurate determinations of atomic weights and upon many calculations carried out constantly by chemists based upon these determinations. It was soon pointed out, however, that although undoubtedly many of the elements existed as a series of isotopes of different atomic weights, yet as far as could be ascertained the series as occurring in nature was a constant one. Therefore, in any chemical reaction involving many millions of atoms, the old accepted atomic weight, which was an average value based on the constancy of the mixture, could be used with perfect propriety. As soon as this was realised, the occurrence of isotopes ceased to worry the practical chemist since it did not influence or alter his everyday calculations, and it has since been mainly the preoccupation of a few research workers in the field of pure as opposed to applied chemistry.

SCIENCE AND PHILOSOPHY.

When, however, scientists attempt to formulate a philosophy or "world view" based on the findings of science, these recent advances in scientific thought must be taken into account. An approximation, however close, is not a reliable signpost in the search for reality. It may be said that the scientists of the nineteenth century were generally speaking not greatly interested in the great metaphysical and philosophical questions of

“Being” and “Knowing.” They were content for the most part to explore the physical universe using the empirical methods of science in an attempt to discover facts, without much concern as to whether such facts when discovered would fit into a rational picture of the universe. Many indeed went further and denied that the universe was rational or that there was any meaning to be sought in “existence.” With the advent of the new physics, however, the scientists have once again entered the lists as protagonists in the great questions of philosophy, bringing with them the empirical methods of science by way of weapons. Nineteenth century scientists were so obsessed with attempting to answer the question “how” that they either ignored the question “why” or denied that such a question existed. The twentieth century discoveries have shown that such dogmatism is unjustified, and by defining the limitations of the empirical method they have brought the great question “why” back into its rightful place. It will be our purpose now to outline the scientific advances which have wrought this significant change in outlook, whereby scientists have been forced to forsake their old dogmatism, and to admit that there are questions to which science alone can never give any answer but that of reverent agnosticism.

EPISTEMOLOGY.*

In reviewing the development of the modern theories of Relativity and the Quantum theory of matter and radiation the first conclusion which seems to emerge quite clearly is that science can give us no information about ultimate Reality for two clearly defined though related reasons. In the first place the universe does not provide an absolute standard within itself upon which to base our scientific measurements. There is no yardstick with which to measure Reality in the physical universe, or at any rate not one which is available for our use. The theory of Relativity has demonstrated that all the measurements we make of space and time, and also of mass and velocity, are relative, and although they are doubtless related to some absolute standard, that standard is not discoverable within the physical universe by the methods of scientific observation for the simple but sufficient reason that we as observers are within the system and, therefore, we are strictly unable to adopt the detached observer attitude towards the universe.

* The theory of the methods or grounds of knowledge.

The Quantum theory has introduced another limitation to the scope of scientific enquiry in Heisenberg's Principle of Uncertainty which states that we cannot know with complete accuracy both the position and the velocity of a particle of electronic size at any instant, and still less can we predict either the position or velocity at any future time. This limitation to scientific method is a necessary outcome of the discovery which forms the basis of the Quantum theory, that radiant energy is not emitted continuously, but is given off in discrete packets or quanta which form the irreducible minimum of radiant energy. Now the emission of a quantum of radiant energy from any object imparts to the object a definite though almost infinitely small recoil in the same sort of way that a shell leaving the barrel of a gun imparts a recoil to the gun. In the ordinary "man-sized" world even the cumulative effect of the impact of millions of quanta does not have any appreciable effect upon the object because of the almost infinite disparity between the inertia of the quantum and of the object. The position, however, in the subatomic world is quite different, for in this world of the almost infinitely small the emission of a quantum of radiant energy is such a world-shaking event that the atom is virtually a different object to that which existed before the emission of the quantum. As the emission of a single quantum is in the nature of things, the most delicate instrument at the disposal of scientific observers, it must be clear that the scientific method will never be able to probe further into the ultimate nature of Reality. We can never know what an atom is like unless it emits quanta of energy which are our only means of observation, and the emission of a quantum at once alters the thing we are trying to observe; this is the impasse to which the Quantum theory has brought us. The "observer-object relationship" which is the foundation of the scientific method depends for its validity entirely upon the assumption that it is possible to adopt the observer attitude towards physical objects without altering the objects by the mere act of observing them. It is now clear that this assumption is not permissible when we come to the ultimate structure of the material universe, and we see that the "observer-object relationship" is invalid in the astronomical sized universe because there is within it no fixed observer viewpoint which we can take up, and in the subatomic world because here the very act of observing alters the thing which we are trying to observe.

Presumably the same limitations apply to the "man-sized" world, but here they are of little practical importance for reasons which we have discussed; so that we find that the astronomers and physicists have been quick to appreciate the implications of the new physics, while the general run of scientists whose preoccupation is with the "man-sized" world have paid but scant attention to theories which seem for them to have very little practical significance.

The reader will have observed that the foregoing arguments have a profound bearing upon Epistemology, and set clear and definite limits to the usefulness of the scientific method as a source of knowledge. Sir James Jeans expresses it thus:— "The true object of scientific study can never be the realities of nature, but only our own observations on nature." The only legitimate attitude for the true scientist to take up is that of the Phenomenalist who recognises that his observations do not constitute a knowledge of Reality, but only of the appearance of Reality as seen in the distorting mirror of scientific Epistemology. The scientist, therefore, who takes it upon himself to make dogmatic statements concerning the nature of Reality based entirely upon his scientific observations, steps outside his legitimate province, and his pronouncements have neither scientific nor philosophical authority. There can, therefore, strictly be no ground for controversy for example between Science and Religion, for the scientist's method can neither prove nor disprove religious beliefs which are concerned with the ultimate realities of the universe. If we believe with St. Paul that Faith is the evidence of things unseen it is at least certain that science can never prove us to be wrong, for the very fact that the Eternal things are unseen, and indeed unseeable, places them forever outside the scope of scientific enquiry.

REALITY—MATERIAL OR MENTAL ?

Although, as has been shown, science can never give us any final information about Reality, nevertheless the new Physics does give us some hint concerning the direction in which Reality lies, and the present position of science in this respect is far more in favour of the Idealist than the Realist philosophy. The signposts, such as they are, seem to point towards mentalism and away from materialism. This may perhaps be made clearer if we note the significant fact that the recent advances in the

interpretation of the universe have been made possible by the application of pure mathematics. Einstein's theory of Relativity can really only be expressed in a series of mathematical equations, and it is impossible to make or imagine a mechanical model of such ideas as the "space time continuum." At the other end of the scale, the Quantum theory has led on to the intensely mathematical wave mechanics of Schrödinger. Thus the more scientists have sought to probe the ultimate mysteries of nature, the more they are driven to formulating their discoveries in terms of pure mathematics and away from the pictorial or mechanical model. Now, while we should be wrong as we have shown to suppose that such mathematical equations represent Reality, yet it is at least suggestive that there must be in Reality something of the nature of pure mathematics, which is essentially a mental construct. Thus we are led to the position that the Reality which lies beyond our observations would seem to partake of the nature of mind rather than of matter. Thus Eddington says: * "We reach then the position of the idealist as opposed to the materialist, philosophy. The purely objective world is the spiritual world; and the material world is subjective in the sense of selective subjectivism." While Jeans put it in these words: † "Thus the relativity theory of gravitation, because of its close association with pure mathematics, seems to carry us yet further along the road from materialism to mentalism, and the same may be said of most of the recent developments of physical science."

The new Physics at least suggests that the ultimate reality behind the physical universe is akin to mind, and the Theist will identify this with God, while other philosophers will recognise in it the universal or cosmic mind, a phrase which has been used again recently by Professor Wood Jones. The Biblical Theist will find all this very much in accord with the world view expressed in the Epistle to the Hebrews, where God is represented as "Upholding all things by the word of His power."

DETERMINISM OR FREEWILL ?

The new Physics also has some bearing upon the age-old philosophical problem of human freewill. The classical mechanics was rigidly deterministic and seemed to prove that freewill was illusory. This belief which was characteristic of the nine-

* Sir Arthur Eddington—The Philosophy of Physical Science.

† Sir James Jeans—Physics and Philosophy.

teenth century was strengthened by the teachings of the Behaviourist school of Psychology. The Quantum theory has, however, struck a severe if not mortal blow at closed determinism, as it shows that the ultimate processes of nature are not deterministic ; or, if they are, science cannot discover what it is that determines them. Heisenberg's Uncertainty Principle, which has already been mentioned, shows how unpredictable are the events in the subatomic world ; and indeed in this world the ordinary ideas of causality cease to have any meaning.

At the risk of tedium I must reiterate that Heisenberg's Uncertainty Principle which dominates the picture in the subatomic world must also apply theoretically to the "man-sized" world, although in practice the cumulative uncertainties tend to cancel out so that the underlying indeterminacy of nature is obscured by an artificial determinism. We thus arrive at the rather surprising conclusion that the law of chance must be one of the fundamental laws of the physical universe, so that all scientific predictions are predictions of probability and not of certainty. A familiar illustration comes to mind in this connection. If a coin is tossed once there is an equal chance of its coming down heads or tails ; the result is quite unpredictable. If the coin is tossed 500 times, however, we shall not be far wrong if we predict that it will fall heads 250 times and tails an equal number ; and the greater the number of times the experiment is repeated the closer will our prediction, based on the law of chance, approximate to the experimental results ; in other words, the more and more deterministic the experiment becomes. Thus the basic law is the principle of uncertainty, and the law of chance only becomes deterministic when dealing with large numbers. It is at once clear that such determinism is in a sense artificial, and is certainly not rigid for it is easy to envisage circumstances in which it might be overruled. To return to the illustration, it would be perfectly possible to devise a machine to do the coin tossing with such precision that the result of the experiment could be altered in any desired way, so that in 500 spins of the coin it would fall heads 500 times or any other combination.

This, it seems to me, gives us just a hint of the way in which human freewill could operate upon the substract of subatomic indeterminacy by causing the cumulative indeterminacies to add up in the desired direction rather than cancelling out, so that they would become operative in the "man-sized" world. Again an illustration comes to mind. An iron bar if isolated

from a magnetic field does not show magnetic properties, and it is generally supposed that this is due to the haphazard arrangements of the groups of atoms within the bar. If it is placed in a magnetic field, however, the atoms become orientated in such a manner that the inherent magnetic qualities of each group become cumulative and act in the same direction so that the iron bar now exhibits the properties of a magnet with a North and South Pole.

The writer is well aware that the foregoing arguments do not form in any sense a scientific proof of the reality of freewill. Indeed, it would belie the main contention of this paper if they were advanced as such, for clearly the question of human freewill comes into the category of non-material Reality in which we have insisted that science has no authority to speak. We cannot invoke the aid of science to prove any subject in which it can be shown that science can supply no valid or reliable data. The arguments have been advanced not so much to prove a doctrine but as an attempt towards supplying an acceptable account in scientific terms of the mechanism of a doctrine which is accepted as a fact of experience. All that modern science can really say on the subject of freewill is that modern science cannot disprove its reality. The classical physics envisaged a world which was rigidly determined by the physical law of cause and effect, in which it was assumed that a physical "effect" must, and could only, be determined by a physical "cause." The discoveries of modern science have not upheld this belief, for they have shown that there are undoubted physical "effects" in the universe for which science can point to no physical "cause," as for example in the breakdown of radioactive elements, which does not seem to be determined in the old accepted sense. It is this breakdown of the final validity of the physical law of cause and effect with the resulting possibility that physical "effects" may be produced by non material causes, which has opened the door again to the possibility of freewill.

To quote again from Sir James Jeans :—

*3. "The classical physics seemed to bolt and bar the door leading to any sort of freedom of the will ; the new physics hardly does this, it almost seems to suggest that the door may be unlocked—if only we could find the handle. The old physics showed us a universe which looked more

* Sir James Jeans—Physics and Philosophy.

like a prison than a dwelling place. The new physics shows us a universe which looks as though it might conceivably form a suitable dwelling place for free men and not a mere shelter for brutes."

CONCLUSION.

To recapitulate ; it would seem, broadly speaking, that the new physics demonstrates conclusively that the scientific method as an instrument of Epistemology is necessarily too coarse to give us any information about Reality as sought by Metaphysics. At the same time it gives us the hint that if such Reality could be found it would be in the nature of mind rather than of matter, and it paints for us a picture of the universe in which the sombre colours of materialistic determinism are lightened by the dawning possibility of some sort of freewill.

It must not be supposed that the conclusions which I have sought to present are universally accepted by the scientific world ; indeed, there are not a few dissentient voices. Curiously enough these are mostly to be found among the ranks of the Biologists. The life sciences which were the last to yield to the sway of nineteenth century materialism, seem to be the most loath to relinquish it. They exert an influence upon public opinion which is out of proportion to their numerical strength, for their writings which are numerous have been widely publicised. These men almost with one voice preach a doctrine of scientific humanism, in which science is made the basis of ethics and the formula for social progress, and their position has been well set out in a recent symposium under the title of " Science and Ethics " in the columns of " Nature."

