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JOURNAL OF THE TRANSACTIONS  
OF  
THE VICTORIA INSTITUTE

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VOL. LXXVI

1944



H. E. ROBERT HALLIDAY GUNNING,  
M.A., LL.D., M.D., F.R.S.E., F.R.C.S.E.

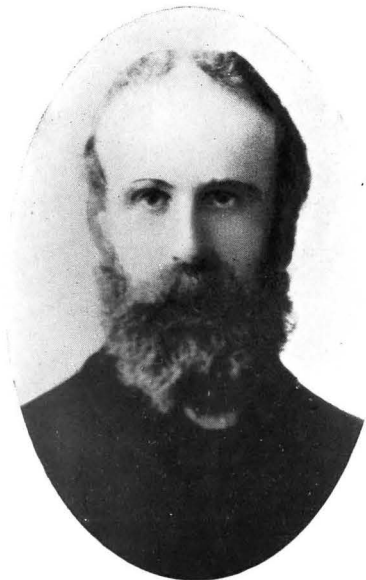


PROF. H. LANGHORNE ORCHARD,  
M.A., B.Sc.

## In Memoriam



ALFRED T. SCHOFIELD, M.D., L.R.C.P.,  
M.R.C.S., F.R.G.S.



REV. SAMUEL RUNSIE CRAIG, F.R.A.S.

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

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VOL. LXXVI

1944



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\* \* 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

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REPORT OF THE COUNCIL FOR THE YEAR 1943.

TO BE READ AT THE

ANNUAL GENERAL MEETING, MAY 22ND, 1944.

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## 1. *Progress of the Institute.*

Account of the Seventy-ninth year's work of the Institute is presented in the following (seventy-seventh) Annual Report.

Of the character of the studies covered by the syllabus the Council have no misgivings. The Authors have given of their best, and merit the warm thanks of the many who have yet to receive the Transactions no less than the few who were privileged to hear the papers read.

## 2. *Meetings.*

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

(*Circulated and published.*)

“The Sources of the Gospels,” by F. F. BRUCE, Esq., M.A.

“The Wholesomeness of Christianity as shown by recent events in U.S.A., New Zealand and Islands near,” by the Rev. Prof. A. K. RULE, Ph.D. (being the third paper in the series).

“The Atonement and Psychology,” by the Rev. Prof. J. G. MCKENZIE, M.A., D.D.



*(Read and published.)*

“Evolution and Entropy,” by R. E. D. CLARK, Esq., M.A., Ph.D. (being the Langhorne Orchard Prize Essay, 1942).

Douglas Dewar, Esq., B.A., F.Z.S., in the Chair.

“A Review of the New Scientific Outlook,” by ARNOLD S. ALDOUS, Esq., M.B., B.Sc. (being the Dr. A. T. Schofield Memorial Paper, 1943).

F. T. Farmer, Esq., B.Sc., Ph.D., in the Chair.

“Recent Biblical Archæology,” by SIR CHARLES MARSTON, J.P., F.S.A., President.

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

*(Published only.)*

“Archæological Notes,” by SIR CHARLES MARSTON, F.S.A., Air Commodore P. J. WISEMAN, C.B.E., and SIR FREDERIC KENYON, G.B.E., K.C.B., D.Litt., LL.D.

*(Communications.)*

“The Assassination of Sennacherib,” by E. B. W. CHAPPELOW, F.R.A.S., F.R.S.A.

“Some Events of the Forty Days Following Christ’s Resurrection, with Special Reference to the Great Meeting in Galilee,” by Lt.-Col. F. A. MOLONY, O.B.E. (late R.E.).

### 3. Council and Officers.

The following is a list of the Council and Officers for the year 1943:—

#### President.

Sir Charles Marston, F.S.A.

#### Vice-Presidents.

*(Limited to seven.)*

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

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

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

Sir Frederic 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.

#### Trustees.

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

Robert E. D. Clark, Esq., M.A., Ph.D.

Wilson E. Leslie, Esq.

**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., D.Sc., late R.A., F.G.S., F.R.S.E.
Lieut.-Col. F. A. Molony, O.B.E., late R.E.	Wilson E. Leslie, Esq.
Lieut.-Col. T. C. Skinner, late R.E., F.R. Met.S.	Percy O. Ruoff, Esq.
Rev. Principal H. S. Curr, M.A., B.D., B.Litt., Ph.D.	Robert E. D. Clark, Esq., M.A., Ph.D.
Douglas Dewar, Esq., B.A., F.Z.S.	Air Commodore P. J. Wiseman, C.B.E., R.A.F.
	Prof. S. Nevin, M.D., B.Sc., M.R.C.P.

**Honorary Officers.**

Wilson E. Leslie, Esq., *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.**Messrs. Luff, Smith & Co., *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: R. E. D. Clark, Esq., M.A., Ph.D., and Prof. Samuel Nevin, M.D., B.Sc., of whom Dr. Clark offers (and is nominated by the Council) for re-election.

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 regrets to announce the deaths of the following Fellows, Members and Associates:—

Dr. G. K. Paterson, E. A. Molony, Esq., O.B.E., E. W. G. Masterman, Esq., M.D., F.R.C.S., Captain Anthony Biddulph, B.A., R.E., Rev. F. Lacy, M.A., Rev. F. W. Pitt, Mrs. C. E. Moilliet, James Ryley, Esq., Prof. H. A. Kelly, M.D., A. E. Montague, Esq.

**6. New Fellows, Members and Associates.**

The following are the names of new Fellows, Members and Associates up to the end of 1943:—

FELLOWS: William Sutherland, Esq., M.D., Ch.B., W. C. Fraser, Esq., M.A., F. A. Tatford, Esq., M.I.P.A., F. T. Bendall, Esq., D. W. Wallace, Esq.,

A.R.C.S., B.Sc., D.I.C., H. L. Alexander, Esq., G. H. Carter, Esq., R. C. Denton, Esq., Rev. L. W. Barnard, A.B., M.A., D.D., Ernest White, Esq., M.B., B.S.

MEMBERS: I. D. Ford, Esq., R. N. Hansford, Esq., B.A., Rev. E. L. Simmonds, M.A., B.D., Rev. Angus F. Mackay, M.A., Clive A. Thomson, Esq., LL.B., Rev. C. F. H. Henry, M.A., Th.D., A. G. Beaven, Esq., Rev. L. E. H. Stephens-Hodge, M.A., Rev. A. Rutherford, F.R.G.S., Miss F. K. Forster, B.Sc., L. Richmond Wheeler, Ph.D., M.Sc., B.A., F.L.S., W. E. H. Stokes, Esq., Paul Belyavin, Esq., C.E., A. Bogden, Esq., F.R.S.A., M.R.S.L., A. K. Weaver, Esq., M.A., Ian Gilmour, Esq., Miss I. J. MacDonald, Rev. E. E. Ingham, W. R. Payne, Esq., G. L. Hicks, Esq., J. R. Brown, Esq., M.Sc., A.M.Inst.C.E., A.M.I.Mech.E., G. Wilson, Esq., C. H. Helmer, Esq., B.Sc., O. R. Barclay, Esq., B.A.

ASSOCIATES: R. H. Priestnall, Esq., F. H. J. Collings, Esq., V. K. Turner, Esq., Sister Margaret Dix, Barry D. Till, Esq., J. R. Bridges, Esq., B.A., J. S. Reynolds, Esq., B.A., M. H. Tupper, Esq., B.A., C. C. H. Mansel Morgan, Esq., B.A., J. W. Earp, Esq., B.A., R. F. Hettlinger, Esq., B.A., G. J. Herring, Esq., J. A. Silk, Esq., J. Evenden, Esq., W. L. Freeman, Esq., E. L. Ward Petley, Esq., L.R.A.M., Rev. D. G. L. Livingstone, L.Th., Geoffrey C. Wells, Esq., P. E. Peck, Esq., B.Sc., A.M.I.E.E.

LIBRARY ASSOCIATE: Spurgeon's College.

### 7. Membership.

Life Fellows	...	...	...	18
Annual Fellows	...	...	...	94
Life Members	...	...	...	25
Annual Members	...	...	...	241
Associates	...	...	...	70
Library Associates	...	...	...	41
Total Nominal Membership	...	...	...	489

### 8. Donations.

E. H. Betts, Esq., £1 1s.; G. A. Heath, Esq., 8s.; Maj.-Gen. H. N. Sargent, £1 1s.; Mrs. Scott Challice, 10s.; J. S. G. Thomas, Esq., £1 1s.; Rev. H. T. Rush, £1 17s. 8d.; Mrs. C. M. Craig, £16 17s.; T. Bromhead, Esq., £2; Colonel Molony, £1 19s.; H. H. Goodwin, £1; Sir Charles Marston, £211 5s.; Conway Ross, Esq., £1 1s.; Alfred Roberts, Esq., £5 5s.; S. H. Flook, Esq., 13s.; Air Commodore P. J. Wiseman, £3 3s.; A. P. Kelsey, Esq., 10s.; Dr. C. G. S. Baronsfeather, £1 1s.; Rev. Stewart Robinson, 15s. 11d.; Dr. Mary R. Fleming, £5; Douglas Dewar, Esq., £2 2s.; Peter Hill, Esq., £1 1s.; C. E. Howkins, Esq., 8s.; E. H. Betts, Esq., £1 1s.; R. S. Timberlake, Esq., £1 1s.; Dr. R. T. Sharp, 13s.; C. W. Gunn, Esq., 15s.; W. Wardle Sales, Esq., £10. Miscellaneous, 3s.. Total, £273 12s. 7d.

### 9. *Finance.*

Three factors have largely altered the position for the better this year. First: A considerable net gain of membership. Second: Drastic economies of recent years are now at length being reflected in the Budget. Third: Very generous additional support by many Fellows, Members and Associates (including two outstanding gifts by the President) have nearly, if not quite, readjusted the balance, leaving the finances in a happier position than for many years past.

Of these the first may well call for special comment. For the Institute's membership to undergo *increase* in the fourth year of war unprecedented, surely indicates a deepening appreciation of the value of its witness and work, and augurs well for prosperous continuance.

With these in view the Council thank Almighty God, and again offer their services with renewed hope for the future of the Society.

P. J. WISEMAN,  
*Chairman.*

BALANCE SHEET, 31ST DECEMBER, 1943.

XII

LIABILITIES.		£	s.	d.	£	s.	d.
SUBSCRIPTIONS PAID IN ADVANCE	....				26	1	6
SUNDRY CREDITORS FOR EXPENSES	....				145	1	3
LIFE SUBSCRIPTIONS :—							
Balance at 1st January, 1943	....	360	0	0			
Less Amount carried to Income and Expenditure Account	....	10	0	0			
		<hr/>			350	0	0
"GUNNING" FUND ( <i>per contra</i> )	....				508	0	0
Balance at 1st January, 1943	....	91	1	6			
Add Dividends and Interest received	....	23	18	9			
		<hr/>			115	0	3
Deduct :—							
Prize and Expenses	....	74	4	0			
		<hr/>			40	16	3
"LANGHORNE ORCHARD" FUND ( <i>per contra</i> )	....				200	0	0
Balance at 1st January, 1943	....	4	12	8			
Add Dividends and Interest received	....	9	2	11			
		<hr/>			13	15	7
"SCHOFIELD" MEMORIAL FUND ( <i>per contra</i> )	....				220	0	0
Balance at 1st January, 1943	....	2	16	8			
Add Dividends received	....	9	9	4			
		<hr/>			11	15	4
Deduct :—							
Prize and Expenses....	....	11	15	4			
		<hr/>					

ASSETS.		£	s.	d.	£	s.	d.
CASH AT BANK :—							
Current Account	....	166	16	9			
"Gunning" Prize Account	....	70	16	3			
"Langhorne Orchard" Prize Account	....	13	15	7			
"Craig Memorial Trust" Account	....	13	3	3			
		<hr/>			264	11	10
STAMPS IN HAND							
					0	2	5
SUBSCRIPTIONS IN ARREARS :—							
Estimated to produce	....				43	1	0
INVESTMENTS (At Cost) :—							
"Gunning" Fund :—							
£873 3½ per cent. Conversion Stock	....	508	0	0			
"Langhorne Orchard" Fund :—							
£258 18s. 3½ per cent. Conversion Stock	....	200	0	0			
"Schofield Memorial" Fund :—							
£378 14s. 6d. 2½ per cent. Consolidated Stock	....	220	0	0			
"Craig Memorial Trust" Fund :—							
£376 7s. 4d. War Stock 3½ per cent	....	400	0	0			
		<hr/>			1,328	0	0

ANNUAL REPORT.