It will be sufficient here to remark that they must be content to be caught in the toils of the rigidly deterministic science which they preach. If they elect to cling to a materialistic conception of the universe governed by inexorable laws of rigid determinism, then it is futile for them to attempt to alter or determine the course of social evolution, for the freewill which they invoke to do so has no place in the world view which they have espoused. It is to be hoped that the encroachment of chemistry, and more recently physics, upon the life sciences in the relatively new sciences of biochemistry and biophysics will make this attitude less and less tenable.

Those of us who, like James Ward, regard the universe as a realm of ends, may be assured at least that true science has

nothing to say to the contrary. If there be a Divine purpose behind the universe, it is not within the province of science either to discover it or to deny it. The Christian as a new creature is given in Faith a source of knowledge of Reality which is denied to the materialist, but the validity of which the materialist has no right to deny—a new sense which responds to the stimulus of Divine Revelation as the eye to quanta of light or the ear to waves of sound. James Ward, in the conclusion of his Gifford lectures, discussing Nietzsche's idea of an Ueberschensch, expresses this view in words which will serve well to bring this paper to its conclusion :—

*“ The regenerate Christian is already an Ueberschensch, no longer natural man, but spiritual in the Pauline sense, nor is his experience fairly described as subjective belief in God ; it is actual love of God and conscious communion with Him. We have no right to question this, though we must admit that such inward convictions of the reality of religious experiences are, for the purposes of our discussion to be classed as Faith, not as knowledge, in as far as it is,—epistemologically, though not psychologically—subjective, incommunicable and objectively unverifiable. In so far, however, as he lets his light shine and men see his good works, the religious man affords practical evidence of the worth of his faith. With enough of such light, the justification of Faith would be sure.”

DISCUSSION.

The CHAIRMAN (Dr. F. T. FARMER) said : It has been a pleasure to listen to Mr. Aldis' paper, and I am sure you will all wish to join me in thanking him very heartily for it. The subject which he has reviewed is one which is full of intricacies and difficulties, and it is to his great credit, in my opinion, that he has presented it so lucidly that we can all understand and appreciate the essential points without getting lost in a mass of detail. It takes a scientist to understand the problems of modern physics, but it takes more than a scientist to see beyond the physics into the ultimate significance of it all.

I am one of those who believe that a chairman's remarks should be brief—very brief. And I know there are plenty of people wishing

* James Ward. Gifford Lectures. Realm of Ends.

to express their opinions on this interesting subject, so I do not propose to say more than a few words. Those words will be of a rather general character.

Until recently science was concerned only with inanimate physical systems, matter, heat, energy, and so on. From these it has spread with great rapidity to cover almost every field of enquiry, and it is commonly held now that science is concerned with the *whole of life*. Every problem is to be considered in a scientific way, even in psychology, sociology, ethics, politics and religion. By tackling them objectively, scientifically, it is claimed, they can be solved just as material problems. Up to a point this attitude has been valuable and fruitful, and has served to get behind emotions and prejudices which are the great barrier to accurate thinking. It has probably marked a step forward in every field in which it has been applied. But it has a danger, I think, and this danger should not be overlooked. There is a tendency to elevate the scientific attitude almost to the level of a god, and to suppose that it rules the whole of the universe, in fact, that it contains the key to moral as well as material problems. Man's salvation is to be by science, no longer by the Cross of Jesus Christ. In other words, it is assumed that science is able to distinguish between right and wrong, and to say that this thing is good, and that thing is bad.

Can this be so? I think the answer is quite definitely, No. The scientific method is one that relates cause and effect. It says that if we know everything about a system at time t_1 , then we can deduce its entire state at some future time t_2 . But it can never say what it *ought* to be like in the first place; the word has no meaning in a scientific sense.

That is the position as I see it. The old determinism of the 19th century has gone. But in its place a more subtle form of materialism has arisen, and it is one that presents at least as great a challenge to Christianity. The scientific outlook has become not only the sufficient basis for all human needs and the sufficient answer to all human problems, but also that which if necessary man may worship as the supreme power.

Mr. J. S. C. McGAVIN said: I fear that materialists will take up the statement on page 79 that a result of coin-tossing is "quite

unpredictable." They will say, and rightly, that as all the factors involved can be known then the result can certainly be predicted. The author's statement is no doubt sufficiently exact for most practical purposes, but in a matter which is so controversial we cannot be too exact in our statements.

Though science and religion may normally till different fields, yet in the last analysis, as Truth is one, they must come to some terms. Mysticism, purporting to be entirely independent of historical facts, may be able completely to ignore anything that science may say. Christianity, on the other hand, is based on historic events and stands or falls with them. From this point of view Christianity must take note of the voice of science.

In connection with the "observer-object relationship" mentioned on page 76, it is helpful to remember Professor Lamont's* distinctions between "I—my world," "I—Thou," and "I—Absolute." These are dimensions differing in quality. Science normally is only concerned with the first of them.

Gp.-Capt. WISEMAN said: Dr. Aldis has given us an admirable summary of some of the more recent trends of scientific thought. It is quite apparent that whereas at the beginning of this century the general attitude of scientists was that of Parmenides, "Nothing flows, all things remain," the prevailing attitude at present is that of Heraclitus, who said, "All things flow, nothing remains."

More recently, men of science are aware of a sense of limitation, even of frustration. Earlier in the century it was assumed that all things could be measured or calculated with absolute accuracy. In the realm of astronomy Einstein revealed limitations, and in physics, Heisenberg and Dirac explained why there was little or no hope of measuring the real behaviour of electrons or similar particles. The writings of scientists reveal a growing sense of something mysterious which lies beyond mathematical calculations.

Dr. RICHMOND WHEELER suggested that the value of papers read before the V.I., such as the one they had just listened to, would be enhanced if references included date of publication, publisher's name, and page.

* Lamont, "Christ and the World of Thought," 1935, p. 62f. Publishers T. & T. Clark.

He considered that the influence of biochemistry and biophysics at present was definitely materialistic. A better way seemed to be that of Dr. J. Gray, who urged that biology should be the mistress in her own studies of living matter (*Adv. of Sci.*, 1933, p. 92). Animals were conscious wholes, partly independent of their physical environment, as Dr. E. S. Russell and other naturalists showed; this outlook was supported by the incontrovertible facts of biogenesis. Human free-will got definite scientific support from the recognition of the autonomy and non-material nature of Mind, as Jung, McDougall, Brown, Stout and other leading psychologists taught (cf. Wheeler, *Vitalism*, Allen & Unwin, 1939, 176-91). Special creation of animal consciousness and the human spirit had been maintained by A. R. Wallace against nineteenth century materialism.

WRITTEN COMMUNICATIONS.

MR. PAUL BELYAVIN wrote: I have read with considerable interest the paper presented by Mr. Aldis, and it appears to me to be a very clear and accurate presentation of the modern scientist's point of view.

After many years of study of various related problems, however, I now always endeavour to examine all, what we call "modern views," also in Time-perspective. To explain it more clearly; to-day we have heard the new scientific outlook, 1943. But in 300 B.C. the new scientific outlook was that of Aristotle.

What I would like to know *now* is—what will be the "new scientific outlook" in the year 3943? Can our present day science be considered final and immutable, or should it be considered only as a temporary expedient?

I think that scientists have actually committed their theories to a position of a temporary expedient by admitting that they are not interested in what things are but only in how they behave.

The actual reason for the adoption by the scientists of this idealistic and phenomenalist attitude was the utter frustration of the ontological philosophy. The latter was brought about by the apparent realisation of the possibility, that there may be, after all, no objective Ultimate Reality, and, as some of the philosophers have put it, "the ever-rolling stream of changing phenomena may

be the only ultimate Reality." This view is as old as Protagoras and Heraclitus.

But there may be a different aspect of the problem—that the Ultimate Reality may have its beginning at the infinitely small, and continue its development following the same path and on the same principle through all scales of existence.

It is possible that Ultimate Reality may be found not in an irreducible particle of matter, but in a principle of organisation, in a system on which the Universe of Infinite Space is built.

We are legitimately justified in expecting the Universe to be built as a rational organisation, for we have undeniable evidence of such an organisation on Earth, which is one of the elements from which the Universe is constructed. It would be illogical and unrational for a Universe built from organised individual units like Earth, to be nothing more than an accidental Chaos. This principle, or system, is likely to extend also to the basic structure of matter.

Have we then any right or reason to expect that if and when the Ultimate Reality will eventually be discovered, it will not prove destructive to all existing scientific theories ?

The scientists say no, our theories are bound to endure for the very reason that they are built on observation, inference and scientific verification, and not on any fanciful and changeable ideas of Ultimate Reality. But are they ? To make this matter clear, let us examine critically the Atomic Theory, which is the foundation stone of modern science.

As we all undoubtedly know, the scientist alleges that all matter is made from atoms, which, in their crude original form, are assumed to be built from a nucleus consisting of protons, neutrons and electrons, with one or more electron revolving around it in orbits.

We can omit all further developments of the atomic theory which are irrelevant to our present task.

The revolving motion of electrons around the nucleus is necessary to counteract the attracting forces between electrons and the nucleus. But the question is, *why* should the electrons revolve around the nucleus, and *how can they* ? For there is no law in heaven or earth which would cause them to revolve, and the simple forces of attraction between the electrons and the nucleus cannot possibly give rise to any other forces which could cause revolving motion.

In fact, if this revolving motion were a possibility, then perpetual motion should also be possible and easy, which we know it is not. Consequently, this revolving motion could only be caused by supernatural intervention, a miracle. But is it right to build a scientific theory on the foundation of a miracle? For, as we can easily visualise, miracles make all sciences redundant and unnecessary.

Everything then can be explained by a miracle, so why should we bother about any sciences? But this is not all.

If all matter is made only from electricity, what are the electrons themselves made from? Is electricity matter, or is it not? If it is matter, why should we deny it atomic structure?

So you see, that we are really back to where we started from and the atomic theory may be, after all, just as bottomless as the problem of Ultimate Reality. Indeed, the scientists themselves admit now that after having added to it the Quantum theory, the Heisenberg's Principle of Indeterminacy and the Relativity theory, the modern physics can no longer be presented to the mind in terms of physical models but must be left in the form of mathematical equations.

The last statement is, to say the least of it, startling. We all know that a mathematical equation is only a certain form of presentation of some logical deduction, a concept. Hence, if we are told that such a concept may not be there, we are justified in expressing our doubts about the mathematical equation being properly understood by scientists themselves. It certainly appears that it is no longer the mind which dominates the formula, but it is the formula which dominates the mind.

The conclusion is, that we should not consider any modern theories as being something final and immutable, but only as a temporary expedient, to serve in the meantime some useful practical purpose.

Mr. E. H. BETTS wrote: We are indebted to Mr. Aldis for his succinct account of recent advances in mathematical physics and their philosophical implications.

We feel, however, that recent thought is too ready to accept unquestioningly anything offered by the mathematicians. The status of mathematics in mathematical physics has yet to be made clear. A few remarks must here suffice. They may be sufficient to indicate that the position is one which really needs clearing up.

First, no mathematical structure can have the least bearing on physical problems unless it starts from *sensa* or data given as the results of ordinary observation.

Secondly, no mathematical structure has any physical truth or validity unless it is not only based on observations in the physical world, but returns to that sphere with numerical values which can be tested against actual observations.

Thirdly, it is possible to build mathematical constructions based on unimaginable and deliberate absurdities (such, for example, as an index of optical refraction explicitly involving $\sqrt{-1}$), which constructions will give formulæ which fit the facts obtained by observation of nature and are in that sense true formulæ. It is, however, obviously not therefore legitimate to argue back from the validity of the formulæ to establish the physical reality of the admittedly absurd basic hypothesis. Such considerations must weaken an attitude of implicit confidence towards mathematics in its applications to physical problems. For, no less than in the above case of absurdity, we are asked by the mathematicians to forsake our common sense in accepting the space-time continuum and curved space, which Jeans himself admits to be unimaginable (*New Background*, p. 136), but which is held by Professor Castelnuovo as an *object of sensory perception*, to be an essential element in relativity theory (cited by W. R. Thompson, F.R.S., in *Science and Common Sense*, p. 91).

Fourthly, although the physico-mathematical Theory of Relativity tested by numerous actual measurements of varied types proves to be satisfactory and in this restricted sense "true," we have seen that mathematics is of such a nature that such "truth" does not at all argue the truth (in the sense of *physical reality*) of the basic hypothesis involved. For the hypothesis of the ether explains literally thousands of large-scale phenomena. "The representation chosen is so perfect that one is sure of calculating in advance, for example, any diffraction figure one requires, no matter how complex is the form of the holes pierced in a screen" (Bouasse, cited by Thompson, *loc. cit.*, p. 108). Nevertheless, the physical reality of the ether cannot be upheld. Our third observation, above, indicates that Einsteinian Relativity may have no better standing. It is not an explanation but a "description," in mathematical terms, of the "pattern of events."