"CRAIG MEMORIAL TRUST" ( <i>per contra</i> )	....	400	0	0
Dividends received	....	13	3	3
Less Expenses <i>re</i> Papers	....	13	3	3

£1,903 14 7

INCOME AND EXPENDITURE ACCOUNT :—

Balance at 1st January, 1943	....	485	1	10
Add Excess of Expenditure over Income for the year 1943	....	71	10	1
		556	11	11

*Deduct :—*

Donations received	....	288	12	7
		267	19	4

£1,903 14 7

ANNUAL REPORT.

We report to the members of the Victoria Institute that we have audited the foregoing Balance Sheet dated 31st December, 1943, 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.

Drayton House,  
Gordon Street,  
London, W.C.1.  
27th April, 1944.

LUFF, SMITH & Co.,  
*Incorporated Accountants.*

XIII

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST DECEMBER, 1943.

EXPENDITURE.		INCOME.	
	£ s. d.	£ s. d.	£ s. d.
To Rent, Light, Cleaning and Hire of Lecture Room	70 3 5	By SUBSCRIPTIONS :— Fellows	186 10 2
„ Salary	182 1 8	Members	196 16 7
„ Pension—A. E. Montague (11 months)	47 13 4	Associates and Library Associates	53 17 10
„ National Insurance	4 2 8	„ Proportion of Life Subscriptions	10 0 0
„ Printing and Stationery	215 12 3	„ Sale of Publications	24 7 7
„ Postages	44 15 4	„ Contributions towards Expenses from :—	
„ Audit Fee	5 5 0	“Gunning” Fund	30 0 0
„ Insurance	1 17 0	“Schofield Memorial” Fund	2 6 4
„ Sundry and Office Expenses	17 1 2	“Craig Memorial Trust” Fund	13 3 3
			45 9 7
		„ Balance, being Excess of Expenditure over Income for the Year 1943	517 1 9
			71 10 1
			£588 11 10
	£588 11 10		£588 11 10

ANNUAL REPORT.

# THE ANNUAL GENERAL MEETING

OF THE

## VICTORIA INSTITUTE

WAS HELD AT THE NATIONAL CLUB, 12, QUEEN ANNE'S GATE,  
WESTMINSTER, S.W.1, ON MONDAY, MAY 22ND, 1944, 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 24th, 1943, were read, confirmed and signed.

The Annual Report of the Council and Statement of Accounts for the year 1943, having been circulated to all, were taken as read.

The *First Resolution*, as under, was then read and explained, the Chairman then calling on Mr. E. H. BETTS to propose and the Rev. A. E. HUGHES to second it :—

“ That the Report and Statement of Accounts for the year 1943, 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 AIR COMMODORE P. J. WISEMAN to propose and Mr. DOUGLAS DEWAR to second it :—

“ That R. E. D. Clark, Esq., M.A., Ph.D., retiring Member of the Council, be, and hereby is, re-elected. Also that Messrs. Luff, Smith & Co., Incorporated Accountants, Drayton House, Gordon Street, W.C.1, be, and hereby are, 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 Chairman calling upon Major H. B. CLARKE to propose and Brigadier N. M. McLEOD to second it :—

“ That the President, Sir Charles Marston, J.P., F.S.A., the Vice-Presidents, Lt.-Col. F. A. Molony, O.B.E., late R.E., Prof. A. Rendle Short, M.B., B.S., B.Sc., F.R.C.S., Sir Frederic 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 Hon Treasurer, W. E. Leslie Esq., the Hon. Secretary, Lt.-Col. T. C. Skinner, late R.E., F.R.Met.S., and the Hon. Editor, Rev. Principal H. S. Curr, M.A., B.D., B.Litt., Ph.D., be, and hereby are, re-elected to their offices.

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



The *Fourth Resolution*, as under, was next read and explained, the Chairman calling upon Mr. E. LUFF-SMITH to propose and explain it and Mr. P. O. RUOFF to second it :—

“That the Chairman of the Council, the Hon Treasurer, and the Hon. Secretary (all for the time being) be, and hereby are, appointed Trustees, and empowered to carry out all duties that devolve upon the Trustees under Rule 18, Section II of the Objects, Constitution and By-Laws of the Victoria Institute.

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

A new mode of employment of the Schofield Memorial Award was next announced. Hitherto the income of £9 9s. 4d. had been made up to £10 for award to the author of a selected paper each year. The arrangement had never been entirely satisfactory and, in future, with hearty agreement of the surviving donor, the income would be allowed to accumulate, to provide a third triennial Prize Essay Competition in sequence with the other two—the Gunning and the Langhorne Orchard—thus securing for each year a triennial competition paper.

The award for the Gunning Memorial would remain at £40, but for the Langhorne Orchard and Schofield Memorials it was necessary to fix the award in each case at 15 guineas to allow sufficient margin to part-cover the printing and postage which had hitherto been defrayed from the general fund of the Institute.

Portraits of Dr. Gunning, Mr. Langhorne Orchard, Dr. Schofield and the Rev. Runsie Craig had kindly been presented by relatives and the Council proposed publishing all four together in miniature, as a frontispiece to the volume of Transactions.

The Langhorne Competition for 1945 was next announced, the subject chosen being “The Relationship between Conduct and Belief.” Prize 15 guineas. Length of paper was not to exceed 7,500 words. Essays to reach the Hon. Secretary not later than December 31st, 1944. Printed rules for the Competition would be issued to all Fellows, Members and Associates forthwith.

Announcement was then made of an important Conference being arranged for August 22nd to 26th at the Institut Français, South Kensington, on the subject of “The Place of Spiritual and Economic Values in the Future of Mankind.” Those interested in the Victoria Institute’s representation were invited to acquaint the Hon. Secretary within a few weeks and their names and addresses would then be forwarded to Sir Charles Marston, who had kindly undertaken co-ordination.

A hearty vote of thanks to Sir Charles Marston for presiding was proposed by Mr. Leslie and carried with acclamation.

War conditions having rendered it impracticable to hold an Ordinary Meeting on January 10th, 1944, the Paper for that date was circulated to subscribers and is here published, together with the written discussion elicited.

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## EVOLUTION AND ENTROPY.

(being the second prize Langhorne Orchard Essay, 1942)

By E. H. BETTS, B Sc.

THE century which saw the re-birth and re-habilitation of evolutionary doctrines witnessed also the rise of thermodynamics with its two wide-sweeping laws and in particular its Second Law with the involved doctrine of entropy. Darwin's "Origin of Species," which may fairly be regarded as the first attempt to put forward a theory of organic evolution on a basis of wide examination of facts, appeared in 1859 and, in so far as "science is measurement" the First Law of Thermodynamics—the great Law of Equivalence—can be regarded as established by the work of Joule in 1843. Of the Second Law of Thermodynamics the foundation had been laid by Sadi Carnot in 1825 and the formulation made by Clausius in 1850, the term "entropy" having been first proposed by the latter in 1865. Thus in their appearance in scientific shape evolution and entropy were closely contemporary. Here, however, the resemblance ends.

The two doctrines were taught side by side without much suspicion of antagonism between them. Evolution had, as of course it still has, a wider vogue and has now largely settled down to the taken-for-granted stage among the semi-educated, while experts still wrangle about its ways and means of implementing itself. Darwinians, neo-Darwinians, Lamarckians and neo-Lamarckians quite fail to put forward an agreed mechanism. All agree, however, in a vigorous claim that the failure to discover the machinery constitutes no justification for denying the "fact." This may be true. There is, however, a specious fallacy underlying an illustration proffered in support of the argument. "We need not deny the fact," says Dr. Julian S. Huxley, "because we have not discovered the machinery. As an obvious example we are very far from understanding the physiological

and chemical machinery of development by which, for instance, a hen arises from an egg; but that does not cause us to deny the fact that hens do develop from eggs."\* The criticism here is obvious. There is a great difference between discovering the machinery and understanding it. In the case of the development of the hen from the egg the machinery needs no discovering. It is patently the physiological and chemical processes which begin with the embryo in the egg and end with the hen and we know beyond a cavil that there is no discontinuity between the beginning and the end. In the case of evolution we not only do not understand the machinery but, as is admitted, it has never been discovered.

But the idea of evolution so captured the scientific, as well as the popular, imagination that it rapidly spread into all departments of thought. We hear therefore not only of organic but of stellar or cosmic, political, social and linguistic evolution. In all these, there is the one underlying and essential idea, namely, that the diversity or complexity to be observed in each sphere of observation is due to the action in the past of natural causes which can be observed still at work in the present. Indeed, according to Herbert Spencer "whose views greatly influenced not only the technical but also the popular use of the word, all the changes in the universe, whether material or psychical, are phenomena either of Evolution or of the reverse process of Dissolution."† Evolution itself thus rapidly evolved. It became more than a scientific hypothesis to explain the origin and diversity of plant and animal species. It engaged itself with the remote past as well as the distant future. It asserted, and still asserts, that all life descended from the lowliest microscopic forms and indeed that "living matter is but a special arrangement of ordinary matter, the evolution of life but a local and peculiar eddy, so to speak, in cosmic evolution."‡ It expanded into belief in the inevitable and endless progress of mankind, engendering the most optimistic expectations of universal advancement and taking shape as a new lay religion, a "firm basis for ethics,"§ dear especially to the heart of the agnostic and the atheist of the late nineteenth and early twentieth centuries.

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\* Ency. Brit., 1929, art. *Evolution*.

† New Oxf. Dict., art. *Evolution*.

‡ *Sci. of Life*, Wells, Huxley and Wells, p. 641.

§ *Belief and Action*, Viscount Samuel.

The brightness of the hope of those days of pseudo-scientific optimism is now somewhat tarnished. First of all the great world war of 1914-1919 with its stark revelations of actual and potential evil served the turn of *experimentum crucis* to the hypothesis which had paraded so boldly as a law—the Law of Progress. The modern mind, severely chastened, anxious and even fearful, a fear induced by the dread of a repetition of the great war (since realized) and by the contemplation of the colossal problems of its aftermath, withdraws from its advanced evolutionary positions and hastens to point out that evolution “does not guarantee progress”;\* indeed, that “in evolution, actually it is the exception, and for every case of it there are ten of degeneration.”† But the rosy optimism of those days met with a second check—one of a different kind. The Law of Evolutionary Progress found itself confronted with the Law of Increasing Entropy. This asserted very pointedly that the universe, by way of general degradation of energy, was heading for a state of thermodynamic equilibrium in which all physical change must cease—a heat-death, far off, no doubt, but inexorable in its approach and totally contrary in its implications to those of evolution. How men of science and philosophers, not to mention the much misguided ordinary layman, succeeded in ignoring for some sixty years the significance of this great law is no small mystery. On the part of philosophers the cause may have been the notable severance observable at that period between philosophy and science;‡ on the part of the men of science, departmentation of studies and sectional absorption; on the part of the general public, lack of education in general and of scientific teaching in particular. That public ignorance of the entropy law has now at last been widely (though still only partially) dissipated is largely due to the brilliant expository powers of such eminent leaders of scientific thought as Sir James Jeans and Sir Arthur Eddington, who by broadcast, book and lecture, both learned and popular, have put the conclusions and the problems of science before great masses of people. Perhaps for the first time in the history of publication, up-to-date accurate science has formed the subject-matter of “best-sellers.” And what are the implications of this law of entropy? In what ways precisely does it impinge on the doctrine of evolution?

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\* Viscount Samuel, *loc. cit.*

† J. B. S. Haldane, *Fact and Faith*.

‡ See, e.g., *A History of Science*, Sir W. C. D. Dampier, Ch. VII.

Is there necessarily antagonism between the one and the other ?

Let us first be clear about the nature of entropy and the fact of the law of entropy. Entropy is not a physical condition of a body such, for example, as temperature, which can be apprehended by the senses or measured with an instrument. It is a mathematical concept—a function of the physical conditions heat and temperature—which furnishes us with a measure of the availability of the energy within a body or system for the performance of work or the maintenance of life-process. It is such a function that its increase spells a decrease in the availability of the energy. The Law of Entropy states that *the entropy of an isolated system cannot diminish*. Any change in it must be an increase. In plain language this means that the energy of a finite universe must be “running down”—not disappearing, but becoming less and less available for conversion into work or for the support of life-process ; in short, all energy is degrading itself surely into a homogeneity of heat at one even, universal and probably low temperature level. When, and if, that condition is reached, whatever the temperature, all movement, all work—mechanical, electro-magnetic, chemical, physiological—all sources of power and all life-process will have ceased. So far, the Law of Entropy takes us. Revolt from it as the mind will—and attempts to elude it are numerous—there seems to be no escape ; for it is not the result of speculation but plain deduction from simple observation of universal scope and not, as might be supposed, observation of and deduction from the abstruse, remote or rare. It is no more abstruse as a doctrine than the plain truth that we cannot obtain power from a steam engine by filling its boiler with ice. The accuracy of this comparison will be admitted when it is realized that the law of entropy is merely a mathematical statement of the second law of thermodynamics, which in Planck’s form reads thus :—“ It is impossible to construct a machine which functions with a regular period and which does nothing but raise a weight and cause a corresponding cooling of a heat reservoir.”\* If, however, we lend an ear to what is rather more recondite, we are told, further, that the same general principles may be applied to the astronomical universe : that however originated, for example, in the hot interior of a star by the breakdown of atoms, energy still “ runs

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\* Max Planck, *Theory of Heat*, tr. Bose, p. 52.

down," that is—it may be pardonable to repeat—while not lessening in quantity, assumes a less and less available form.

This is the degenerative principle which the idea of unlimited and incessant progress had to encounter. It would be absurd, of course, to suppose that it provides a complete refutation of the doctrine of organic evolution. That must come in other ways fairly plainly evident to those with minds *free* to re-examine the orthodoxies of the present day.\* What the entropy law has to say bears on evolution and supposed evolutionary progress in two ways, namely, with respect to *beginnings* and with respect to the trend of the changes steadily taking place in the universe.

Considering the latter, we find that there is direct opposition between evolution and entropy. Evolution teaches, or until certain recent changes of front did teach, that the universal trend was upward, from the simple to the complex, from the less to the more highly organised, from the lower to the higher; and it attributed to this alleged progressive process the appearance, in a universe which was once nothing but a nebular mist, of living beings including man, with all his culture, his religion, his thoughts of God. It prognosticated the inevitable progress of our species to perfection. The law of entropy teaches that if there is a universal process it is one of breakdown—of universal energy-degradation; that the universe, far from struggling upward, is running down, irrevocably and irreversibly; and that whatever natural causes are still in operation, the energy at their disposal is on the downgrade. It is hardly necessary to point out that upward progress in the organic and human spheres and degradation in the sphere of energy may co-exist. The two processes do not cancel each other out. But the Second Law of Thermodynamics is destined, science tells us, to cancel out ultimately everything that evolution could conceivably achieve and reduce it to the nothingness of a universal heat-death. Thus it was that thermodynamics rang the death-knell of the fantastic hopes based on evolution and preached as a kind of scientific religion by evolutionary philosophers of the last century. Thus it was that evolution in its wider aspects met its first great check at the hands of science.

Incidentally, quite apart from entropy, although in keeping with its teachings, the observed processes in nature and history

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\* "The severe methodological criticism employed in other departments of biology has not yet been brought to bear against evolutionary speculation." Dr. W. R. Thompson, F.R.S., in *Science and Common Sense*, p. 229.

are rather from the complex to the simple and from the higher to the lower. Radio-activity reveals the *dis*-integration of atoms of high atomic weight and not the evolution of complex atoms from simple ones. Indeed, modern astronomical evidence is showing that there is a uni-directional "evolution" of matter from the state of high atomic complexity to one of atomic simplicity, and a breakdown of matter further into radiation. This process of disintegration may be artificially imitated in an atom here and an atom there, and thus to an almost infinitesimal extent speeded-up, but a reversal of the cosmic process we are not likely to bring about or witness. As to the alleged upward trend in the religion of man, an eminent modern archæologist asserts that a pure monotheism was the original religion and that polytheism was a later pollution of it.\* A very eminent modern anthropologist supports this teaching.† Again, civilizations change in character, and change constantly, but not necessarily upward. Many recent finds, for example, prove the antiquity of an advanced state of civilization in Babylonia, Egypt and Assyria, so that no informed person now questions the existence of a state of literary culture long before Moses—facts which are contrary to the evolutionary ideas of human progress from the "primitive" upwards. Thus, not only in respect of cosmic order as revealed by the law of entropy, but also in the spheres of inorganic matter, human culture and human religion, the "law" of evolutionary progress is *not followed*.

And what of beginnings? Evolutionists do not seem able to face the facts with composure. They have discovered, but will not acknowledge, that their principles fail them if carried to the limit. That a universe which is "running down" must at some time have been "wound up" is a truth which has been expressed many times and has consequently become almost hackneyed in its terms. But it remains robust logic and implies a beginning, and a beginning of a kind which transcends in its action that of any "natural causes now seen to be at work," for it implies a reversal of the irreversible of present science. Boltzmann's identification of the Law of Entropy with the Law of Thermodynamic Probability gives us a fresh statement of the uni-directional running down process in the form that the universe as an energy system "tends to the configuration which offers

\* Dr. S. H. Langdon, Professor of Assyriology in The University of Oxford, in *Semitic Mythology*.

† Prof. Wilhelm Schmidt, *Origin and Growth of Religion*.

the maximum probability"; and this is merely to acknowledge that it must be tending *from* a point of departure the occurrence of which, in this same language of probability, is "infinitely improbable"—apart, of course, from Transcendence. Thermodynamic Probability is an insuperable barrier to any naturalistic explanation of the origin of the universe. The explanation which attributes "to the action in the past of natural causes which can be observed at work in the present" the existence and all the activities of "the whole cosmos including both living and non-living beings"\* cannot stand before it. Sir Arthur Eddington takes us to the limit, but is startled by it. "It is one of those conclusions," he says, speaking of the winding up of the universe by God (and allowing that it should be regarded as the working-hypothesis of thermodynamics rather than its declaration of faith), "from which we can see *no logical escape*—only it suffers from the drawback that it is *incredible*."† A revered headmaster of the writer's was fond of reminding dull Latin pupils that "you can lead a donkey to the water, but you cannot make him drink." It is Sir Arthur who is here leading the donkeys to the water, but he is also amongst those who stubbornly decline to quench a thirst which occasionally betrays itself. The stubbornness is manifest. For to him the Second Law of Thermodynamics is at one and the same time "supreme among the laws of nature" and "incredible" in its implications.‡ We are hardly in agreement with him that, as far as thermodynamics is concerned, the "winding-up" of the universe should be regarded as only a working-hypothesis. A conclusion from which there is "no logical escape" is something rather more than that. The inescapable conclusion of science is that the universe must have been "wound up." But at this point, where science reaches its frontiers and can go not a step farther, revelation meets us with the pronouncement, "In the beginning God created the heavens and the earth." There is no discord across the frontier which divides science and revelation.

Not every evolutionist, however, is so honestly refractory as Sir Arthur Eddington. What can we think, for instance, of those who occupy and defend, simultaneously, the three positions set forth as follows? First, that of the principle of biogenesis, that is that life proceeds only from life. "It is," we are told,

\* E. S. Goodrich, *Ency. Brit.*, 1929, art. *Evolution*.

† *Nature of Phys. World*, Ch. IV.

‡ *Loc. cit.*



“one of the foundation stones of the modern doctrine of evolution.”\* Second, the principle of continuity which maintains that no “causes” should be invoked except natural causes now seen to be in operation.† Third, abiogenesis, taught thus: “But although this principle of continuity applies to all organisms at the present day, which have a long history behind them and have no doubt departed greatly from the initial stages in the evolution of living matter, there must have been a time when protoplasm first appeared. It must be supposed that long ago, when conditions became favourable, relatively high compounds of various kinds were formed.‡ Many of these would be quite unstable, breaking down almost as soon as formed§; others might be stable and merely persist. But still others might tend to re-form, to assimilate as fast as they broke down. *Once started*|| on this track such a growing compound or mixture would inevitably tend to perpetuate itself and might combine or feed on others less complex.”¶ It should be noted that the “favourable conditions” here postulated include not merely the sea but a sea of the same composition as at present, for the writer adds: “These first steps in the elaboration of living matter probably occurred *in the sea, for protoplasm contains the same salts as sea-water and in much the same proportions.*”\*\* (Quite incidentally, J. B. S. Haldane imagined the primitive ocean, in which life originated, to have been composed of a hot dilutely soupy mixture of sugars and a vast variety of organic substances formed by the action of ultra-violet light on a supposed previously existing mixture of water, carbon-dioxide and ammonia.†† The two speculators will no doubt easily keep the peace about this, since it has been laid down already that it is by no means necessary to have “discovered the machinery”; the “fact” is the great thing!) No! The three positions give us a case of biogenesis *plus* uniformity *plus* abiogenesis. In syllogistic shape it would run thus:—

Under the natural causes now in operation all living matter  
proceeds only from living matter.

\* E. S. Goodrich, *Ency. Brit.*, art. *Evolution*.

‡ *Loc. cit.*

† This, it is to be noted, is a process unknown under present natural causes.

§ But this is a process which is frequently observed under natural conditions.

|| Italics here inserted.

¶ *Loc. cit.*

\*\* *Loc. cit.*

†† See *Fact and Faith*, p. 44 of Thinker's Library Edn.

Natural causes now in operation are the only causes that should be invoked.

At some time in the past living matter proceeded from non-living matter.