Does it not behove us, then, to view with extreme caution any physical or philosophical conclusions drawn from, such "descriptions." The mathematical physicists are themselves learning to be cautious. Jeans declares, as a conclusion to his latest book, "The plain fact is there are no conclusions" (*Physics and Philosophy*, p. 216). The suggested viewing of ultimate reality as mental rather than material, even as a mere suggestion, has little to back it.

Mr. W. E. LESLIE wrote: One of the most important points dealt with in this very excellent paper is the discussion of the bearing of the Uncertainty Principle upon the doctrine of Determinism. A difficulty that arises is the tendency of any argument which invalidates Determinism to undermine the principle of Causality also. The author seems to realize the difficulty, for on page 79 when he speaks of causality in the sub-atomic world he says that there "the ordinary ideas of causality cease to have any meaning." Does some special idea of causality still have meaning? The author does not tell us. But on the same page he speaks of the human will "*causing* the cumulative indeterminacies to add up in the desired direction. . . ."

In thinking of God we must use anthropomorphic terms—terms of the man-sized world. It may be that in the microcosm and the macrocosm we begin to pass out into ultimate realities which our minds as at present constituted cannot grasp.

At the end of the paper Faith is spoken of as though it were a new mysterious sense. But surely it is an activity of the intellect "he that cometh to God must believe that He is . . ." blended with an act of the emotions "thou shalt love the Lord Thy God . . ." and the will "to as many as received him. . . ."

Rev. Principal H. S. CURR wrote: Dr. Aldis's treatment of an abstruse subject is so lucid that even those, whose studies have not lain in that direction, may feel emboldened to make one or two comments. These must inevitably be of a very general and non-technical character. The justification for them may be found in the familiar truth that, while the man, who cannot claim to be

a specialist, may be incapable of understanding and appreciating the paths and processes whereby certain results are achieved, he is frequently competent to offer opinion on the conclusions, when these are finally stated.

One such observation is prompted by Dr. Aldis's reference to the relations of science and religion. He makes it clear that these are occupied with different departments of human experience which may thus roughly be designated. Science is concerned with the things which are seen and temporal, while the province of religion must be sought in the things which are unseen and eternal. But since truth, in the last analysis, is one, wholly self-consistent and indivisible, it must be a subject for rejoicing amongst religious people that scientific doctrine is flowing in channels which accord a great deal better with religion than those which were most prominent at the end of last century. Faith is thus made much easier to the modern mind, imbued with modern culture, whilst living, moving, and having its being in modern conditions.

I would venture to deprecate all attempts to resolve the material into the mental, or the mathematical. After all has been said, the use of mathematics to express the teaching of scientific research is merely descriptive, as Dr. Aldis explains. It would be a mistake to argue that, because a phenomenon cannot be imagined, it has, therefore, no objective reality. There are things in heaven and earth which the eye hath not seen, nor the ear heard, nor have they entered into the heart of man. But their independent existence is not in question. God reveals them to such as He pleases by His Spirit (1 Cors. ii, 9-10).

Physics and metaphysics alike search for some basic factor which will serve as a body of union and unity for all things else. Some have tried to find it in matter, and others in spirit. Materialism and idealism have both enchained the minds of men. Does the Bible not supply the clue by its affirmations that in Christ all things consist, as Paul demonstrates so powerfully in Colossians, 1, 9-20. In His Incarnation, mind and matter kiss each other. He is the Truth as well as the Way and the Life. It cannot be otherwise since personality is the highest and deepest category which we know. The ultimate cannot be anything less in any branch of human knowledge.

Mr. E. A. MOBBERLEY wrote : In addition to the books mentioned in the very lucid account of the above subject, as given by Dr. Aldis, the following contain interesting information :—

The *Revolution in Physics*, by Zimmer (1941). An outline of the older "classical" physics is given and it is shown how new theories have become necessary in order to elucidate experimental results. For instance (page 59), "We have before us two theories of light, each of which is able to explain only a part of what we know about the properties of light." The wave theory helps to explain diffraction and interference, but does not explain Millikan's experiments (page 61), which showed, in 1916, that a charged electroscope can be discharged by light and that the discharge depends on the energy of light particles (spoken of as "bullets," "darts," or "Photons"). The book also gives an account of the various theories concerning the nature of matter. The account is admittedly incomplete because unmathematical.

In *Physics and Philosophy* (1942) Sir J. Jeans says (page 133) : "The wave-picture and the particle-picture do not show two different things, but two aspects of the same thing."

The World as I See It, by Einstein (1935). This book (not entirely in a scientific vein) gives some references. On pages 138, 139 and 156, is given the relation of the quantum theory to atomic structure. In speaking of theories concerning themselves *solely* with the *probability* of the occurrence of physical reality, he says (page 161), "I am still inclined to the view that physicists will not in the long run content themselves with that sort of indirect description of the real." In this paragraph and on page 159, "partial differential equations" are mentioned as the "natural expression of the primary realities of physics."

It seems to me that there is general agreement between the scientists mentioned that only *partial* explanations are given by the various theories—each being wonderfully adequate, *as far as it goes*, in giving mind pictures of *one* aspect of the properties of light and matter, but these things are really in themselves *unique*.

Towards a Christian Philosophy (1942). Professor Hodgson gives a profound study of some of the philosophical problems which are mentioned by scientific writers, but never really solved by the latter as they are outside the range of science. He says (page 172) that

“ when we try to study the universe by scientific method, for a while it seems to respond encouragingly to our enquiries, but when we push these enquiries further in an attempt to grasp its fundamental nature, it seems to slip through our fingers and elude us. It is, I believe, true to say that so far as we are seeking to know enough about it to control it, it is responsive to us. It is when we seek to answer the question of what it is in itself that we are baffled.”

Examples of this “ control ” are seen in the applied sciences, such as mechanical, electrical and civil engineering, metallurgy and chemistry, and—perhaps most important of all—medical science.

853RD ORDINARY GENERAL MEETING

HELD IN ROOM 19, LIVINGSTONE HOUSE, BROADWAY, S.W.1, ON
MONDAY, MAY 24TH, AT 5 P.M.

SIR FREDERICK KENYON. G.B.E., K.C.B., D.LITT., LL.D., IN
THE CHAIR.

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

The CHAIRMAN then called upon Sir Charles Marston (President) to read his paper entitled "Recent Biblical Archæology."

Questions were asked by Major H. B. Clarke and the Rev. Dr. Hart-Davies.

PRESIDENTIAL ADDRESS.

RECENT BIBLICAL ARCHÆOLOGY.

By SIR CHARLES MARSTON, F.S.A.

WE live to-day in an age absorbed in the details of its immediate existence, or in the details of material Sciences. Few seem to find leisure to survey the course of events as a whole, or to appreciate the movements that underlie them. So the time has hardly arrived when a subject like "Recent Biblical Archæology" attracts audiences such as those who listen to the Beveridge Scheme of Social Insurance.

Of the very few who seek to study the deeper and wider currents of existence, more than one have suggested that the causes of the present World catastrophe are due to the fact that too much attention has been paid to the Science of Matter, and too little to the Science of Man. Or to put it another way, we have been eager to use the evidence that matter supplies of its environment, while we ignore the evidence about Man and his environment, as written down both in the Bible and history.

Until this neglect has been overcome we may have to face more catastrophes. But when men finally accept the principles of experience which they are still striving to side step, then Biblical Archæology is likely to become a more popular Science.

In the meantime, a quotation ascribed to H. G. Wells seems apposite. He says, "Our own lives are all the practical material we have for the scientific study of living; the rest is hearsay."

We, who have exceeded the threescore and ten limit, can remember the day when the scientific study of living had reached

a stage where scientists thought that they knew about all there was to be known. They were neither concerned with Bible, History, or Tradition. They were captivated with *The Plan*—what Plan? A celebrated scientist, a Nobel Prize winner, has described it, as follows :—

“The scientists of the nineteenth century blundered in supposing that they had found a fairly consistent and universally applicable scheme of interpretation of the physical world—a set of laws in conformity with which all phenomena everywhere must take place.”

Needless to say, the discoveries of this present century do not all accord with “the Plan.” Nor has the high estimate of human knowledge withstood the light of further facts of observation. Some years before this war, Sir Arthur Eddington wrote : “We have turned a corner in the path of progress, and our ignorance stands revealed appalling and insistent.” Nevertheless, the nineteenth century idea of “the Plan”—the key to all knowledge—cast a spell upon the learning of the early part of this century, and we are still under its influence. This is partly due to the time-lag between those advanced in knowledge and those who teach it, and partly to the impression that the progress of science is continuous, and that what we believed last century is a sound basis for what we can believe to-day.

But in reality the progress of science is not continuous at all, but catastrophic. Sir James Jeans, in his Presidential Address to the British Association in 1934, pointed out : “The theoretical physicist must admit that his own department looks like nothing so much as a building which has been brought down in ruins by a succession of earthquake shocks. The earthquake shocks were new facts of observation, and the building fell because it was not built on the solid rock of ascertained fact, but on the ever shifting sands of conjecture and speculation.”

We had been accustomed to regard Physics as the most exact of Sciences. And in considering these weighty words, we wonder how many other so-called scientific conclusions taught as true to-day, may be built on conjecture and speculation, and may prove to be false. The time has surely come when an enquiry should be made into the fundamental assumptions on which all current knowledge is based. An edifice of so-called knowledge may look imposing and pretentious in its detail. But it must ever be remembered that these serve to conceal its foundations ;

and that if they are unsound the whole edifice is liable to collapse. The scientists of the nineteenth century who evolved the Plan, of course excluded the possibility of miracles from their laws. The evidence in possession of Science to-day no longer entitles us to do so. We have new facts of observation. Yet the spell of the nineteenth century is still upon us, so much so that few have the courage to affirm their belief in miracles. This war has supplied countless examples of physical courage. Is it not time that we had the moral courage to testify to the realities of our Religion in this important respect ?

My memory goes back to the days when the Bible was the basis of our Religion. It was also the basis of our Civilization. Both the British Empire and the United States treated this Book as their Supreme Authority. The Bible was also the Authority on Ancient History, Literature, Poetry, Anthropology, Psychology and other arts and Sciences. It was described by Mr. Gladstone as "The Impregnable Rock of Holy Scripture." But the nineteenth century marked a time when, instead of accepting the Bible as their Judge, Men began to judge the Bible. And some of us have thought they did not do so fairly, nor in accordance with the Laws of Evidence. This would have been of small account had the Book been Homer's *Iliad*, or another like Classic. But the Bible was an authority of enormous importance. It might well have been said: "If the Bible fell, so would our Civilization !"

As we look back on the past four years we perceive moments when our Civilization nearly did fall, and was sustained only through the superhuman help with which the Bible had made us familiar. When we turn from our Civilization to our Religion we find it in the same evil plight. Four-fifths of our people attend no place of Worship, and there is a widespread ignorance of the Bible even among leading men. No wonder it had become the essential and urgent work of the Science of Biblical Archæology to find outside evidence in Bible Lands, so that people could judge whether the Bible was what it represented itself to be, or whether it was, after all, a collection of myths and legends. The evidence supplied by Biblical Archæology has proved to be all in favour of the authenticity of Holy Scripture.

The conclusions of the Higher Criticism of the Bible have been many and varied. Let us consider three or four examples of how they are affected by Biblical Archæology. My own first contact with them was about half a century ago.

It was then represented that the Pentateuch was composed during the captivity in Babylon, and that its contents were derived from current knowledge gained there. When it was pointed out that the Pentateuch purported to have been written by Moses many centuries before the Captivity, the reply was made that it was customary in ancient times to ascribe writings to individuals who had lived long before, in much the same way as historical novels in our time often purported to be written by individuals who lived centuries ago. The answer to this was that people knew when they read such novels that they were all based on imagination. But to affirm that the first five Books of the Bible stood in a similar position, was to make them out to be nothing more nor less than forgeries. This remark was deprecated as being too strong. Moses might have said something of the sort. The answer was: So might the historical characters in the novels. But nevertheless we did not treat novels as historical records. Moreover, to put such an important part of the Bible into the category of fiction was to discredit the knowledge of our Lord Jesus Christ. Not only did He affirm that Moses wrote of Him, but in His contest with the Devil He replied to each of the three Temptations by quotations from Deuteronomy.

The critical conclusion that the Pentateuch was written in Babylon, because it was thought to reflect the knowledge of the period of captivity, has received its death blow from the recent discoveries of Biblical Archæology. These furnish conclusive evidence that the backgrounds of the actual time of Moses, and of his writings, are correct. The Ras Shamra discoveries in Syria, for example, positively refer to the very sacrifices that Moses instituted in the Wilderness.