The logically inescapable fact is that just as the entropy law leads us back to a state of things which is incapable of rational explanation apart from the invocation of non-natural causes,\* so does the combination, postulated by evolutionists themselves, of the principle of biogenesis and the principle of continuity. This issue, as has been already remarked, the teachers of evolution cannot face. They tacitly jettison both their principles. Why must they do this? Undoubtedly because evolution is, as has been well said, no science at all but a frame of mind—a philosophy.†

Compare the substantiality of the logical bases of the Law of Entropy with the extreme flimsiness of the imagined evolutionary origin of living matter cited above. Let us take the latter first. It argues that "It *must be supposed*," "relatively high compounds *were formed*" (how, is left to guesswork), they "*might be stable*," "*might tend to re-form*," "once started . . . *might combine or feed*." And we find that "when conditions became favourable" merely indicates conditions characteristic of the oceans of our present time in which the *abiogenetic process put forward is unknown to science*. Truly if ever hypothesizing took the bit between its teeth it has done so here! What mere lip-service it is that evolutionists pay to the work of Pasteur!‡ Consider now by contrast the former, the Law of Entropy, *alias* the Second Law of Thermodynamics. Its basis is so secure that anyone who can overthrow it by the detection of a flaw in its structure *can proceed at once to the invention of a machine which would serve simultaneously as a heat engine (motor) and a cooling machine (refrigerator) working with the expenditure of no energy and the consumption of no fuel*, all the necessary energy being derivable from the exhaustless stores of heat in the earth, the air and the sea. Such a discovery would be immediately followed by a scientific, industrial and economic revolution of totally unprecedented magnitude. The whole of life would be

\* "It could not occur fortuitously," as Eddington says: *loc. cit.*

† See *More Difficulties of the Evolution Theory*, D. Dewar, Ch. XVI.

‡ The discomfort of evolutionists in face of the results of this great investigator's researches is well seen in the unworthy references made to him by J. B. S. Haldane in *Fact and Faith*, chapter on "The Origin of Life."

rapidly changed. Quite conceivably wealth would lose its meaning and labour most of its value. Unfortunately for any would-be inventor, "at present we can see no way in which an attack on the second law of thermodynamics could possibly succeed."\* Again, "The chain of deductions from this simple law have been almost ilimitable; and it has been equally successful in connection with the most recondite problems of theoretical physics and the practical task of the engineer."† Surely we have here not a hypothesis but an established LAW OF SCIENCE in all truth.

Supporters of evolutionary doctrine who point out that however great and convincing the evidence for the Law of Entropy may be, yet its application to the whole stellar universe is an unjustifiable extension in that "generalizations made from limited observations" should not be supposed true "in wider conditons which are as yet largely undetermined"‡ seem to be strangely inconsistent. They are the people who in support of their own hypotheses, as we have well seen, love to push out into the mists of unknown conditions and the stretches of unlimited time and almost immeasurable space where anything can be *supposed* to happen. "If infinite time is available, all unlikely things *may* happen. Chance concentrations of molecules *might* reverse the action of random shuffling and undo the second law of thermodynamics. Chance concentrations of radiant energy *might* saturate a part of space, and new matter, *perhaps* one of our spiral nebulae, crystallize out. Are we and all our myriad stars *perchance* one of such *accidental* happenings?"§ It is to be noted how the objection raised to supposition is followed in the same work by a magnificent cluster of suppositions put out by the same writer. The difference in quality between the supposition objected to and the cluster of suppositions advanced by the objector is that the former is based on universal and unchallenged human experience and observation without a negative instance while the latter are without support from experience and contrary to common experience. Sir James Jeans, himself apparently a believer in evolution, tells us that the law of entropy may conceivably fail under conditions of which we have no knowledge but that the majority of serious

\* Eddington, *loc. cit.*

† *Ib.*, *loc. cit.*

‡ Citations from Sir W. C. D. Dampier, *Hist. of Sci.*, Ch. V.

§ *Ib.*, *loc. cit.*, Ch. X.

scientists consider this very improbable.\* The momentous fact that remains with us is that all experience everywhere and down-to-date, and all recorded observation serves unexceptionably to confirm the law. Accordingly, to cite Jeans once more :

“ Everything points with overwhelming force to a definite event, or series of events, of creation at some time or times, not infinitely remote. The universe cannot have originated by chance out of its present ingredients, and neither can it have been always the same as now. For in either of these events no atoms would be left—save such as are incapable of dissolving into radiation ; there would be neither sunlight nor starlight, but only a cool glow of radiation uniformly diffused throughout space. This is, indeed, so far as present-day science can see, the final end towards which all creation moves, and at which it must at long last arrive.”†

Attempts to evade the Law of Entropy are fascinating. It is surprising indeed that those who are prepared to strain their logic out of joint to keep out creationist ideas should seek evasion by toying with Clerk-Maxwell's classical demon.‡ Seen in its true light, such a being, able to see and sort individual molecules is but a symbol of the non-, or super-natural ; and further, such a demon at work here and there would, as Poincaré has pointed out, merely serve to retard the onset of a state of thermodynamic equilibrium and not prevent it. What is more, such a being must be supposed to be conscious, intelligent and watchful. But to undo the Second Law he would have to be also ubiquitous. Combining then the attributes of consciousness, intelligence, watchfulness and ubiquity, what have we ? Surely a Being not for the evolutionist to toy with ! To undo the Second Law is akin to “ winding up ” the universe. In a context relating to entropy in its cosmic bearings, then, Maxwell's demon is either ineffectual or almighty. Evolutionists therefore make a gift of the case to creationists if they introduce “ demons.” Of course, their attempts to circumvent the law are actuated not from dread of a future extinction due to the heat-death

\* *Mysterious Universe*, Chap. V.

† *Eos. or the Wider Aspects of Cosmogony*, p. 55. Citation given by Dampier, *loc. cit.*, p. 483.

‡ The name seems to have been Lord Kelvin's ; the idea, Maxwell's. Dampier seems (on p. 257) to use the idea as an objection to the “ extension ” of the entropy law. The Swedish astronomer Arrhenius also puts the same objection.

implied by its truth, but from their philosophic horror of an allogical past.

And in this fear of the logically irreducible entropy is not their only *bête noire*. If an allogical past implies creation, the logically irreducible in the present in the sphere of biology implies vitalism or something philosophically closely akin to it. From within their own ranks biologists hear eminent men of science speak of other "surds" in nature than the law of entropy, and of these the most familiar—and the one some most fear—is the great gulf fixed between the "living" and the "not living." Testimonies to this are not few or despicable. "The unity, in the spatio-temporal sense, of the organism, constitutes not so much a problem as a postulate."\* "It seems logical to accept the existence of matter in two states, the animate and the inanimate, as an initial assumption."† And, not the least of such utterances, we have: "Life, as simply life, is the reality which must be assumed in biological interpretation."‡ Of course, such confessions, disturbing as they may be to our biological mechanists, are not to be obviated. We are surrounded by the arbitrary, the occult, the logically irreducible. We need not go to the mystery of life or living matter for this. Many "explained" phenomena, subsumed under well-known laws, classical and recent, remain unfathomably profound mysteries. Gravitation had its Newtonian and now has its Einsteinian "explanation," but whichever we dwell on, the unreduced residue is there and however far investigation is carried there must be a residue. Newton asserted that the forces posited in his law of gravitation were not occult but that their "causes" were occult; and, after all, what "causes" "the curvature of space-time in the neighbourhood of matter"? It is to be accepted without reserve that the minimization of the allogical core in nature is, as Needham§ states, the proper pursuit of science. It is to be equally maintained, however, that the refusal to admit the logical irreducibility of an order or class of phenomena—to hedge to the point of inconsistency—when scientific investigation points rigorously in that direction is bad

\* E. S. Russell, *Interpretation of Development and Heredity*, p. 6, cited by Needham, *Order and Life*, p. 16.

† J. Gray, *Mechanical View of Life*, in *Adv. of Sci.*, 1933, p. 86, cited *ib.*, *loc. cit.*

‡ J. S. Haldane (not J. B. S. Haldane), *Materialism*, 1932: p. 66. Cited in Needham, *loc. cit.*

§ *Loc. cit.*, p. 13.

and unworthy philosophy. Of this tendency we have already given instances—for, alas, many excellent and outstanding men of science are faulty philosophers. We shall have shortly to deal with other cases of evasion in connection with entropy and its implications. But there is an important feature characterizing most of these more or less determined attempts at evasion which is particularly well illustrated in the attitude towards the problem of living matter and its organisation exhibited by the biological mechanists, who *entertain, and approach scientific problems with, a pre-determination not to admit the arbitrary in nature although rendering formal homage to it*. Thus we are told that “biological order is a form of order different from that found in physics, chemistry or crystallography, yet not impenetrable by the human mind or ruled by unintelligible entities. Translated into terms of Marxian philosophy it is a new dialectical level.”\* Now it is submitted that to claim knowledge of what does or does not “rule” biological order, and to assert that the entities, if any, which rule it, are not unintelligible, amounts to a prejudging, in the terms of a philosophic dictum of what is (according to the writer himself) still scientifically *sub judice*. More than this, there is contradiction in the assertion—at least by implication from its context. For the argument is that a form of order different from that found in physics, chemistry or crystallography, is nevertheless to be searched out and revealed by the methods of those sciences. Wherein then lies the difference? At what point in the development of an organism is it first seen? What determines the difference? If the difference is to be equated with a mere change of dialectical (i.e., evolutionary) level, could this sustain the fact that in, say, embryonic “organiser” phenomena living matter must always be there to carry on the co-ordinated activity of structure-forming? For such is the case whether the “organiser” is itself a relatively simple chemical substance or not. Needham cites K. Sapper with approval to the following effect: “Is it not inconceivable that properties should be found in a material complex which are *not* the result of the properties of the components?” We will not quarrel with this as a general statement. But used in a discussion concerning the root differences between living and non-living matter it introduces a rank begging of the question by its reference to living matter as a “material complex.” Obviously living matter is

\* Needham, *loc. cit.*, p. 45.

far more. It is a material complex which displays "active maintenance of normal and specific structure," which, according to Haldane—and we approve—is what we call life. The logically irreducible residuum is whatever *causes* ordinary chemical elements to play a part in the constitution and organisation of living organisms and thus assist in the development of an order different from that of physics or chemistry. Ordinary chemical elements do this only when they are caught up into the whirl of already living matter. An examination of the truly admirable results of modern embryological and biochemical research tends in no way to unsettle this principle. Chemical substances of relatively simple molecular form may exert striking determining effects within the embryo, even changing the "destiny" or part played within its structure of the surrounding areas. But such substances introduced within the embryo can only influence in this way already living matter. Thus we come back, full circle, to something which never has yielded its secret, namely, matter in an animate state, which it seems logical to accept as an "initial assumption"—an alogical core.

Of the objections to and evasions of the Law of Entropy there remain a few pertinent to our subject which should be briefly examined. One type of objection is that which cannot accept the Law because some day something may turn up to oppose it. "There can be no certainty that later discoveries will not reveal some cosmic process, as yet unknown and even unimaginable, which is perennially at work, replacing the energy diffused through radiation. Such a process is not more unimaginable than is an original act of creation."\* This suspense of judgment would be commendable if it were being consistently practised. Let evolutionists clear their minds of *all* theories of action which are open to opposition in virtue of agencies "as yet unknown and even unimaginable," and they will carry conviction that it is truth and certitude indeed that they seek! As matters stand the objection is a perfect specimen of that wishful philosophy which sets aside the theoretically ratified and practically verified results of actual observation for something "not unimaginable." It thus provides one more illustration of the remark already made that evolution is no science but a frame of mind—a pre-determination—a philosophy, not beginning, as philosophy should, where science ends, but severed from science and usurping its place. Incidentally, why does the

\* Viscount Samuel, *Belief and Action*, Ch. III.

objector attempt to slight creation as being unimaginable? The process of creation is of course unimaginable. The fact that it took place is *not* "unimaginable." As men of science we think it, in order to escape from the unthinkable. As men of faith we simply apprehend it. This type of objection merits no further comment except that it reveals a certain discomfort set up by the law of entropy in the minds of evolutionary thinkers. Bosanquet is one of those philosophers who cover a similar discomfort with a show of indifference. "For a philosophy that knows its business," he says, "the law of degradation makes no difference." Pringle Pattison agrees with him, for "entropy has ceased to trouble philosophers." W. R. Inge's comment is caustic and sufficient: "A theory which threatens to destroy the universal validity of the mechanistic hypothesis is, one would think, worthy of serious attention by metaphysicians."\*

Eddington, face to face with an *impasse*, seems to seek escape in a form of idealism by insinuating that "entropy is of a much more subjective nature than most of the ordinary physical qualities." Entropy is an "appreciation" of arrangement and organization, he says. It certainly is a measure of it, or—preferably—a measure of *disorganization*—but that Eddington here really is in a state of confusion as to physical entities and our knowledge of them seems to be indicated by his next analogy: "entropy is subjective in the same way that the constellation Orion is subjective. That which is arranged is objective, so too are the stars composing the constellation, but the association is the contribution of the mind which surveys." This is not so. The stars are arranged in space. They are spaced about in a pattern or "association" which has physical existence. There is in the mind which surveys an answering "association" or pattern. If Rigel and Betelgeuse converged on to the "Belt" there would be a different association in the surveying mind only because of a different physical association in actual space. It is precisely the same in the case of entropy. It is a mental picture or "appreciation" of molecular groupings corresponding to the physically existent groupings, and the correspondence is one of close linkage. Maximum entropy, for example, is an "appreciation" of the physical grouping entitled fortuity. Consider thus the thermodynamic equilibrium of a small closed system. Would the state of final inactivity and inertness thus

\* *God and the Astronomers*, p. 21.



characterized consist in a mere subjective "appreciation" of something, or would the total disorganization or randomness of the particles exist objectively? Even Professor C. E. M. Joad criticises such philosophies of the universe in these terms: "What, I cannot help feeling, eminent scientists misconceive is the nature of the act of knowing and the nature of its relation to the object known."\* But Sir Arthur Eddington and Sir James Jeans are certainly not led into these falsities by any revealed falsity in the science of which they are such eminent exponents, but by a philosophy which constrains them both to a pre-fixity of view of the universe and which led the former of them, as we have seen, to speak of one law as both "supreme among the laws of nature" and "incredible."

Finally, there are those who accept the Law of Entropy and admit the validity of its application to the universe as a whole, but repudiate, even as a working hypothesis, the idea that at some date in the past the universe was "wound up" by God. In other words they deny any act of creation. In its stead they substitute blind chance. Their hypothesis is—to borrow the illustration used by Sir James Jeans (after T. H. Huxley)—that just as the random and unintelligent strumming on type-writers of an army of monkeys would, *given time enough*, produce all the books in the British Museum, so the shuffling of the atoms from infinity of past time would, sooner or later, produce the ordered universe. Here we recognise the Epicurean theory of the origin of the world by a "fortuitous concourse of atoms." Such a theory of a blind, chance-play origin of the universe could only spring from a desire to eliminate God from our thoughts. Not only would it thus leave us infinitely poorer but the argument itself is very poor. It eliminates reason just as much as it eliminates God. For it attributes to the same causes both the present irreversible process of degradation of energy and the original organization of the energy of the universe. "Does anyone really think that printer's pie might be shaken up till *Hamlet* emerged complete?"†

In this attempt at evasion of the full implications of the Law of Entropy we see evolution and entropy in complete opposition. The theory of a fortuitous origin of the universe is evolution in its quintessence. Creation by God at some date in past time.

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\* *Philosophical Aspects of Modern Science*, p. 122.

† W. R. Inge, *God and the Astronomers*, p. 227.

is, even by the grudging admission of evolutionary physicists,\* the working hypothesis we are compelled by the Law of Entropy to adopt.† Thus, confronted with the necessity of admitting creation or suggesting an alternative, what is the reaction of evolutionary theorists? It is this:—"Let us make two colossal assumptions—the eternity of matter and the infinity of "shuffling," and let the Laws of Probability account for a configuration which is grotesquely improbable!"

In conclusion, it is clear that even a cursory comparative survey of the logical foundations of evolution and entropy, respectively, provides a contrast so striking that the rationale of evolution is seen to be in a condition of decrepitude, while entropy is so well founded that to upset it would entail a revolution in both thought and life. To recapitulate, evolution puts forward as a scientific explanation of the diversities as well as of the origin of life the workings of an unknown mechanism and claims that apology for not knowing it is unnecessary. It reasons in a circle, basing evolution on geology and adjusting geology to suit evolutionary teachings. It puts forward as of fundamental importance the principle of biogenesis and, when faced with a fundamental problem (the origin of life), immediately jettisons this principle. It makes solemn pronouncements about the supreme importance of a law of science,‡ and refuses to follow it to its just conclusions on the score of their incredibility.§ It postulates as the cause of cosmic *organization* natural processes observed to be those of irreversible *degradation* of energy. It repeatedly resorts to the unknown and the unknowable in the form of infinite time and immeasurable distance in appeal against the known course of action in nature while all the time doing lip service to a principle of continuity. It propounds imaginary favourable natural conditions under which, it claims, life may have originated spontaneously, but totally fails experimentally to reproduce either the conditions or the life out of them: in excuse it postulates a need for unlimited time for nature's successful experiments.

\* Eddington: "I am an evolutionist," *Nat. Phys. World*, Chap. IV, last paragraph.

† Jeans goes further and says: "Everything points to a definite event . . . of creation," *Eos or the Wider Aspects of Cosmogony*, *loc. cit.*

‡ "If your theory is found to be against the Second Law of Thermodynamics can give you no hope." "It is supreme among the laws of nature." "The chance against a breach of the Second Law can be stated in figures which are overwhelming." Eddington, *Nat. Phys. World*, Ch. IV.

§ "No logical escape—only . . . it is incredible," *loc. cit.*, same chapter.

In its philosophical aspects evolution exhibits unphilosophical prepossession by a bias—the strong predetermination at all costs never to admit an actual instance of the arbitrary or rationally irreducible in nature, while compelled, of course, to profess general belief in the existence of the arbitrary.\*

To exclude the arbitrary is to exclude that into which or beyond which human knowledge cannot penetrate. In effect it is to exclude God. It is therefore in this philosophical, or, more truly, *unphilosophical*, trait that the peculiar anti-religious character of evolutionary teaching consists. It is important not merely to point this out but to stress it and particularly to have it noticed that this attitude towards the inexplicable residuum in nature is the result of predetermination and not of investigation. For evolution has long posed, and still is posing, before the public eye as a scientific *discovery* having certain philosophical and religious results. *It is nothing of the kind.* On the contrary it is a philosophic bias giving form and direction to doctrine alleged to be scientific but resting on evidence and using methods which are, as we have seen, of the most shifty, inconsistent and evasive kind—evidence that in any British court of law would be ruled out as invalid and methods that would merit condemnation in any schoolboy.

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\* "That there is arbitrariness in the universe cannot be disputed. Why the universe has the nature it does have, and not some other nature, is not a question to which any scientific answer can be given." J. Needham, *Order and Life*, p. 12.

#### WRITTEN COMMUNICATIONS.

Lt.-Col. L. M. DAVIES, D.Sc., Ph.D., F.R.S.E., F.G.S., wrote : I welcome this paper, which is ably written and much to the point. It is clear that, while working on different lines, the author emphasises similar facts to ones which I have tried to bring out as a geologist. His criticisms of the fallacies and inconsistencies of evolutionary reasoning are true and timely. I suggest comparison between his concluding remarks and the whole burden of my paper entitled "Darwinism" in the current (January, 1944) issue of the *Nineteenth Century*, pages 27-36. For the doctrine of organic evolution is a piece of natural philosophy masquerading as natural science ; and, as Mr. Dewar and I have recently demonstrated, even its foremost propagandists—men like Professor D. M. S. Watson,

F.R.S., Dr. Julian Huxley, F.R.S., Dr. Joseph Needham, F.R.S., and Dr. H. B. Cott, F.R.S.—refuse to meet competent critics when their broadcast assertions or published works are radically attacked by a series of articles in a leading secular review. The promptness with which these gentlemen go to ground when faced by well-informed opponents shows how well they know the indefensible nature of their propagandist claims on behalf of “science, falsely so called.”

Mr. JOHN EVENDEN wrote: The author writes (page 14): “Evolution is no science, but a frame of mind—a predetermination—a philosophy, not beginning, as Philosophy should, where science ends, but severed from science, and usurping its place”; he develops this thesis in his paper. For reasons stated below I would submit that the theory of evolution is not a mere philosophical idea, but a scientific theory that in its day met the facts and was to be held tenable until disproving facts should arise. That it is no longer tenable does not mean that it is not a scientific theory as well as a philosophy.

On comparing physics to biology it will be seen that the relative importance of various factors is vastly different. For instance, mathematics plays a very big part in physics, and thus physical theories are often subject to the rigid proofs associated with mathematics; in biology mathematics is of far less importance. Again, classification plays a very big part in the biological sciences, whilst though important, in physics it plays an altogether different rôle.

Now when the systematic study of fossils became established as a science the method of classification was applied, as in other branches of natural history. It was found that the classification could be co-ordinated if it was assumed that each form of life was created not from inanimate matter, but from other life. Thus, it was thought, the higher animals developed from the lower, during geological history. This is, notice, a scientific hypothesis, based upon reasonable foundations, and is subject to either proof or disproof. Darwinism, Lamarckianism, etc., are theories designed to account for the mechanism of change from one level of life to another. It is the original idea, coupled with this suggested mechanism, that constitutes the scientific theory of evolution, a theory which philo-

sophers generalised into a philosophy that was in turn to colour the science. The point to notice is that at first the theory of evolution was a scientific theory, later becoming a philosophy.

I agree with the author that evolution has been used quite wrongly in philosophy. I cannot think, however, that it is just a worthless "frame of mind." Philosophically it is, in its proper place, a description within a prescribed limit. Thus a certain development can be said to be evolutionary, implying continuity of development within the limits of the discussion, and it is most important that one should be able to do this. The point may be illustrated by considering a staircase; whilst one would normally say that it is continuous, a carpet-maker would point out the steps; upon his agreeing, however, that it was the steps that were continuous a microscopist would point out the fluff on the carpet, and so on. In other words, it is most valuable to deduce general principles of evolution, so long as they be applied only within the limits of the problem concerned, just as geometry is useful even though pure mathematical curves seldom if ever occur in nature.

Rev. Principal H. S. CURR wrote: I have thoroughly enjoyed the perusal of Mr. Betts' essay. In its lucidity, literary grace, and learning so lightly carried, it is a model for papers such as those presented at this Institute.

A principle of far-reaching significance is mentioned when reference is made to Sir W. C. D. Dampier's reminder to the effect that generalisations which are based on limited observations should not be regarded as universally and eternally true in view of their possible incompatibility with conditions which have not yet been fully investigated. The same truth is stated by Sir James Jeans in a sentence which is summarised in the same paragraph. In illustration, one need only refer to the discovery that this planet is not a flat surface, but a globe, or, again, to the Copernican theory in astronomy which displaced the Ptolemaic. Indeed, Sir W. Dampier's dictum may be regarded as the keynote of scientific progress.