Another of the recent results of Biblical Archæology has been the excavations of Jericho by Professor Garstang. Only a short time before them, an Authoritative Work had published the remarkable statement: "Readers may be able to examine the Pentateuch critically for themselves, or, in other words, to practise the Higher Criticism." Thus lightly could the Bible now be treated!

This critic went on to examine the Book of Joshua. He wrote concerning the walls of Jericho: "There is no reason to suppose that anything supernatural occurred. The wall *fell down flat* is merely literary hyperbole intended to convey the completeness of the victory; and nobody probably would have

been more amazed than the actual writer to learn that his words were ever required as a point of faith to be understood literally."

With this rash assertion we may compare the text in the Epistle of the Hebrews, which says: "By faith the walls of Jericho fell down" (Hb. xi, 30). We know now what actually did happen. The walls of Jericho fell down in consequence of an earthquake, which we legally describe as "an Act of God." They fell down flat instead of collapsing in heaps, because they were tied together by houses. Their foundations were defective, and the breadth and weight of the inner wall pushed the outer wall over and fell on top of it.

Again this critic said that: "It is perhaps hardly necessary to point out that had the walls collapsed entirely, Rahab and her household could scarcely have escaped." It is surely hardly necessary to point out in answer to this criticism that the narrative does not state that the walls collapsed *entirely*. We know now that the part of the walls where Rahab's house stood was held up by the adjacent Citadel which was built between the walls.

Dr. Driver, Canon of Christ Church, Oxford, wrote eloquent books on the Old Testament in the earlier years of this century. They are distinguished by a fine literary style and immense assurance on the correctness of his criticism. But the following passage contains a statement that has a fundamental bearing upon his whole work. Dr. Driver wrote: "It is a primary canon of historical criticism that a first-class historical authority must be *contemporary* (or nearly so) with the events which it purports to relate: if therefore the narratives of the Exodus were not committed to writing till several centuries after the Exodus took place, what value is to be attached to them? The two earliest narratives are undoubtedly those of J and E: these are based upon the oral traditions current in the ninth and eighth centuries B.C. upon customs and institutions in force at the time, and upon collections of—in all probability—written Laws," *vide* Driver's Exodus.

I have not discovered how Dr. Driver, after admitting the existence of writing, postulates oral tradition in this statement.

We have just seen how the excavation of Jericho has exactly confirmed the part of the Book of Joshua which describes its fall, and a statement in Joshua vi, 25, implies that the narrative was written in Rahab's lifetime.

In his excellent address on the Ras Shamra Tablets on

March 3rd, 1941, I think our distinguished and most learned Chairman, Sir Frederick Kenyon, contradicts these fundamental statements of Dr. Driver about oral tradition being the vehicle of the transmission of most of the Pentateuch, when he writes : " The proof of the early use of writing in the Near East is of vital interest to Bible students, because it shows that the earliest Old Testament records, whether of historical facts or of legislation, whatever the literary evidence may be as to their date and manner of composition, can perfectly well have been based upon contemporary written documents, and not merely an oral tradition. The fact now admits of no dispute. From Mesopotamia, from Asia Minor, from Syria, from Egypt, we have ample evidence of the habitual use of writing from at least the third millennium B.C. ; and our treatment of the early Hebrew literature must take account of this established and uncontestable fact."

There remains the theory that critics can distinguish the various sources of the Pentateuch, and assign them to unknown writers, whom they designate as J., E., P., D., etc. It is likely that sources did exist ; but that they can be distinguished with the certainty assumed is quite another matter. *For this system cannot be applied to modern writings.* The attempt to do so in the case of Deeks *versus* Wells in 1931, led to such strong language in the Canadian Law Courts that I hesitated to reproduce it in one of my books. But the case was brought to the Judicial Committee of the Privy Council in London, where Lord Atkin in his Judgment said that the details of the evidence were " quite properly described by one of the Judges as fantastic."

We know that ancient documents of remote times abound in duplications and reiterations. Therefore to assign one sentence in the Bible to one source, and the next to another, is purely a matter of conjecture and speculation, on which no conclusions can be made.

These examples of the so-called Higher Criticism, taken more or less at random, are fairly representative of the whole. It is hard to believe that they, and the methods employed, would ever have been seriously accepted by Church of England scholars, had it not been for the great delusion of the last century, that there had been discovered a scheme of interpretation of the physical world with laws, in conformity with which all phenomena everywhere must take place.

That made it easier to treat portions of the Bible as folklore, myth, and legend, because they did not conform to the Plan of the nineteenth century.

But instead of the Bible containing mythical elements the course of events has revealed them in the Plan. Nevertheless, here we have at the present time prominent Divines writing books for Religious Teachers in schools, in which warnings are given about myth and legend in the Old Testament.

These authorities do not seem to realize that there are far more dangerous myths less than a century old which are believed by multitudes to-day, and which, in my view, are responsible for the decline in both our Civilization and Religion.

The late Dr. Langdon, Professor of Assyriology at Oxford, wrote: "Darwinian evolution applied to the origin and progress of religion can have only one result: it must destroy the faith of mankind that there is any reality in religion at all."

The last address I had the honour to give this Institute was on May 8th, 1939. It was devoted to the Lachish Letters. It will be remembered that these consisted of eighteen pieces of pottery with ink writing upon them. They were found in the remains of a room in the Gate Tower of the City destroyed by Nebuchadnezzar; and they contained ninety lines of readable matter. They were handed to Professor Torczyner of the Hebrew University, Jerusalem, for decipherment and translation. They proved to be written in the Phœnician Hebrew script, of which the then existing knowledge was imperfect. They were contemporary personal letters between orthodox Jews in the days of Jeremiah the Prophet. As such the find was unique. Previous outside evidence concerning Israel and Judah had come through their enemies, such as Sennacherib's account of his treatment of Hezekiah, King of Judah. And even the Elephantine papyri (fifth century B.C.) were written by men who were only partly of Jewish birth and polytheistic in their beliefs.

The oldest existing manuscript of the Hebrew Bible is believed to be the one in the Synagogue of Cairo, and it dates back to about 895 A.D. It is written in the Assyrian Hebrew script adopted by the Jews after the Captivity. These Lachish Letters are therefore nearly fifteen hundred years earlier. And though in a different script—the Phœnician Hebrew—yet their phraseology, spelling, style and composition are the same as that of Jeremiah or II Kings. The Letters were written by an Officer named Hoshaiah to Jaush, the Governor of Lachish; and they

concerned the fate of the Prophet Uriah, the son of Shemaiah, mentioned in Jeremiah xxvi. It is not surprising that they aroused great interest amongst scholars, and a deluge of criticism of both decipherments and interpretations followed, in Jerusalem, in this country, and in the United States. Professor Torczyner took it all with remarkable open-mindedness and good temper. He has now published a Book in Hebrew in reply, and has sent me an English translation. I am endeavouring to arrange to have a summary published in this country. It contains many details to which it is needless to refer in this address. The one point of importance to us is, that the Professor still maintains the identity of the Prophet with Uriah the Son of Shemaiah, on which he has been assailed by others. The broad facts of the contents of these Letters are otherwise not in dispute. They contain frequent appeals to Jahveh, and no other Deity is mentioned. There is also reference to Jeremiah, Mattaniah, Gemariah, Jaazaniah, Neriah, Hagab and others, but no decision seems to have been reached as to which of them are to be identified with the individuals mentioned in the Book of Jeremiah, and elsewhere.

The Letters were written approximately in B.C. 600. It is interesting to refer to what is known of this Phœnician Hebrew script. The earliest known use of it appeared on the Moabite stone of about B.C. 890. It was also used on the Siloam inscription of B.C. 700, which was carved on the wall of the tunnel connecting the Virgin's Fountain with the Pool of Siloam in Jerusalem. It is also used in the manuscript of the Samaritan Pentateuch; and it would appear to greatly enhance its importance as compared with what scholars had previously assigned to it. There would seem to be sufficient evidence to justify the assumption that the Old Testament was originally written in this Phœnician Hebrew script. And Professor Torczyner has declared that it may well date back to Moses.

It will be remembered that, after Mr. Starkey's murder, the remainder of the Lachish Expedition with great bravery and fortitude continued their work until the end of the season. And their efforts were rewarded by the discovery of some additional specimens of the Phœnician Hebrew Script in the City itself, besides those already found in the gatehouse. One piece linked up with the Lachish Letters.

It will be recalled how the excavations revealed the fact that Nebuchadnezzar had twice destroyed Lachish, apparently once

in the reign of Jehoiakim, and again at the end of that of Zedekiah. As the Lachish Letters were found above the Jehoiakim level, it was supposed that they belonged to the reign of Zedekiah. This took no account of the possibility that they had been written in the days of Jehoiakim, and only brought to the gatehouse in the time of Zedekiah. The discovery of this additional Letter below the floor of a house erected in Zedekiah's time rather gives colour to this assumption.

Another fragment on the floor of a house had been taken from a jar which actually stood beside it. The writing on the broken off piece read: "In the ninth year." It was in the ninth year of Zedekiah's reign that Jerusalem was destroyed.

A third specimen contained a list of names followed by numerals, and was found on the roadway. It appears to be an Account, and Professor Torczyner devotes an interesting essay on the Hebrew system of numerology to it.

And last, but not least in point of popular interest, the discovery was made that on the perpendicular side of one of the steps of the Palace some schoolboy had scribbled the first five letters of the Phœnician Hebrew alphabet. So we can judge that schoolboys of 2,500 years ago possessed some of the characteristics of schoolboys of to-day. And this particular one made a valuable contribution to modern knowledge, since he supplied evidence for the sequence of lettering of the Phœnician Hebrew script, previously unknown.

In my 1939 Address reference was made to the promise Lachish afforded of further important discoveries. With it was coupled the interrogation—If we ever do get down to them in our time? Since those lines were written, the powers of Evil, to which reference was then made, have loosed this World War upon us. The further excavation of Lachish has had to be abandoned, and the Expedition's affairs out there are being wound up. The Staff of the Expedition have been scattered, and most of them are taking an active part in the war. Two Volumes of Proceedings, one on the Lachish Letters, and another on the Temple outside the Walls, written by the Staff of the Expedition, and magnificently illustrated, and printed and published by the Wellcome Trustees, have been circulated. It is hoped that in time more may follow, for the discoveries and work of Mr. Starkey, and his efficient staff, have so far only been partially illustrated and officially described.

An Organization that has long been active in the Holy Land

is the American School of Oriental Research. Despite war obstacles their energetic representative in Palestine, Dr. Nelson Glueck, continues to circulate delightful accounts of his travels in Transjordan and of the social life to-day in Jerusalem. Some years ago Dr. Glueck discovered and excavated the site of Solomon's Copper Works at Ezion Geber, Eloth, at the Northern end of the Gulf of Akaba. Bible students will remember that Ezion Geber was the last stage of the wanderings of the Israelites before they reached the wilderness of Zin which is Kadesh (Numbers xxxiii, 36). It was at Ezion Geber that Solomon built a navy of ships (1 Kings ix, 26), and it was from there that the ships sailed and fetched gold from Ophir (2 Chron. viii, 17 and 18).

The site of the copper factory is in the immediate neighbourhood. The spot was apparently chosen because it was exposed to the strong wind needed for the furnaces. The factory was built on virgin soil, and its ruins indicated how carefully it had been planned for its purpose. It was constructed of sun-dried bricks of a superior quality, and contained an elaborate system of flues and air channels for conveying a natural blast to its furnaces. From the architecture, and other evidences, there seems no doubt that it was the work of Solomon.

Unlike our modern factories, however, it was fortified and surrounded by a brick wall 27 feet high and from 8 to 12 feet thick. The great walls of Jericho enclosed only a small area. This factory site has the same characteristics—the total area was only $1\frac{1}{2}$ acres. Dr. Glueck remarks on the lack of reference to this working of copper at Ezion Geber in the Book of Kings, although the building of ships is mentioned.

The smallness of the place seems almost to preclude the idea that copper was smelted there in any quantity. One would be inclined to suppose that the factory was used for refining copper and casting finished articles, such as copper and iron nails for the ships, fish hooks, lances, spear heads, daggers, dishes and fibulæ—such as were found on the site. To us who are accustomed to factories covering many acres of land, the area of this place seems too cramped for smelting. That might well have been carried on at the numerous sites on the shores of the Gulf, and the raw copper conveyed in boats to Ezion Geber at its head.

However that may be, there seems no doubt that we have here, as Dr. Glueck suggests, the clue to Solomon's wealth. The products of his factory were carried South in his ships, and

bartered for the gold of Ophir. This was brought back on the return voyage and landed at Ezion Geber. Thence it was conveyed North to Jerusalem, some three weeks' journey on camel back.