With regard to its bearing on the Second Law of Thermodynamics in connection with evolution, it may be said that the same difficulty inheres in the acceptance of the latter. There may well be conditions in which and on which evolution becomes clearly untenable.

What is sauce for the goose is sauce for the gander. The overwhelming majority of arguments in all departments of human knowledge are sharp, two-edged swords, and the man who uses them must be careful lest he injures himself with the weapon which will overthrow his opponent. In logic there cannot be one law for the rich and another for the poor.

Another observation which may be made is that the rigid application of Sir W. Dampier's words would result in the undermining of confidence in all scientific deliverances. We would be certain of nothing except uncertainty. In practice, of course, we are all guided, learned and simple, by the conscious or unconscious acceptance of Bishop Butler's famous words that probability is the guide of life. By probability Butler meant anything short of a mathematical demonstration. Faith is the foundation of science as well as of religion.

The most effective solution of the difficulty seems to lie in the direction of considering the foundations on which the theory of entropy rests. Are these inherent in the very nature of matter and energy? In other words, is it inconceivable that matter and energy could exist except in a form which was inevitably amenable to the principle of entropy? John Stuart Mill once observed that it is possible to conceive a world where two and two make five. The only remark to be made on that statement is that, in the world in question, two must mean something different from what it must denote in the scheme of things with which we are most familiar. In the same fashion, matter and energy would cease to be what they are known to be if the doctrine of entropy was no longer applicable. If that be a correct train of reasoning, then it may be said that the Second Law of Thermodynamics admits of no exceptions save such as this: "And the angel of the Lord appeared unto him in a flame of fire out of the midst of a bush; and he looked, and behold, the bush burned with fire, and the bush was not consumed. And Moses said, I will turn aside now, and see this great sight, why the bush is not burnt" (Exodus iii, 2-3).

Mr. E. W. BATTERSBY wrote: The lecture on "Evolution and Entropy" by E. H. Betts, Esq., B.Sc., was admirable in that he dealt ably with an extremely difficult subject. His exposition was

lucid, and he stuck to the main points of their relationship without getting entangled in side issues.

Perhaps the following passage from "Outline of Modern Belief" (edited by Prof. J. W. N. Sullivan and Walter Grierson, "The Enquiring Layman") will illustrate how unwilling modern scientists are to take the step from the ultimate results of their investigations into the realm of a faith that is being corroborated both through knowledge and intimate experience: "At some time in the past the universe must have been in its highest possible state of organisation. How did this state come about? It can be shown mathematically that the odds against its coming about by chance are entirely overwhelming. Was it, then, evolved by the operation of natural laws from some primitive state? No; that would be impossible as we have seen that the whole tendency of a universe such as ours is towards disorganisation. A less organised universe could not evolve into a more highly organised universe. The only possible alternative would seem to be that the universe was suddenly created. We are to suppose that in some definite moment in the past this universe in a state of perfect organisation sprang into existence at one blow or had steadily been becoming more and more disorganised ever since. This conclusion is incredible. It certainly seems to follow from the law of increasing entropy, which is one of the best attested laws in science, but we simply cannot believe it. No explanation could be accepted as scientific which involved such a breach of continuity." (Part XIII, p. 730.)

The only "breach in continuity" is that of a number of scientists who refuse to accept the conclusions of their premises. Additional proofs to the perfect organisation of the universe at the time of Creation are: (a) Linguistic evolution. Recently I read that a philologist could reduce all languages to three, or even one original one. (b) Disintegration of atoms, *e.g.*, Ætherium. A becomes Ætherium B in two-thousandths of a second, whilst uranium becomes lead in some millions of years. (c) The original religion was monotheistic and later developed into pantheism. I believe that Prof. Delitsch had proved this. (d) Moral dissolution through the emancipation of women and the use of contraceptives; and (e) entropy, of which Sir James Jeans writes: "For every ton of the sun's weight which existed at its birth only a few hundredweight remain to-day."

Rev. W. B. MONAHAN wrote: This paper expresses my conclusions on a subject of lifelong interest, viz., Evolution, which long ago I showed to be utterly out of place if applied to revelation, except in a dialectical sense. That is to say, there may be a growth in expression from the less clear to the clearer; and at last a clear definition of the fact revealed which itself is not subject to any process of evolution.

I want to thank the author of this paper, the best I have seen, and one which ought to have a very pronounced effect on all genuine thinkers. It is splendid.

Prof. ARTHUR P. KELLEY wrote: Mr. Betts is entirely correct in stressing the "evasion" of evolutionists who refuse to submit to the logical deductions of the "law of entropy." Evolution, on the part of evolutionists, is simply a stubborn retention of dogma. One of my university students once said to me: "We are determined to believe evolution, not because it is true nor that we believe there is any evidence for it, but because it has become the symbol of our Liberalism." What point is there in arguing with people whose minds are totally closed to argument? I have recently been thinking of the inertia of the human mind. Harvey is said to have lost his medical practice for announcing circulation of the blood—no one wanted such a crack-brained doctor; but within 30 years his discovery was accepted by the universities. Hobbes ironically remarked that Harvey was perhaps the only man who ever lived to see his doctrine accepted by his own generation. But what can be said for these brilliantly superior evolutionists who not only needed 30 years to adjust themselves to a reception of Gregor Mendel's discoveries, but required 40 years more to understand that the Mendelian Laws which they so naively accepted and so widely published actually knock the very under-pinning from their house of cards, Evolution?

#### AUTHOR'S REPLY

There is little for me to say in reply to my kindly critics beyond thanking them for their remarks, which in several instances reinforce or more aptly illustrate important points. I emphatically agree with Rev. W. B. Monahan that revelation is not evolutionary in



character. It should be apparent to any careful student that its progress in clearness of definition and in fulness to its culmination in the out-shining of the light of the gospel of the glory of God in the face of Jesus Christ, was by well-marked, discrete stages.

I have read, and I rejoice in, the articles referred to by Lt.-Col. Davies and so ably written by himself and Mr. Dewar which have appeared in recent issues of the *Nineteenth Century*. The fact that an editor should esteem such mental food to be suitable for and acceptable to the readers of a successful modern review is to be regarded as a hopeful sign of returning public sanity.

Mr. E. W. Battersbey's notes strengthen the impression that certain men of science, who boggle at the very findings and implications of their own science, are entirely "without excuse" (Rom. I, 20).

Rev. Principal H. S. Curr has placed his finger on a pertinent point of the greatest import, which was perhaps too lightly touched upon in my essay. It is, of course, true, from the very nature of inductive reasoning that no scientific laws whatsoever have any certain application that is both universal and unchanging. It follows from this, with equal truth, that such laws *are not and cannot be valid against satisfactorily attested miracle*. These points need emphasis and insistence, *pace* Sir Arthur Eddington and others who seek by a tour de force, mathematical in character, to represent the laws of science as deductive or as "truisms." Such representation is entirely illusory and must be exposed and strongly resisted. However, it being the chief business of my essay to compare the doctrines of evolution and entropy in their logical foundations rather than to assess their absolute values, I was content to allow each of them its widest conceivable application in order to give full effect to the comparison.

Mr. Evenden's points I can only partly allow. *Formally* such a theory as Darwin's is a scientific theory. But this admission gives it no logical status beyond that of a more or less informed guess. Until it is shown to "fit the facts" it remains a *mere* guess. Any opprobrium attached to such a label is more thoroughly merited by Darwin's hypothesis than by the majority of scientific hypotheses, for his main "guess" as set forth in "Origin of Species" was buttressed by some seven hundred subsidiary guesses taking the form

“we must suppose” or “it may well be supposed” or something equivalent. And the methods of his modern continuators J. S. Huxley, J. B. S. Haldane, E. S. Goodrich and many others are equally steeped in wholesale guessing, as I have also indicated in the essay. That both the main hypothesis and the multitude of subsidiary hypotheses are not merely untenable, but grotesquely so, has been demonstrated again and again.\* To insist on and reiterate such farcical and exploded theories is, I must maintain, not science, but “a stubborn retention of dogma,” the result of a predisposition to see things in an exclusively naturalistic light. Professor Kelley’s comment, for which I thank him, instances a perfect specimen of this in the determination of a student to believe in evolution “not because it is true nor that we believe there is any evidence for it, but because it has become the symbol of our Liberalism.” “The symbol of our *atheism*” would be equally correct. The very word “evolution” has become odious to lovers of truth because it bears a permanent weight of evil connotation. Not the least evil feature is the insolent attempt to account for origins to the detriment of revealed truth. I suggest to Mr. Evenden that his own sentence, viz., “a certain development can be said to be evolutionary, implying continuity of development,” would suffer *no* loss if simply given as: “a certain development can be said to be continuous”—unless he wishes to thrust in suggestively some flavouring of evolutionary teachings. For this is what has been done in magazines and popular science books for three quarters of a century, and is still being done. It is a practice which conveys to the easygoing thinker and the thoughtless the impression—intended, no doubt—that evolution is in itself a firmly founded doctrine available for general service in the illustration of other notions of inferior clarity. What a travesty of truth it all is! I do not know what “general principles of evolution” may mean; much less can I imagine how they can be “deduced.” In his last paragraph Mr. Evenden speaks of “evolution” but means simply “continuity.” Finally, Mr. Evenden states that “physical theories are often subject to the rigid proofs associated with mathematics.” *This is simply a delusion.* Mathematics

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\* See, as a specimen of a recent exposure, *The Man from Monkey Myth*, D. Dewar, B.A., F.Z.S., *Nineteenth Century*, April, 1944, also reprinted as pamphlet by the Evolution Protest Movement.

can be used to elaborate a physical theory and to explore its consequences, but never to prove it. The only certain proof of a physical theory is the experimental one. Rigidity in the proof of a mathematical theorem consists in the absence of all assumptions except those explicitly given. If there is a physical theory which can be said to be certainly and unshakably proved it must be true of such theory (i) that it "fits the facts." and (ii) that it is the only theory that will do so. Much more could be said on this topic and, in these days of the extravagant esteem of mathematics, it badly needs saying. But it must be reserved for another occasion.

War conditions having rendered it impracticable to hold an Ordinary Meeting on February 14th, 1944, the Paper for that date was circulated to subscribers and is here published, together with the written discussion elicited.

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## KIERKEGAARD'S MESSAGE TO OUR AGE.

By MELVILLE CHANING-PEARCE, M.A. (Oxon).

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### REFERENCES.

- L = Kierkegaard : Walter Lowrie, D.D. (O.U.P., 1938).  
J = The Journals of Soren Kierkegaard ; ed. and tr. by Alexander Dru (O.U.P., 1938).  
R = Repetition : Soren Kierkegaard (O.U.P., 1942).  
P = From the Papers of one still living : Kierkegaard (1838).  
U.P. = Unscientific Postscript : Kierkegaard (1845).  
P.F. = Philosophical Fragments, by Johannes Climacus, tr. by David F. Swenson (O.U.P., 1936).  
S.D. = Sickness unto Death by S. Kierkegaard, tr. by Walter Lowrie (O.U.P., 1941).  
P.A. = The Present Age, by S. Kierkegaard, tr. by Alexander Dru and Walter Lowrie (O.U.P., 1940).

### I.—CONDITIONS.

**C**HRISTIANITY is both reactionary and revolutionary. It reacts to and fulfils the "Law and the Prophets" of religious tradition ; but it fulfils them with a meaning so profound or so forgotten that, in the true connotation of the term, it is also revolutionary. It revolves the orb of an eternal Wisdom, turning darkened or hitherto unrevealed aspects of it to the light. It brings out of the immemorial and inexhaustible treasure of that wisdom "things new and old." Its new truths are, indeed, as old as the hills ; but, seen anew, they "turn the world upside down." Its old truths are also eternally new. Such is the basic paradox of this profoundly traditional, profoundly revolutionary faith. Because it is so all the most profound of Christian thinkers have been both traditionalist and revolutionary, both conservative and creative.

As Dr. Lowrie has truly said, Kierkegaard "remained a conservative to the end of his days" (L. p. 91). Nevertheless, in

this proper meaning of the term, there are few Christian thinkers more entitled to the style of "Christian Revolutionary" than Soren Kierkegaard. The revolutionary character of his thought was also, as he constantly insisted, a reversal to the traditional truth which, so he believed, the Christianity of his time had betrayed. But, so penetrating was his insight into the treasury of Christian truth that the apostasy of Christendom which he denounced a hundred years ago to an age, in the main, incapable of understanding his meaning, is one of which our own age has become generally and ardently aware. He was, in fact, the forerunner of a Christian revolution which is only now approaching its flood-tide.

But the revolution which he heralded was one not only of religion but also of culture and life. He denounced the whole trend of thought, both religious and secular, of the romantic, liberal, idealistic, pseudo-democratic culture dominant in his day and the acquisitive, callous, comfort-loving society of *laissez-faire* individualism which it begot in life—a way of thought and life which is only now being seriously or generally assailed. When to say such things seemed insane and seditious, he declared that "Christianity does not exist" (L. p. 525), that "parsons canonize bourgeois mediocrity" (J. 1134) and "are trained in the art of introducing Christianity in such a way that it signifies nothing" (Papers, p. 23), that both "official" Christianity and "academic" or "donnish" criticism and philosophy were idiotic, that "Christianity has nothing to do with nationalism" (J. 1034), that "liberal constitutions" arouse "longing for an Eastern despotism as something more fortunate to live under" (J. 1066) and point to the "intensive development of the state itself" (J. 657), that "ideas such as 'state' (e.g., as it existed among the Greeks; 'Church' in the older Catholic sense) must necessarily return" (J. 85), that romanticism "implies overflowing all boundaries" (J. 44), a vain vagueness, that "Protestantism has produced a fundamental confusion in Christianity" (J. 1385), that humanism is "vaporised Christianity, a culture-consciousness, the dregs of Christianity" (J. 1209). Many make such criticisms today; Kierkegaard's was a voice crying almost alone in a wilderness of nineteenth century "progress" and complacency.

Kierkegaard's revolutionary criticism of life thus includes the whole fabric of socio-political life of the modern age in its scope and the majority of the institutions, ideas and attitudes which he

condemned, are, though increasingly attacked, those with which we have still to deal to-day. And the revolution which he preached was radical; he laid his axe to the tap-root of the tree of life—the religious attitude in which such ideas and institutions originate. The present preoccupation with religion as the root of all political, economic and psychological problems echoes his prophetic diagnosis of our disease. He said that he “came out polemically against his age” (J. 588); his polemic applies no less to our own.

His constructive criticism was no less revolutionary and modern in its trend. His dialectical mode of thought anticipated the Marxian dialectic; his “existential” thinking is a salient feature in modern philosophy and theology. His doctrine of the “Instant” and “Repetition” propounded a conception of time which is now to the fore. His insistence upon the “leap” of life and faith as the way of reality as opposed to the “gradualism” of the evolutionists corresponds to the most recent conclusions of biology and physics. In his call to “inwardness” and awareness and his own profound psychological insight and fearless self-analysis he foreran modern psychology. His doctrine of the life and nature of Spirit forecast that theology of the Spirit with which the religious thought of our own time is increasingly concerned.

Kierkegaard's thought is thus not only revolutionary and not, in the cant and restricted sense of the word, limited to religion, it is also highly relevant to our own political, cultural and social conditions and problems. By temperament, moreover, he belonged rather to our than to his own age; he shared with the typical modern an acute sense of catastrophe and divided consciousness and, in his Journals and other writings, gave to posterity a profound and searching record and analysis of that condition. The realisation of the conditioned nature of all our thought and conduct is only to-day becoming general. Kierkegaard recognised the fact a century ago and, in his searching self-scrutiny and “existential” thinking, applied that philosophically revolutionary conclusion to all the problems which confronted him. The sources of his thought are, therefore, in a degree rare among philosophers and theologians, to be traced to his own physical and psychological conditions and some knowledge of those conditions is essential for the comprehension of his work.

His outer history was singularly uneventful. His real drama was inward and of the spirit; it was not the less dramatic,

catastrophic or tragic for that. He was born in Copenhagen in 1813. His father was a moderately prosperous and "self-made" wool-merchant and was aged 56 when Soren, the youngest of seven children, was born. His mother was of a lower social grade and had been his father's servant. His home conditions were thus those of the comfortable middle-classes, his psychological climate that of an urban, industrial, respectable, bourgeois and Protestant piety.

His father, a passionate, austere, guilt-haunted and, in a Puritan mode, deeply religious man, dominated, both by attraction and repulsion, the life of his son. He was obsessed with conviction of sin and its consequent curse upon him and his family. For he had once, in his own sad and bitter boyhood, cursed God and, particularly in his second marriage with Soren's mother, was agonisedly conscious of sexual incontinence. He carried that curse and sense of sin to the grave in a tortured contrition. It was a burden which his son was to inherit and assume as his own. Soren's mother appears in the records as a somewhat wraith-like and insignificant figure, submissive, repressed and impersonal, who made little impact upon her children; the gaunt figure of the father filled the family horizon. It is not hard to reconstruct that grim and gloomy world. It is a family scene of which we have many examples in our own Victorian age; a remarkably similar situation is described in Edmund Gosse's "Father and Son."

Soren himself, a somewhat sickly son of elderly parents and, as is common in such cases, hyper-sensitive and intellectual in bent, was acutely responsive to such oppressive conditions. The massive personality of his father imposed upon the child an adult and austere form of faith. "As a child," he has recorded, "I was strictly and austere brought up in Christianity . . . a child crazily travestied as a melancholy old man" (L. p. 48). As he grew to manhood he fluctuated between a reverent affection for and resentment and rebellion against his father. But the latter's influence remained dominant to the end and was the mould of his piety. It was from his father that he learned how to live with God; "I have, quite literally, lived with God as one lives with one's father" (J. 771), he writes towards the end of his life. It seems certain that it was his father's confession to him of his own faith and failings which precipitated his own conversion and he continually testifies to the depth of his debt to him. It is unquestionable that it is to this dominating relation-

ship with his father that the markedly patriarchal pattern of his piety and his insight into the mystery of the fatherly love of God are chiefly to be attributed.

In 1830, at the age of 17, he proceeded from the Copenhagen High School to the University with a view to ordination—a prospect with which he flirted but never fulfilled throughout his life. For several years he lived the life of a brilliant, wayward, diletante, mildly self-indulgent and wild young undergraduate and, until he attained his majority, he does not seem to have desired or approached an adult attitude to life. Then, in 1834, his mother, and, a few months later, his favourite sister Petrea, died. In the following spring he met Regina Oslen to whom he became engaged six years later.

The sequence of events in the nine crucial years from 1834 to 1843 provide the psychological key to the pattern of his mature mind and character for, during that period, Kierkegaard, an unformed boy of 21 when it began and a man of 30 when it closed, became adult in character and mind. In May, 1838, the year after Regina had entered his life, he experienced, with a profundity reminiscent of Pascal's "heure et demie" of "Fire," the "sudden," "inexplicable" and "indescribable joy" (J. 207) of conversion to Christianity. In August his father, with whom he had recently become reconciled, died, and in December he records in his Journal what he describes as "the great earthquake . . . the terrible revolution which suddenly forced upon me a new and infallible law of interpretation of all the facts" (J. 243). All these events, for his acute sensitivity, were of a peculiarly revolutionary and catastrophic kind; in the words of St. John of the Cross, they meant "a fearful breaking up in the innermost part" (The Dark Night of the Soul).

The "earthquake" appears to have been caused by the knowledge of his father's real faith and of his rebellion against God and incontinence of life and of the continuing curse which Soren believed that he must inherit and expiate. It was, for him and his particular conditions, the general guilt of mankind which each sinner shares. And through this knowledge he found a new realisation of his own relation to his father and so to God the Father. He became convinced, in Dr. Lowrie's words, that "his defiance of God was primarily defiance of his father" (L. p. 183). It was the significance of fatherhood which he had found, of the Divine Fatherhood and of the human fatherhood which is the mortal and fallible channel of the "great tradition."



It is in the light of this flash of understanding that he can say that religious truth is real "because my father told me so" (J. 785). He had plumbed to a profound piety in the rich Latin sense of "*pietas*." And he had also learned "what father-love is . . . the divine father-love, the one unshakable thing in life, the true Archimedian point" (L. p. 183). This conception of the true "*pietas*" and of the reciprocal love of God the Father of men was henceforward to be the rock of his own religious faith and his "new and infallible law of interpretation of life." He explored that filial relation in religion to the end.

With a new sense of responsibility he set himself to study and equip himself for life and, in 1840, took his theological degree. In the following year he became engaged to Regina Olsen; it was a token of his acceptance of his conditions. "The next day I saw that I had made a mistake" (J. 207), he wrote afterwards, Just under a year later he broke off the engagement and "to save her, to give her soul resiliency" (L. p. 226), he determined to make her believe that he did not love her and that the rupture was due to his own frivolity and worthlessness. The event, coupled with the "great earthquake" and his conversion, was the climacteric point of his spiritual and intellectual development.

From the sequence which has been sketched it will be seen that Kierkegaard's engagement to Regina coincided with a watershed period in his own life, a phase of great inner eruption, and before his own life-attitude had become fixed, during which, in a profound conversion (a turning "upside down") of life and mind, he was passing from an irresponsible, dilettante and, to use his own terms, "erotic" and "observer" to a responsible, realistic and religious attitude and from immaturity to maturity. The feminine element in his life had faded out with the deaths of his mother and sister; in his intercourse with Regina he seems to have sought to fill that gap and to fulfil himself in his human life. He saw in marriage the fulfilment of both natural and spiritual life and seems never, though he failed to attain to it, to have abandoned that belief. In later years he confesses in his Journal "had I had faith I should have remained with Regina" (J. 444). But he found it psychologically and religiously impossible to do so. His reasons for that "great refusal" have a vital relevance for his later thought.

Regina appears to have been a girl who lived very near to nature; her world was that of human nature, of (in Kierkegaard's term) the "first immediacy," of feeling and the "erotic." It was

a world which, with a mounting realisation during these years, Kierkegaard had come to know that he must renounce. For he knew himself to be "dedicated" to an "idea" (J. 600)—the Christian idea, and that, in his conversion, his mode of life had changed from "immediacy (*i.e.*, natural spontaneity) to spirituality" (J. 1041), a way of life which he called the "second immediacy." It was an inner renunciation, dedication and way of life which Regina, with a "woman's loving lack of understanding," could not conceive. He knew that, by virtue of this conversion, he was, in his own words, "an eternity too old for her" (J. 781). For, he quotes from Johan Georg Hamann, "a man who lives in God therefore stands in the same relation to the 'natural' man that a waking man does . . . to a dreamer. . . . He has been 'born again' . . . he has become an eternity older . . . he has now become spirit . . ." He knew that "essentially I live in a spirit-world"—of which Regina knew nothing. "So then," he comments, "she would have gone to smash" (L. p. 221).