It is fitting to end this Address with a reference to the death of Sir Flinders Petrie, in Jerusalem, last July. He would have been 90 years of age had he lived till next June. I had known and admired him, and Lady Petrie, for more than 40 years. As one looks back over that time, one wonders where Biblical Archæology would have been to-day without them. Their industry and research work were immense. He wrote something like 100 books, many of them minutely recording the discoveries he had made. We owe to him the system of pottery dating which has revolutionized Archæology, and made possible its verification of the Old Testament Records. In preparing an Address it so often happens that a quotation in the Press, or in current literature on another subject, arrests one's attention as apposite to what one is writing. Thus the sentence: "How easy it is to be an intellectual in opposition to the man of action!" came while these lines were being written. If ever there was a man of action it was Sir Flinders Petrie. Evidence was to him the basis of true knowledge, and he sought for evidence in Bible Lands when intellectuals were criticising Holy Scripture on a basis of conjecture and speculation. They had the easier task, but Petrie's work will survive when theirs has been forgotten. Of the many interesting things Sir Flinders said about Egypt, one remark in particular remains in my memory. It was that he felt convinced Egypt owed its greatness to a race of Supermen, and not just to the Egyptians themselves. This statement may one day change our conception of the future, and lead to further discoveries in the history of the past.

As matters stand at the present time publicity is not laying proper emphasis on the importance of leadership.

ARCHÆOLOGICAL NOTES.

The Council of the Institute considered that archæological notes dealing with items of current interest and relating to Biblical history would be of value to members of the Institute. Accordingly they invited Sir Frederic Kenyon, G.B.E., K.C.B., D.Litt., LL.D., F.B.A., Sir Charles Marston, F.S.A., and Air Commodore Wiseman, C.B.E., to write these, the earliest period of Bible history—the Patriarchal and Iraq period being assigned to Air Commodore Wiseman, Palestinian archæology to Sir Charles Marston, the New Testament period and Greek manuscripts to Sir Frederic Kenyon.

IRAQ.

By AIR COMMODORE P. J. WISEMAN, C.B.E.

THE war has stopped excavations in Iraq; and the publication of the results of discoveries made before the war has been held up by difficulties regarding paper and printing. The compilation of archæological notes in these circumstances presents difficulties, as obviously there are no current excavations to which reference can be made.

There is however one place of Biblical interest, excavated before the war, about which little seems to be generally known in this country. Its attraction to Bible students is that it is the place to which the ten tribes were taken when they were deported from Samaria by Assyria. The Bible passage is:—

“ Then the King of Assyria came up throughout all the land, and went up to Samaria and besieged it three years. In the ninth year of Hoshea, the King of Assyria took Samaria, and carried Israel away into Assyria, and placed them in Halah and in Habor by the river of Gozan and in the cities of the Medes. (2 Kings, xvii, 5 and 6, and xviii, 10 and 11.)

There has been a considerable amount of speculation as to the precise location of the district of Gozan and Halah to which the children of Israel were deported. Up to the beginning of this century the area of the headwaters of the Khabur was so dangerous for travellers, that apart from Beduin and Kurds, it was almost untrodden and unknown. Wandering robber bands occupied the neighbourhood. The district lay several days' journey to the South of the normal traveller's route from northern Syria to Mesopotamia,

which was by Urfa and Mardin and considerably north of the southern route from Damascus and Palmyra.

The main excavations at Tell Halaf (Halah) were made in the year 1927-1929 by Dr. Baron von Oppenheim, to whom, after the great war, the French authorities granted the permit to excavate in the headwaters of the Khabur.

This river is the only tributary of the Euphrates in Mesopotamia which has a permanent flow of water. In the region there are hundreds of springs; even in summer the Khabur is ninety feet broad, while in winter a great volume of water is poured into the Euphrates. This makes the district capable of great fertility. It was one of the oldest settlements in the area, and in ancient times was of great importance. Some of the pottery found was dated by the excavators at 3000 B.C. Many clay tablets written in cuneiform, and others in Aramaic were discovered; on several of these the name Guzana appears. It seems that Tell Halaf was the capital city of the Assyrian province of that name. Evidence of subsequent habitation by Greeks and Romans was traced.

While there was abundant evidence of its occupation as an Assyrian province, it is not at all surprising that the excavations revealed no trace of the presence of Israelite deportees. It is not likely that a people used as slaves or in a menial position would be mentioned on the monuments or inscriptions. What is of consequence is the precise location of what is probably the most important, and principal district to which they were deported. It must however be borne in mind that some were taken to the cities of the Medes, but as this is mentioned last, presumably the greater number were deported to the region of the Khabur. At one time it was imagined that Gozan was far more distant from Samaria than was Babylon from Jerusalem. This is not so. It is only about two-thirds the distance, that is 400 miles in the direct line. Moreover there was this difference, whereas between the Khabur and Samaria there was an almost continuous line of civilized cities, between Babylon and Jerusalem there was the great 500 mile stretch of desert, for the greater part almost waterless.

A cuneiform tablet was found at Tell Halaf dated in the year 793 B.C. explicitly calling the Assyrian Mannu-ki-assur "Governor of Guzana."

I well remember a discussion in the excavator's tent at Ur of the Chaldees when Mr. Gadd who was present told us of the recent discovery in the British Museum of a tablet which told of the fall of Nineveh. In 612 the Capital of the Assyrian empire was stormed by the Medes, and not long after the district to which the Israelites had been deported was taken.

I do not comment on any of the theories regarding the movements of the Israelites before or after that fall.

ARCHÆOLOGICAL DISCOVERY FROM THE TIME OF ABRAHAM.

By SIR CHARLES MARSTON, F.S.A.

THE educated public do not yet seem to realise that during the past eighteen years great strides have been made in the Science of Archæology. These are especially due to the classification and dating of the pottery fragments which lie among the ancient relics of civilization in Bible Lands from before the days of Abraham. When Archæologists dig among these antiquities they now know where they are in time. And these dated fragments fit into the periods of Bible History to which they belong like the pieces of a jigsaw puzzle. So there has come to light evidence testifying to the historical Truth of the Old Testament which our forefathers did not possess, and which would be even unknown in the Time of Our Lord.

One would suppose that this War would arouse a quest for new Truth, and would mark a break in the false materialistic ideas of the early part of this century. But the time has hardly yet come for this in Bible study, and prominent scholars are either unaware of, or seek to ignore, results reached through the dating of pottery.

The Bible is a Biography of Abraham and his Descendants, and in these Last Days, the ground is cleared for its verification.

The pottery found in Professor Garstang's excavations at Jericho supplied a date of about 1400 B.C. for its destruction. This was a key date, and if the chronology of the Old Testament is based upon it we are able to work backwards or forwards with simple, clear, satisfactory results. The dates thus obtained satisfy the Old Testament statements and coincide with what is known of the outside chronology of adjoining countries. Nevertheless, some still try to cling to those old conjectures which create confusion in the ordered sequence of events.

On the basis of the Jericho pottery, Abraham was born in B.C. 2160 and entered Canaan in B.C. 2085. The cities associated with him in Genesis that have been identified contain pottery fragments which indicate they were in existence at this period. The identification of Hammurabi with Amraphael, King of Shinar, mentioned in Genesis xiv furnishes an outside date. The evidences of both Archæology and Astronomy indicate that Hammurabi began to reign in B.C. 2067, while the Jericho dating makes Sodom and Gomorrah to be finally destroyed in B.C. 2060. That leaves an interval of seven years in which the raid on these cities by Chedorlaomer and his associates could have taken place. It is perhaps

a shorter interval than one would assume from a cursory reading of the Sacred Narrative ; but there is nothing intrinsically improbable about it, while the immense interval of time covered by both dates makes their coalescence inexplicable unless they are substantially correct.

It is now generally recognized that Abraham's Race—the Hebrews—appear in outside history from B.C. 2200 as mercenary soldiers and traders in Babylonia and Assyria. This gives colour to the tradition that Abraham's father—Terah—was a military leader. And further support is derived from the Ras Shamra tablets (B.C. 1400) which contain a traditional account of the invasion of Palestine by a host of foreigners under Terah.

This in turn links up with the statements of Josephus that the Hyksos invaders of Egypt were the Hebrews.

The Book of Joshua contains the statement that Abraham's father and grandfather "served other gods." This can be identified with moon god worship. Nevertheless, the Hebrew National God according to inscriptions, was Elohim, a name used for God something like two thousand times in the Old Testament. Abraham therefore revived the original monotheistic beliefs of his Race. We know from Sir Leonard Woolley's excavation of Ur of the Chaldees that Abraham lived there in highly civilized surroundings. The houses were three stories high, built round a courtyard. They had bath rooms and other modern conveniences. The ruins of the rooms contained cuneiform tablets—some were historical, others hymn books, others were treatises on mathematics or arithmetic. Among the latter were forms for extracting both square and cube roots. According to Josephus, when Abraham visited Egypt he taught the Egyptians mathematics. A modern writer has represented Abraham to be a "herdman," instead of an employer of three hundred herdmen and what we should call today a great Sheikh. He gave up civilization and its idolatry, at the Commandment of God, and went to live in Canaan. He looked for a city which hath foundation, whose Builder and Maker is God. Thus he became "the Father of the Faithful."

Let us pass on nearly five hundred years over the biographies of Isaac, Jacob, and Joseph, until we come to Moses. The Jericho chronology tells us that he was born in B.C. 1520. Instead of the great Babylonian civilization we are now in contact with the Egyptian. It was a time when the native Egyptian dynasty had finally expelled the Hyksos invaders, and the Israelites, being Hebrews by descent, had become an object of hatred to the Egyptians. The most remarkable woman in all Egyptian history, Hatshepsut, the daughter of Thotmes I, by birth and by ability already exercised a dominating influence over the Egyptian Court. She maintained her position for forty years. It must have been

she who found the infant Moses floating on the Nile in an ark of bulrushes, and rescued him and adopted him as her son. This period of forty years in Egypt corresponds with the time of Hatshepsut's rule over it. Josephus, the Jewish historian, records incidents in the life of Moses at this time which coincide with what we know of incidents in Hatshepsut's reign.

In the interior of the Peninsula of Sinai there is a temple used for the type of worship which we read about in Genesis and Exodus. The place is called Serabit, and this temple belonged to the Midianite miners employed in the neighbouring turquoise mines. The Egyptian monuments there record that it was enlarged and beautified by Hatshepsut. Sir Flinders Petrie led an expedition there in 1904, and discovered that the miners had cut inscriptions in an alphabetical script on the neighbouring rocks. This is the oldest known alphabetical script, and goes back to the days of Moses, and some think to an even earlier date. When we excavated the Bible city of Lachish in South Palestine in 1933 specimens of this script painted on pottery were found in the rock tombs under the city. And a date of B.C. 1300 was ascribed to them. It would therefore seem as though the Israelites had learned this script when in Sinai under Moses, and brought it with them when they entered Canaan under Joshua.

It makes these facts more significant if we reflect that when Moses left Egypt, about the time of the death of Hatshepsut, he fled to Midian and lived there forty years. During this period Thotmes III, the greatest Pharaoh in history, made seventeen expeditions into Palestine and Syria and conquered these countries. His badge was the hornet, and the references in the Pentateuch to that insect helping the Israelites in their conquest of Canaan probably refer to these campaigns of Thotmes III, for this Pharaoh's conquests paved the way for Joshua's invasion forty years later. It must have been after the death of Thotmes III in B.C. 1447 that Moses returned to Egypt to demand the release of the Israelites from his successor Amenhetep II.

It is *most* significant that 1 Kings vi 1 dates the Exodus 480 years before the founding of Solomon's Temple, which took place between B.C. 967 and 957. When 480 years are added to these figures we have a margin for the Exodus between B.C. 1447 and 1437, a margin which begins with the very date of Thotmes' death. If, on the other hand, the 40 years Wandering in the Wilderness is deducted from B.C. 1437, the destruction of Jericho cannot be later than B.C. 1397, although the pottery dating of Jericho would allow a margin of another twenty years.

Considerations of space preclude discussion of other incidents in the life of Moses, but Archaeology has recently cast a great deal of light on the Legislation associated with him. We have been in

the habit of assuming that this Legislation, especially the Ten Commandments, was promulgated new to the world from Mount Sinai. It may have been so in form, but, with one exception, it had existed in substance long before Moses. Thus the deceased in the Egyptian Book of the Dead is made to say—"I did not slay men. . . . I did not steal. . . . I did not speak lies. . . . I did not commit adultery." Again, the tablets recently discovered at Ras Shamra in Syria prove that there, between B.C. 1400 and 1360, Sacrifices, similar to those we read about in the Pentateuch, were being used for polytheistic worship by Arabs speaking Archaic Hebrew. Their relationship to the Old Testament Sacrifices is beyond doubt, but how it came about is a subject of its own. But the effect was to make already existing Laws, Rituals, and Legislation, a framework for the all-important Covenant with the descendants of Abraham.

The conquest of Canaan under Joshua, which immediately followed the death of Moses in B.C. 1400, began with the siege of Jericho. Some reference has already been made to the excavation of that city. Professor Garstang found that the account of its destruction contained in the Book of Joshua was strictly correct, and justified the suggestion that the record came from an eye witness. The conquest of Canaan by Joshua at the date supplied by the Jericho pottery corresponds with the period of the Tel-el-Amarna correspondence. These letters from Palestine contained appeals to the Pharaohs Amenhetep III and IV for help against invaders from the other side of the Jordan called the Habiru and the Sagaz. There seems little doubt now that these were the Hebrews under Joshua whose name actually occurs on one of these tablets. And other evidences of identification can be quoted.

Archæology is suggesting that the Egyptians helped the Israelites in their conquest of Canaan. At the time the event occurred a monotheistic revival at the Egyptian court had brought the religion of its rulers into harmony with that of Israel, and hostile to that of the idolatrous and untrustworthy Canaanites. Archæology also tells us that, after the conquest of Canaan, the Israelites were in constant contact with Egypt. On the other hand, save for allusions to the Exodus, the Old Testament ignores Egypt from the time the Israelites entered Canaan, until the days of Solomon. The silence may be due to the fact that the annual Feast of the Passover celebrated Israel's deliverance from Egypt. And it would have dimmed its glory to record that Egypt helped the Israelites when and after they reached the Promised Land.

Space only permits references to a few more archæological contacts with the long history of Israel and Judah. The first was when we laid bare the remains of the Jebusite City of Jerusalem captured by David, and revealed how Joab effected an entry into that impregnable stronghold.

For the time of Solomon, Dr. Glueck, excavating on behalf of The American School of Oriental Research, uncovered the remains of a factory for the manufacture of copper articles at the head of the Red Sea Gulf of Akaba. There the copper nails were made for the ships that fetched the gold from Ophir, and other articles for exchange for the gold.

In the days of Solomon's son Rehoboam, Shishak, the first Pharaoh mentioned by name in the Old Testament, captured Jerusalem. It is interesting to record that Egyptian chronology makes his reign coincide precisely with that of the Old Testament based on the Jericho pottery date.

A reference to the discovery of the Lachish Letters, written in the days of Jeremiah the prophet, make a fitting end to this archaeological summary. These are the only personal letters of Old Testament times yet brought to light. They consist of eighteen pieces of pottery with ink writing upon them. The writing is in the alphabetical Phœnician Hebrew script used by Hebrew scribes before the Captivity. It represents a series of messages to the Governor of Lachish concerning the affairs of Uriah the prophet mentioned in Jeremiah xxvi. Some idea of the value of this discovery is gained when we consider that the oldest existing Hebrew Manuscript of the Old Testament was written about A.D. 900 in the Assyrian Hebrew script which came into use after the Babylonian captivity. These letters are therefore fifteen hundred years earlier, written in an earlier script which we know was used as early as B.C. 850. Experts say it may actually date back to Moses, like the alphabetical Sinai Hebrew script found in the rock tombs under the city. Although this Phœnician Hebrew script is so much older than the Assyrian Hebrew in which our copies of the Old Testament are written, yet in phraseology, spelling, style, and composition, the letters agree with 2 Kings, or Jeremiah, written about the same time.

It is earnestly hoped that this summary will convey some idea of the progress that Archæology has made during the past eighteen years in throwing light on the Bible; and that this outside evidence about the Old Testament will be embodied in future teaching in Schools and Colleges.

GREEK MANUSCRIPTS AND ARCHÆOLOGY.

By SIR F. G. KENYON, G.B.E., K.C.B., D.Litt., LL.D., F.B.A.

A TIME of war is not likely to be favourable to archaeological research or literary criticism; and the present war has swept over all the Bible lands, and has absorbed, and still absorbs, the time of all the younger, and not a few of the older scholars to whom we should naturally look for such research. Excavation has been impossible, publication has been difficult, and inter-communication between scholars in different parts of the world has been impeded or wholly interrupted. The present report must therefore be based mainly on work done shortly before the war, with a little overlap into the war years.

The principal event in the sphere of the textual criticism of the Greek Bible during the past decade has been the publication of the Chester Beatty papyri. The discovery of this group of fragmentary MSS. of many books, both of the Greek Old Testament (Septuagint) and of the New Testament, was first announced in November, 1931, and between July, 1933, and October, 1938, the texts of all the MSS. of the canonical books were published, together with complete photographic facsimiles of all except two, which still await completion. As a supplement to this series (published in this country by Messrs. Emery Walker) must be mentioned a volume published at Princeton University in 1938, under the editorship of A. C. Johnson, H. S. Gehman, and E. H. Kase, entitled *The John H. Scheide Biblical Papyri: Ezekiel*, which contains 21 leaves from the same MS. as one in the Chester Beatty collection. The MS., when complete, contained the books of Ezekiel, Daniel, and Esther; the Scheide leaves include the text of Ezek. xix, 12–xxxix, 29, with gaps of five leaves, while the Chester Beatty fragments are the upper halves of 8 leaves of Ezekiel (xi, 25–xvii, 21), 13 of Daniel (iii, 72–viii, 24), and 8 of Esther (ii, 20–viii, 6, with the apocryphal portions belonging to them, which in our Apocrypha are numbered as parts of ch. xiii–xv). The Princeton leaves, which are approximately perfect, thus make a very substantial addition to our knowledge of this MS., which cannot be later than the first half of the third century, and is by Wilcken assigned to the second.

But besides the canonical books in the Chester Beatty collection (which, it may be remembered, comprises portions of the books of Genesis, Numbers, Deuteronomy, Isaiah, Jeremiah, Ezekiel, Daniel, Esther, Ecclesiasticus, the four Gospels, Acts, all the Pauline Epistles except 2 Thessalonians and the Pastorals, and Revelation), one MS. contained portions of two non-canonical works, the Book

of Enoch and a homily on the Passover and Passion by Melito, bishop of Sardis in the second half of the second century. Six of the fourteen leaves composing this MS. belong to the University of Michigan, and it was arranged that the whole should be edited by Professor Campbell Bonner of that University, who executed the work with great competence. The Enoch appeared as Part VIII in the series of *Studies and Documents* controlled by Professor and Mrs. Kirsopp Lake in 1937, and the Melito as Part XII in the same series in 1940; and a photographic facsimile of the whole MS. was issued as a volume of the Chester Beatty series, under the editorship of the present writer, in 1942. Besides these 14 leaves, there were three small fragments in the same writing, which evidently could not form part of either Enoch or Melito; and these were brilliantly identified by Professor Bonner as belonging to an apocryphal Book of Ezekiel, of the existence of which there is evidence in Clement of Alexandria, whose quotation from it in part coincides with one of the Beatty fragments.

The Enoch text occupies pages bearing the numbers 15-26, and comprises ch. xcvi, 6-cvii, 3 (ch. cv and cviii being omitted). The fourteen pages lost before these would not have sufficed for all the preceding chapters of the complete work, and it may be presumed that the extract began with ch. xci, where a distinct section begins. It ends with the title, "The Epistle of Enoch," which might well be applied to this section, but not to what precedes it. The homily of Melito follows immediately, with the author's name at the head of it. It occupies sixteen full pages, and is apparently near its conclusion on the last of these. The Ezekiel fragments may have either preceded the Enoch (since ch. xci-xcvii would not have filled all the missing pages), or followed the Melito, since the seven missing leaves at the beginning must have been balanced by seven at the end, the MS. being a single-quire Codex of 28 leaves, of which the middle 14 have been preserved.

The book of Enoch was originally written in Hebrew, but of this no fragment has survived. Of its translation into Greek, a few words were known from the quotation by St. Jude, and some extracts (from ch. vi-x, xv) were preserved in the 8th century chronographer Syncellus. The whole work became known when the traveller, James Bruce, brought back three MSS. of an Ethiopic version in 1773. From one of these Archbishop Richard Laurence published an English translation in 1821. The Greek text of ch. i-xxxii was recovered from a vellum codex discovered at Akhmim in Egypt in 1886 (which contained also portions of the Gospel and Apocalypse of Peter); and now the Chester Beatty MS. has added the end of the work, ch. xcvi, 6-cvii, 3, ch. cv and cviii, which are alien intrusions in the Ethiopic text, being omitted. The exordium to this final section (misplaced as xcii, 1-5, which should precede

xcī) describes it as "The book written by Enoch for all my children who shall dwell on the earth, and for the future generations who shall observe uprightness and peace." Enoch foretells the increase of violence and apostasy, which the Lord will punish. He recounts the events of seven "weeks," of which six are yet to come, after which the elect righteous shall be chosen. Three weeks more shall follow, and then the first heaven shall pass away, and a new heaven shall appear. After that "there will be many weeks without number for ever, and all shall be in goodness and righteousness and sin shall no more be mentioned for ever." The rest of the book is taken up by exhortations to the righteous, denunciations of the wicked, and a forecast of the Day of Judgement. Chapters cvi and cvii are portions of a different work, narrating the birth to Lamech of a wonderful son, of whom Enoch says that he shall be named Noah, and that in his days there shall be a great deluge, in which all mankind except himself and his three sons shall perish.

The homily of Melito has hitherto been known only by a few quotations. Eusebius mentions him as a bishop of Sardis in the time of Marcus Aurelius, and includes in a list of his works two treatises on the Passover. Tertullian describes his style as "elegant and rhetorical," and the newly-discovered text fully bears out this description. It is a highly rhetorical and artificial comparison of the Passover and the Passion, full of elaborate antitheses and of juxtapositions of Old Testament antitypes and their fulfilment, of which the following is a sample :—

"You have heard now the story of the type and of the retribution [*i.e.*, the story of the Exodus, especially the slaughter of the first-born]; hear also the plan of the mystery. What is the Passover? It is so called from that which befell, that is, from 'suffer' [Pascha, paschein]. . . If you wish to see the mystery of the Lord, look at Abel who was slain like him, at Isaac who was bound like him, at Joseph who was sold like him, at Moses who was cast out like him, at David who was hunted like him, at the prophets who in like manner suffered for Christ's sake."

An indictment of Israel for its ingratitude follows :—

"Thou wast of good cheer, while he was hungry; thou wast eating bread and drinking wine, while he drank vinegar and gall; thou wast glad of countenance, while he was sad; thou wast rejoicing, he was oppressed; thou wast singing, he was judged; thou gavest command, he was nailed to the cross; thou wast dancing, he was being laid in the tomb; thou wast lying upon a soft cushion, he in the grave and the coffin."

There is much more in the same style. The whole homily makes no addition to the evidences or doctrines of Christianity; but it is a

remarkable specimen of the homiletical literature of the second century, and its recovery in a manuscript written in the fourth century is a proof of its continuing popularity.

The main service of the Chester Beatty papyri has been to fill the gap between the original composition of the books of the Septuagint and the New Testament and the great vellum codices of the fourth and later centuries on which our knowledge of their text has hitherto been based. We now have manuscripts (imperfect, it is true, but still substantial) which carry back the tradition to the beginning of the third, and in some cases of the second, century. These earlier witnesses show that, while much verbal variation had crept into the record in the course of the second century, the substance is the same and is authentically preserved. That is enough for the ordinary reader of the Bible, who only needs to be assured that the books which he reads do in fact belong to the period to which Christian tradition has assigned them and have come down to us in a substantially correct form. Minor details of variant readings concern chiefly the textual specialists. For them the chief point of interest has been the identification, principally by Streeter and Lake, of a certain type of text as that which was used by Origen in the latter part of his life (A.D. 231-253), when he was living at Caesarea, and which has consequently been named "Caesarean," though it may in fact have been brought by Origen from Egypt. This type of text was first recognized as something distinctive (though not then as Origenian, but merely as a type current in Calabria in the 13th century) by W. H. Ferrar, whose work was completed and published by T. K. Abbott in 1877. It then consisted of four MSS. numbered in the catalogue of N.T. MSS. as 13, 69, 124, and 346, and commonly known as the "Ferrar group" or "Family 13." This group has been recently restudied by Kirsopp and Silva Lake, who have edited the text of Mark from these MSS. in Part XI of *Studies and Documents* (1941). This serves as a basis for another work which the same scholars have in hand, an edition of the Caesarean text of Mark, in which they will take into account, not only Fam. 13, but also the kindred Fam. 1 (edited by Lake in 1902), the Washington and Koridethi vellum MSS. (W and Θ), the Georgian version, and finally the Chester Beatty Gospels papyrus, all of which preserve, to a greater or less degree, traces of this textual type. There is therefore now much material for the establishment of this textual family, but the material is difficult to handle, and scholars await with interest the results of the studies of Professor and Mrs. Lake, which they are happily free to pursue in spite of the war.

Another work in which the results of recent discoveries are set out for the use of students is the new Oxford critical edition of the Greek New Testament. This was undertaken by a committee of

which the Bishop of Gloucester is chairman, with a view of providing an up-to-date successor to the edition published by Tischendorf in 1869-72. The editor is the Rev. S. C. E. Legg. The need of such an edition, to incorporate all the new material that has accumulated since 1872, is evident. The first volume, containing St. Mark, was published in 1935; the second, containing St. Matthew, at the end of 1940. St. Luke is now in preparation, but all printing is necessarily suspended until after the war.

Of the Greek Old Testament there is not much to report. A fasciculus (Vol. III, Part I) of the great Cambridge Septuagint, edited by A. E. Brooke and N. M'Lean, appeared in 1940, containing Esther, Judith, and Tobit. This completes the narrative books of the O.T. (apart from Maccabees); but the death of Dr. Brooke and the illness of Dr. M'Lean are a grievous blow to the progress of the work, and no announcement has been made of the arrangements to carry it on. Meanwhile the Septuaginta-Kommission of Göttingen has likewise taken the Old Testament in hand. Its large-scale edition has wisely begun with books not likely to be reached by the Cambridge editors for a long time. The Psalter was published by Rahlfs in 1930-31, 1 Maccabees by Kappler in 1936, Isaiah by Ziegler in 1939, and 2 Maccabees is in preparation. Besides these a text of Genesis with a reduced apparatus was issued by Rahlfs in 1926, and a complete Septuagint, based on the three MSS, 47, A, and B, with a short textual apparatus, in 1935. This differs from Swete's shorter Cambridge Septuagint (1887-94) in giving a revised text instead of simply the text of B, but its apparatus is more slender.

There is plenty of work awaiting scholars when peace shall restore the possibility of scholarly work and of material production.

THE ASSASSINATION OF SENNACHERIB

By E. B. W. CHAPPELOW, F.R.A.S., F.R.S.A.

THE publication, in 1931, by the late Dr. R. Campbell Thompson of the prism of Esarhaddon, which he discovered at Nineveh in 1927/8, has re-opened the whole question of the author of Sennacherib's assassination and lends colour to the theory that it was really Esarhaddon himself.

When Sargon II ascended the throne of Assyria in 722 B.C., Babylonia was torn in twain by the anti-Assyrian party which supported as a deliverer the Chaldean Merodachbaladan (whose first appearance was in the reign of Tiglathpileser III, 745-727; the Biblical Pul), and the pro-Assyrian party, the priestly class, who were influenced by a community of culture and Sargon's conciliation of them.

Sargon at once had to face Merodachbaladan in alliance with Elam and was defeated at Dûrilu and compelled to leave the Chaldean undisputed King of Babylonia for twelve years.

Then in 710-709 B.C. he renewed the contest, expelled Merodachbaladan, and ruled as governor (*shakkanaku*) of Babylon until his death.

At Sennacherib's accession in 705 B.C., nominees of all parties, Assyria, Chaldea, Elam, and the native Babylonians themselves, had reduced the country to utter confusion, which was made worse confounded by the revolt of Hezekiah of Judah fomented by the Chaldean king.

In 689 B.C., in the face of constant revolt and the loss of a brother and two sons in Babylonian affairs, Sennacherib destroyed Babylon and deported the statue of Bêl-Merodach to Assyria, thus alienating the priesthood. For the rest of his reign he ruled Babylon through governors and appointed his younger son Esarhaddon to the post in 681, the year, be it noted, of his assassination.

Such being the political background, let us examine the extant evidence.

In his 1927 prism (Col. i, 1-18 - Col. ii, 11 1 and 2 and 8-11) Esarhaddon states that he was a younger son and had been appointed to the succession by Sennacherib with divine approval, that king having compelled the Assyrian people, including

Esarhaddon's two brothers, to take the oath of allegiance to him; that his brothers then fomented scandal and instigated rebellion against him behind his back, that Ashur and Merodach caused him to take refuge in a secret place and that his brothers then fought each other for the crown, but were helped neither by the people nor the gods.

Esarhaddon then says that he marched in haste towards Nineveh and met and defeated his brothers in Khanigalbe (the ancient Mitanni). The enemy troops and the Assyrian people acknowledged him as king, whilst the two brothers deserted their troops and fled to an unknown land. Esarhaddon then entered Nineveh and mounted the throne, and later, he says, heavily punished and destroyed the seed of the troops who had supported his brothers.

I.—THE PLACE OF THE ASSASSINATION: BABYLON, NINEVEH OR ASHUR.

(a) *Babylon.*

Dr. Thompson points out that Schmidt (*Asarhaddons Staatshalterschaft*, 109) had already suggested that the temple of Nisroch in II Kings, xix, 36 & 37, should be read as the temple of Merodach, *i.e.*, Êsagila in Babylon, quoting in support Ashurbanipal's statement in the Rassam Cylinder, Col. iv 11, 70 *et seq.*, that he gave the dismembered limbs of the rest of the people (of Babylon) who had cast down his grandfather, Sennacherib, among the colossi, as food for dogs, etc. A. Jeremias (*The Old Testament in the Light of the Ancient East*, 1911) agrees with this and also suggests that there is a definite break in the sense between vv. 36 & 37 of II Kings xix, so that it is not implied that the temple of Nisroch was in Nineveh.

The Rassam Cylinder is the only native inscription which mentions a definite scene for the murder, *i.e.*, Babylon.

(b) *Nineveh.*

In an epigraph of Ashurbanipal in *Cuneiform Texts (British Museum)*, xxxv, 15, a deity, Ishtar of Arbela or Ashur, says "By my great help thou did'st defeat their warriors, the rest alone in my hand . . . in Nineveh, the city of thy rule, with the sword thou did'st destroy them", and Ungnad (*Zeitschrift für Assyriologie*, xxxv, 50, 1923) claims this as referring to the murderers and as proving that Nineveh was the scene of the

crime, and that, as Esarhaddon's brothers were in Nineveh, the guilt was theirs.

The inscription, however, is, it may be submitted, very indefinite and inconclusive.

Dr. Thompson points out that if Nisroch be Merodach, then the Temple must be Êsagila in Babylon and not the small Temple of Nebo and Merodach in Nineveh where he found no colossi, and that the murderers must have been Babylonians or have come from Babylon as otherwise Ashurbanipal would not have devoted Babylonians to Sennacherib's shade, but adds that the people mentioned by Ashurbanipal in *Cuneiform Texts*, xxxv were possibly not the same as those mentioned by him in the Rassam Cylinder.

As both these inscriptions refer to Ashurbanipal's own conquest of Babylon in 648 during the civil war with his brother Shamash-shumûkin, the persons mentioned were of a generation subsequent to that of the murderers of 681 B.C.

Dr. Thompson further claims that the Assyrian tradition, according to these two texts, was that the crime had been committed by Babylonians in Babylon or from Babylon, and that as Esarhaddon was Crown Prince in Babylon in 681 B.C., this strengthens the evidence against him.

The civil war between the two brothers must have been *after* the assassination, and is confirmed by the *Babylonian Chronicle*, Col. iii, 11, 36-37, which merely states that his *son* killed Sennacherib in a revolt which continued in Assyria from the 2nd to the 18th Adar, when Esarhaddon succeeded, but it is not clear whether this refers to the strife between Esarhaddon's two brothers or to that between them and Esarhaddon.

(c) *Ashur.*

This is a possible site according to the letter K.82-2-4, 65, published by Leroy Waterman in his *Assyrian Royal Letters*, from an unknown writer to an unknown addressee. Waterman describes it as a report on the confusion in Ashur incident to the murder of Sennacherib, perhaps with the hope of assisting Esarhaddon's accession.*

It states that the wife of the king's prefect had been made to enter the palace, but when they heard that the king (un-

* It must be stated that Olmstead ("Western Asia in the Days of Sargon," 1908, p. 158) puts forward the suggestion, but only the suggestion, that this refers to the body of Sargon who fell in battle against the Cimmerians.

named) was dead, the prefect made her leave it. A dirge was then chanted before the prefect and his chief officers who wore red robes and golden rings. A broken passage follows with a reference among others to a certain Danai, who is said to have loosened the fastening of the great gate and to have brought forward something (according to Waterman, the dead, *i.e.*, Sennacherib) and it is then stated that they went forth to the dead to weep. The prefect and his men were wrapped in mantles(?) and stood with iron daggers drawn. The people (?) were afraid and appealed to Hâmbî the courier, and someone, apparently Hâmbî, entered the palace and went unto the fastening, saying "Open the door", and they laid hold of the prefect, and he (Hâmbî?) slew the sons of Zazaki.

If, as Waterman suggests, the king mentioned in this letter is Sennacherib, the dead body referred to was presumably his. If so, was he killed there or did his body merely rest in Ashur on its way from Babylon to Nineveh, or were the kings of Assyria buried in Ashur?*

Was the prefect acting as official guardian of the body or had he himself committed the murder at the instigation of Adramelech and Sharezer or Esarhaddon? If the latter, were his accomplices the sons of Zazaki, whom Hâmbî (?) slew?

That he should have overawed the people of a purely Assyrian city is strange unless he was the guilty party in the employ of non-Assyrians, perhaps Babylonians, or the feeling against him, if he had acted on the instructions of the Assyrian party at Nineveh, might have been one of natural indignation at the assassination of the national king. On the other hand the slanders of which Esarhaddon complains and the fact, which he himself admits, that he had to go into hiding, make it possible that the prefect, if guilty, had acted for him and the Babylonian party. And who was Hâmbî? Was he an emissary of Esarhaddon who had come to encompass the downfall of a hostile pro-Assyrian official, merely an ordinary State courier who happened to be on the spot, or had he been sent from Nineveh to stir up feeling against the tool of the Babylonizing Esarhaddon? If Waterman's suggestion is correct, these queries are legitimate.

The question of locality is bound up with the identification of Nisroch, but no god of this name is known from cuneiform

* We know, from the *Babylonian Chronicle*, on pp. 272-275 of Band II of Schrader's *Keilinschriftliche Bibliothek*, 1890, that Kings of Babylon were buried in the palace of Sargon of Agade and others.

sources. He cannot be the Assyrian Nusku whose chief seat was at Kharran. The name has, however, been regarded as composite (Schrader: *Cuneiform Inscriptions and the Old Testament*, 1883, and Pinches: *Old Testament in the Light*, p. 129), Pinches' suggestion being that it is a form of *Ashuraku*, just as Nimrod is probably for *Amaruduk* or *Amarudu* in the original Akkadian, *i.e.*, Marduk (Merodach), the initial N being an assimilation to the Hebrew Niphal.

Schrader also pointed out that the Septuagint reads for Nisroch 'Assarach, if this, with Wellhausen, is to be regarded as the proper emendation for the traditional Nasarach or Meserech (*cf.* the Arasche of Josephus), which would support the *Ashuraku* of Pinches.

If this be the case and II Kings be correct, the choice of site rests between Ashur, the chief seat of this god's worship (supporting K.82-2-4, 65 already referred to) and Nineveh, supporting II Kings.

But Thompson and Hutchinson (*A Century of Excavation at Nineveh*, 1929) make no mention of temples of Ashur or Nusku ever having been discovered at Nineveh, which Sennacherib calls (Bellino Cylinder, 1-34) "the city beloved of Ishtar", who was peculiarly associated with it, and whom indeed, coupled with Ashur, he always invokes, whilst the small temple of Nebo and Merodach at Nineveh had no colossi to square with Ashurbanipal's statement, unless there was a private oratory to Ashur in the great "Palace without a Rival", which Sennacherib built there.

Thus of the three possible sites Babylon remains the only one specifically connected with Sennacherib's assassination in the inscriptions.

(2) *The Identity of the Assassin or Assassins.*

According to the cuneiform evidence Sennacherib had six sons, of whom Ashurnâdînhûm, carried captive to Elam in 694 B.C., and Aradbêlit, killed in a Babylonian revolt in 691 B.C., predeceased him.

The names of the other four were Ashurilumuballîṣu, Ashurmunik, Ashursharetir, and Esarhaddon.

Pinches says that ²Ashûr²munik would be better read as Ashurmulik and suggests that he may be Adrammelech, in which Goodspeed, in his *History of the Babylonians and Assyrians*, 1903 supports him, but according to Schrader the Assyrian form of Adrammelech would be *Adarmalik*. Johns (*Ancient*

Assyria, 1912) suggests Ashurshareṭir for Sharezer, but the ending *ezer* would in Assyrian be *utsur* rather than *etir*.

The native sources attribute the assassination to *one* son only and none of Esarhaddon's inscriptions give any names or mention it at all.

Thus the inscription of Nabonidus (556-539), in confirmation of the *Babylonian Chronicle*, merely states that the *son* born of his body slew the king of Mesopotamia (Subartu, *i.e.*, Assyria plus Syria—Pinches) with the sword.

Berosus (3rd century B.C.), who used cuneiform sources, names two sons, but this is not confirmed by any surviving texts. Abydenus and Polyhistor mention only one (according to Abydenus Adramelus, *i.e.*, Adrammelech, who was succeeded by Nergilus (Neriglissor) who was in turn put down by Axerdis (Esarhaddon)). Schrader points out that whereas II Kings xxxv has preserved in Sharezer one part, Abydenus has preserved the other part of the full name *Nergalsharutsur* (Neriglissor), who is, however, not found among Sennacherib's known sons.

V. Floigl (*Cyrus and Herodotus*, Leipzig, 1881, as quoted by Schrader) suggested that Neriglissor might be the eldest son of Ashurnâdinshûm and so the legitimitist heir by descent to the Assyrian crown.

The choice is, therefore, apart from Esarhaddon himself, narrowed down to Ashurmuballitsu, Ashurshareṭir and Ashurmunik, plus perhaps a grandson.

Of the two names given by later writers Adrammelech is consistent throughout, but that of the second varies between the two parts of the composite *Nergalsharutsur*.

It is possible that both Esarhaddon's mother and wife were Babylonian princesses, so that he himself might well be half a Babylonian. Like Sargon, he too favoured the priesthood whom Sennacherib had offended by deporting the statue of Bêl-Merodach, whilst his stay in Babylon had perhaps endeared that immemorial city to him.

If it was his mother, Queen Naqia, through whose influence he supplanted his brothers, his sympathies would naturally induce him to reverse his father's policy towards Babylon and build up for himself a party there as a basis for his struggle for the Assyrian throne. His immediate recognition as King in Babylonia after his father's assassination supports this probability.

It is, therefore, possible that Esarhaddon was, if not the author of the assassination, at least its instigator.

With regard to events in Assyria, although II Kings and later Assyrian sources make no mention of the civil war, except that Adramelus was succeeded by Nergilus, who was put down by Axerdis, the *Babylonian Chronicle* does, although without details. Esarhaddon himself is the only native authority who states that the brothers fought each other, but here again his account, as already summarized, is confused.

In Col. i, 11, 77-79 of the 1927 prism he says the rebel soldiery acknowledged him as king and returned to their allegiance to him, but in l., 82 that his brothers deserted the troops who were helping them, and in Col. ii, 11, 8-11, that he grievously punished the rebel troops who had been helping his brothers, and destroyed their seed. If the troops who, Esarhaddon says, deserted to him, were those he subsequently punished, then he convicts himself of perfidious savagery.

Esarhaddon says that the Assyrian people did not support his brothers and Berosus that they were driven out by the citizens of Nineveh. But what does Esarhaddon actually mean by the Assyrian people? The hardy peasants and farmers who had formerly formed the backbone of the army and the State, had been bled white by generations of warfare, so that the army at this time included a large number of mercenaries. Apart from these, there would, of course, be the mercantile, priestly and official classes. It would be interesting to know with what troops Esarhaddon drove his brothers out.

Was it with the Assyrian garrisons of Babylonia plus native Babylonian troops? What proportion of the regular army had he? Did the bulk of the regular army support the brothers in Nineveh as representing the legitimist claims of primogeniture and the Assyrian as opposed to the Babylonian party? The army, presumably officered by Assyrians proper of noble birth under the Crown, was at this date the most effective force in the State, whilst the mercantile classes would naturally favour strong government rather than a struggle for the Crown either between the brothers and Esarhaddon or between the brothers themselves.

But the statements of Esarhaddon and Berosus as to the Assyrian people and the citizens of Nineveh have little bearing on the subject under review, because it is obvious that they only took action when the day had already gone in Esarhaddon's

favour and, therefore, turned to the rising sun. The officers of the army or such part of it as was in Assyria would very probably have instinctively opposed the pro-Babylonian Esarhaddon, especially if he were suspected of Sennacherib's assassination, whilst the rank and file, before the issue was decided, would naturally follow whoever paid them. Again, the oath of allegiance to Esarhaddon exacted by Sennacherib, being based on an injustice and no doubt exacted by *force majeure*, would have little binding effect, especially when Sennacherib had been assassinated and if it was suspected that the author of the crime was the man whom he had so conspicuously favoured above the heads of his elder brothers. We are thus again, in the absence of clearer written evidence, faced with an insoluble problem.

Unless it was a case of thieves falling out, Esarhaddon's statement that his brothers fought each other certainly militates against the statement in II Kings that they assassinated their father in concert, which it would surely have been to Esarhaddon's interest to broadcast. But if they did not, then the real assassin, whom Esarhaddon does not deem it advisable to mention, must have been a third party who himself or through his agents acted far from Nineveh, in fact, according to Ashurbanipal, in Babylon.

This would account for the confusion in Nineveh on receipt of the unexpected news, just as the letter K.82-2-4, 65 may mirror a similar confusion in Ashur.

Esarhaddon is guilty of yet another contradiction, for after saying that his brothers were at each other's throats, he represents them as united against himself. On the other hand their supersession in favour of Esarhaddon gave them a very strong motive for assassinating Sennacherib and for conspiracy and violence against Esarhaddon.

Nevertheless the evidence extant is far from exculpating Esarhaddon from at least complicity in the crime and does not allow us to accept II Kings as it stands.

But this faces us with yet another problem. How did the attribution of guilt for Sennacherib's assassination to one or two of Esarhaddon's brothers (both historically unidentifiable with any certainty) and not to himself become so current in the West as to be adopted in II Kings ?

Of course, Esarhaddon's account, being that of the victor and next King of Assyria, would be the official although not necessarily the true one. As the *Babylonian Chronicle* states, the civil war lasted only seventeen days, and as Esarhaddon's version

does not mention the murder at all, accounts received in the West would, unless Esarhaddon left a subsequent version which has not survived, be based on rumour, and in so swift a succession of events, the rumour would be very confused.

No Assyrian official or governor after Esarhaddon's victory would dare to ascribe the guilt to him who now held the power and the glory even if he knew that guilt to be a fact; he would have nothing to gain and all to lose.

In the fashion of all Assyrian kings, Esarhaddon would allow the publication of no official statement containing anything derogatory to himself, just as the native records contain no account of the plague which compelled the Assyrian army of Sennacherib to withdraw from before Jerusalem, and just as we may never know whether Shalmaneser V died from natural causes or violence in the camp before Samaria.

There are, as I hope I have shown, grave suspicions against Esarhaddon, and what more natural, when the princes in Nineveh had failed, than for them to be saddled by the conqueror, not in any State inscription, but by more subtle and probably verbal methods of propaganda, with responsibility for that crime which he may himself have committed and to avenge which they may have taken up arms? Great have been the opportunities and powers of autocratic governments in all ages to subvert the truth.

I have endeavoured to state fairly the pros and cons in this baffling problem, but unless further excavation yields unexpected light, a baffling problem it must remain.

"The above paper is published without discussion, for those whom it may interest. The Council should not be held to endorse the views expressed."

*SOME EVENTS OF THE FORTY DAYS FOLLOWING
CHRIST'S RESURRECTION, WITH SPECIAL REFER-
ENCE TO THE GREAT MEETING IN GALILEE.*

By Lt.-Col. F. A. MOLONY, O.B.E., late R.E.

ST. PAUL made the Resurrection of Christ the Test fact of Christianity. It is not surprising that Unbelievers have tried to discredit the records by alleging contradictions. Most of the minor discrepancies, such as those which exist about the visit of the women to the tomb, have been well explained; but there is one particular contradiction which is continually brought forward, not only by Sceptics, but by Christian Believers.* Yet we hope to show that it can be most satisfactorily explained. It is this. St. John xx, 26, represents the Apostles as remaining eight days in Jerusalem. (For he says "The doors being shut . . ." and the nineteenth verse tells us that this was for fear of the Jews. This would only have been necessary in Judea.) Against this, it is urged that

* Tom Paine wrote, "According to Matthew, the eleven were marching to Galilee to meet Jesus in a mountain by His own appointment at the very time when, according to John, they were assembled in another place" ("Age of Reason," Conway edition, page 164).

Strauss wrote (of Mark xvi), 7, "If they had given it (the message), the disciples would certainly, as in Matthew, have gone to Galilee, and this, in Mark, they are not supposed to have done, as he, with Luke, represents the appearance of the risen Jesus as taking place, not in Galilee, but in Jerusalem and the neighbourhood."

The Rev. F. J. Foakes-Jackson, D.D., writes ("Beginnings of Christianity"), "But it is definitely implied that they were in Galilee when they first saw the risen Jesus" (Mark xiv, 28, and xvi, 7); "Luke and Acts, taken together, give a different account of events, and represent the disciples as staying in Jerusalem after the crucifixion. They cannot both be true, for the disciples cannot have been both in Galilee and at Jerusalem when Peter first saw the risen Lord."

The Rev. P. Gardner Smith, B.D., wrote, "Luke xxiv and John xx leave no room for a journey of the disciples to Galilee. . . . It is perfectly obvious that we have in Luke a tradition which, in certain important particulars, is not to be reconciled with that in Mark and Matthew. . . . The appearance in Galilee, which is described in Matthew, and anticipated in Mark, is quite definitely ruled out by Luke."

Prof. F. C. Burkitt was a sincere Christian and a charming friend; but he wrote, "The surviving traditions of these appearances of Jesus are confused and contradictory; there can be little doubt that there is an element of unhistorical legend and even fancy in some of the tales, notably those which are located in Galilee."

St. Matthew (xxviii, 16) and St. Mark (xvi, 7) represent the Apostles as starting at once for Galilee. This, however, is not correct, as we are nowhere told when the Apostles started for Galilee.

Most commentators are agreed that the meeting on the mountain in Galilee is the same as St. Paul refers to (1 Cor. xv, 6) as having been to 500 brethren at once. For it would have been dangerous to arrange for such a great gathering to take place near Jerusalem, whereas the lonely mountain side would be very suitable. Christ attached great importance to this gathering, for He planned it even before His crucifixion (Mark xiv, 28).

We have seen that many have imagined that they find contradictions in connection with this great event, but we claim that all can be reconciled if we make one most reasonable assumption, which is, that when Christ named a place for the great meeting, He also named a convenient date and time. Do we not all do so when we make appointments? If Christ did not, His followers would have had to camp out on the lonely mountain side for days, perhaps weeks.

Now all the five hundred had to be separately and privately warned, and this must have entailed a lot of work. We may suppose that some hundred of them came from Judea,* and the rest from Galilee.

Now it would be much more convenient for the Apostles, being in Judea, to first warn the friends there, and this fully explains their not starting for Galilee for at least a week. Then they went and proceeded to warn Christ's many friends there. We may suppose that the great meeting did not take place till three or four weeks after the Resurrection. There was ample time out of forty days. We take it that the meeting on the shores of the lake did not take place till after the meeting with the 500. For then the Apostles would have no immediate task to carry out, and might well think that they would do well to earn some money by fishing.

Then they returned to Jerusalem, and were there told to remain until they were endued with power from on high by the coming of God the Holy Spirit (Luke xxiv, 49). We hold that a considerable time elapsed between the forty-eighth and forty-ninth verses of St. Luke's gospel, who found that space on his parch-

* Martha, Mary and Lazarus, who had so often hospitably entertained Christ, Nicodemus, Joseph of Arithmathea, Bãrtimeus, the man born blind, would surely all be given the opportunity of seeing their beloved Lord once again. And many others.

ment compelled him to choose between relating the story of the walk to Emmaus, and the events in Galilee. He chose the former, as he knew that the latter had been already recorded by St. Matthew and St. Mark. We note, in passing, that the sayings attributed to Christ after His resurrection make a wonderfully complete set: and this is the more remarkable, because they are drawn from all four gospels.

SUMMARY.

If we make the very reasonable assumption, which may almost be reckoned a certainty, that Christ named a date and a time, as well as a place, for the great meeting in Galilee, there are no contradictions regarding it. Further, when we consider how much had to be done in arranging for the important event, we claim that there are not even discrepancies. This is very noteworthy, for at least seven passages refer to the gathering, and these appear in five different authors.

It is interesting to note that our opponents have met with so little success in their attempts to find difficulties. They have rather drawn our attention to facts and harmonies which should increase our faith.

We have every reason to believe that Christ, our Saviour, appeared alive after His crucifixion to five hundred brethren at once on that lonely mountain side in Galilee.

ALBERT EDWARD MONTAGUE.

FEW among our older Fellows and Members but will recall, with regard and affection, the late Secretary, MR. A. E. MONTAGUE, whose retirement on December 31st, 1937, after fifty-four years of employ, terminated a fine record of faithful service.

Since his retirement, though handicapped by failing health, he carried on gamely through the London raids till November this year, when a fall, resulting in fracture of the skull, brought him to hospital where seven days later he died at the age of eighty.

The funeral service was held at St. Paul's, Camden Square, followed by interment at New Southgate Cemetery in the presence of his family and near relatives. THE INSTITUTE was represented by the Honorary Secretary. He lies with his devoted wife, who predeceased him by about five years.

It was the late Secretary's complaint—rather his perennial boast—that he had “never had a holiday,” but the truth of the matter was that he was so fond of his job that neither fiat of the Council nor attraction of his peace-time hobbies of gardening and boxing, could keep him away from office for more than twenty-four hours at a time.

A man of God: a quicker, or, in his own line, more efficient worker, the writer has seldom met. The world owes much to such men; would there were more like him.

T. C. S.