This was part of the "secret" which he could not tell her. But there was more. For he felt himself to be a "penitent." He had, so he believed, inherited his father's sin and curse. For he, too, in his wilder youth, had defied both his father and God. And he, too, in a sudden blind sensuality, had been guilty of sexual incontinence. Moreover, he knew his own deep melancholy of disposition. "Had I not been a penitent, not had my *vita ante acta*, not been melancholy—," he wrote, "union with her would have made me happy as I had never dreamed of becoming" (L. p. 218). He was conscious too of his own dawning genius which "like a thunder-storm comes up against the wind" (J. 309) and of the "pale, bloodless, hard-lived, midnight shapes" (J. 345) to which he must "give life and existence," and of, as he believed, "the curse which rests upon me . . . never to be allowed to let anyone deeply and inwardly join themselves to me" (J. 79). Therefore, for her sake and his own—and God's—he was driven to the conclusion that he must not marry. "It was for her sake that I broke it off. This is my consolation," he wrote.

It was no simple or easy sacrifice. "I loved her dearly," he declares with an obvious sincerity, "she was as light as a bird, as daring as a thought" (J. 363). And again—"there is nothing so infinite as love" (J. 368); he could not forget her. But the reborn life required, so he conceived, the renunciation of the

“erotic” natural life. Again to quote St. John of the Cross, it required “the emptying . . . of all that is not God” (The Dark Night of the Soul). Regina personified that erotic, natural life. To abandon her and it meant a death; “when I left her,” he wrote, “I chose death” (J. 655). He abandoned more than Regina—a whole world. “Ce n’est pas Regina Olsen seulement,” comments M. Leon Chestov, “c’est le monde entier qui s’est transformé pour Kierkegaard en une ombre, en une fantôme” (Kierkegaard et la Philosophie Existentielle: Leon Chestov, p. 55). But however bitter that renunciation may have been, it was not barren; in that sacrifice he was taught his truth. Six years later he adds, “I owe what is best in me to a girl; but I did not exactly learn it from her, I learnt through her” (J. 761). However his conduct in this affair may be judged there can be no doubt that he acted under an overmastering sense of compulsion. “I had not the strength to abstain from marriage, I was compelled” (J. xxxviii), he confessed.

The experience was crucial and creative for Kierkegaard’s life and thought. Here is the forge of his passionate and paradoxical faith. Here was the conflict and dialectic of “Yes” and “No” in life from which came his Christian coordination of contraries and the dialectic, the poignant paradox in his own experience whence stemmed his governing conception of the dialectic and paradox at the heart of religious reality. Here was a knowledge of passion “proved on the pulses” by the light of which he affirmed that “faith is a passion” (though a passion which must be purified) (J. 590). Therefore he found in paradox “the passion of thought” and judged that “the thinker who is devoid of paradox is like the lover who is devoid of passion—a pretty poor sort of fellow” (J. 335). Since his own faith was thus forged in the furnace of an existential passion, therefore he found no use for a religion not rooted in reality, in actual existence. Here is the “*fons et origo*” of his “existential” theology.

Two years after his breach with Regina Kierkegaard began his serious career as a writer with four books, all written as an “indirect communication” for Regina, “Either—Or,” “Two Edifying Discourses,” “Repetition” and “Fear and Trembling”; all were published in 1843. He had succeeded in representing himself to the public of Copenhagen (though not to Regina) as a worthless cynic and in provoking a publicity and unpopularity which broke into flame in a series of anonymous lampoons upon him in the “Corsair” in 1845-6. He learned what it meant

to be "trampled to death by geese" (L. p. 358); for his extreme sensitivity, as he wrote, "such a galling sort of abuse is about the most torturing experience."

He continued to write voluminously until his death twelve years later at the age of 42, at first under a variety of pseudonyms after the Socratic model and because, as he said, "I am a penitent," and later, when in 1848 he experienced a second conversion of which he writes—"My whole nature is changed. My closeness and reservedness are broken—I must speak" (J. 747)—under his own name. This second crisis of spirit seems to have convinced him of his own integration as a spiritual person and of an urgent calls to action. "From now on," he said, "I shall have to take over clearly and directly everything which up till now has been indirect and come forward personally, definitely and directly as one who wished to serve the cause of Christianity" (J. 806). During the remaining seven years of his life he published twelve books. A year before his death in 1855 he launched a campaign against the established Church in Denmark in a periodical called "The Instant." On his death-bed he refused the ministrations of the Church but died in the calm assurance of grace.

The chief characters in this intense personal drama are few in number. Kierkegaard's retiring and introverted disposition and semi-recluse existence did not conduce to the making of intimate friendships. Apart from members of his family and Regina the figures of a university tutor and Bishop Mynster play the most important roles in his life and thought; in spite of personal affection, they seem to have become representative for him, the one of the Hegelian idealism, the other of the "official" Christianity which he abhorred.

In the making of his mind books played a more important part than persons. Apart from the Bible, the dialogues of Socrates (to whom his dialectical mode of thought is largely due), the works of Hegel and the Jena Romantics such as Fichte, Novalis, Schelling and the Schlegels (mainly in violent reaction from their teaching), the plays of Shakespere (and, in particular, Hamlet and King Lear) and the writings of Johan Georg Hamann (whose conversion and attitude to conventional Christianity so nearly resembled his own) were the main formative influences upon his thought. Though he repudiated the name of "mystic" and held that "mysticism has not the patience to wait for God's revelation" (J. 321), he studied Gorres' "Mystik" and was

acquainted with mystical writers such as Boehme, Tauler and the Victorines.

The source of Kierkegaard's profound and persistent sense of crisis and catastrophe is thus to be found very largely in his own inner and private life. But the course of public affairs in Denmark during his lifetime fomented that feeling. He had long, and with the persistence of an Isaiah, prophesied political disaster; with the Danish-German war of 1848, in the course of which Denmark lost Schleswig-Holstein, the storm broke with a sense of catastrophe for his countrymen and contemporaries, which, for an age attuned to disaster upon so much more vast a scale, is not altogether easy to appreciate. Nevertheless Kierkegaard's generation in Denmark lived with thunder in the air and his thought was shaped under the shadow of a coming catastrophe clearly foreseen by him. Moreover, Kierkegaard, with a prophetic vision which is alone sufficient to acclaim his genius, foresaw with a terrible clarity what he described as the "total bankruptcy" towards which the whole of Europe seems to be heading" (L. p. 157); it is a bankruptcy of which our world is now all too well aware. With an uncanny prescience he foresaw and foretold the whirlwind which we are reaping. He conceived it to be his duty and destiny to sound a "cry of alarm." It is, therefore, as a "corrective" (the title with which he himself described his role as he saw it) and "cry of alarm" rather than as systematic theology or philosophy that his work can alone, with justice, be judged.

Kierkegaard's conditions were thus of a kind to render them a happy hunting ground for psychologists. An Oedipus-complex, making him at once the psychological murderer and "spiritual wife" (cp., the article on Kierkegaard in "Horizon," by Rudolph Friedmann, Oct., 1943) of his father, bi-sexuality and homo-sexuality are eagerly diagnosed by Freudian fanatics.

A full and modern estimate of his thought cannot, indeed omit such a mode of enquiry. It illuminates, from one angle, the nature of the tension which he, like all men who, in Dr. Reinholdt Niebuhr's words, stand "at the junction of nature and spirit," inherit "as the sparks fly upward" (The Nature and Destiny of Man, I. 18). They cannot, save for a bigoted and uncritical psychological dogmatism, pass any final verdict upon the "unmapped, unmeasured, secret heart" (Laurence Binyon : The Mirror) of Kierkegaard or any other genius, nor can they, as is sometimes so glibly assumed, denigrate the spark of spirit,

the flame of personal truth born, in the womb of genius, from such inner conflict. In the words of M. Henri Massis, ". . . là où l'esprit est libre, actif, il n'y a pas de désastre irréparable" (Les Idées Restent, p. 65) for the soul wrestling with its psychological contraries.

But such psychological criticism serves to emphasise the kinship of Kierkegaard's spirit with the temper, so conscious of a similar division of consciousness, of our own age. It is thus with an especial affinity of feeling that the modern man can contemplate the inner drama of Kierkegaard's life and the knotty texture of his thought. For, with a lonely heroism of spirit which can but elicit the admiration of the understanding, he confronted, a century before its full time, a conflict of consciousness of which the majority of Europeans have only lately become aware. But it is with the wisdom born from that travail of soul that we are concerned. In such a presence preconceived formulas and dogmas are best laid by.

## II.—EXISTENTIAL THINKING.

The foundations of Kierkegaard's faith were laid in his own life; the only truth which was of any value for him was that which was "existential," which spoke to his own suffering and corresponded with the paradox, conflict and despair so poignantly experienced in his own individual existence and passion. He had known the paradox and dialectic of life and love, the extremity of inner division and had plumbed the depths of human futility. "I stick my finger into existence—it smells of nothing" (R. 114-5), he wrote in "Repetition," and again, "the whole content of my being shrieks in contradiction against itself" (L. p. 364). It was in this "tension of reality" that his thought was rooted and for such a "sickness unto death" in his own experience of human existence that he sought a "radical cure" in an "existential truth." Both his need and his psychological state were thus remarkably similar to those of our own time.

Such a personal truth had always been his aim. When only 22 he had already stated his life's quest. "The thing is to understand myself, to see what God really wishes me to do; the thing is to find the *idea for which I can live and die*" (the italics are Kierkegaard's). That truth was alone true for him which he could, in Keats' phrase, "prove upon his pulses." Such a truth he styled "existential." It is a term which is fundamental for

his faith and now in common use—and abuse. It therefore requires careful consideration.

Although modern "existential philosophy" largely derives from the thought of Kierkegaard, he himself never precisely defined the term. But he has stated what "existence" implied for him. "Existence is the child of the infinite and the finite, the eternal and the temporal, and is therefore constantly striving . . . an existing individual is constantly in process of becoming." (U.P. p. 79). Existence thus implies, for Kierkegaard, not the calm of being but the conflict of becoming and, not life in the abstract, but conditioned human life lived in the "tension of reality." The "existing individual" exists on the frontier between time and eternity, finite and infinite, a—

". . . swinging-wicket set  
Between  
The Unseen and the Seen."

(Francis Thompson : Any Saint.)

He is, in Dr. Reinhold Niebuhr's words, "under the tension of finiteness and freedom, of the limited and the unlimited" (*The Nature and Destiny of Man* : II, p. 222). It is to this specifically human predicament in existence that Kierkegaard's use of the word refers, with such existence that his "existential thought" is concerned and by such existence that he believes it to be conditioned. He thus anticipated the notion of the conditioned nature of all thought and of the "tension of faith" upon which such leaders of modern thought as Professor Karl Mannheim and Dr. Niebuhr to-day insist.

It is thus with such actual existence that, for Kierkegaard, real thinking is alone concerned and by its conditions that it is itself conditioned. Thinking which recognises such existence as at once its only real subject-matter and its test of truth and that the thinker is himself, as an "existing individual," immersed in the conditions of his existence and therefore "in process of becoming" is, for him, "existential thinking"—the thought of "the whole man facing the whole mystery of life" (Either/Or). In Dr. Paul Tillich's definition of this type of thought, ". . . truth is bound to the existence of the knower . . . Only so much of knowledge is possible as the degree to which the contradictions of existence are recognised and overcome" (*The Interpretation of History*, p. 63).

But it is important to observe that, for Kierkegaard, experience of existence is not limited to the experience of personal human existence apart from God; it includes the existence of God. For God has Himself entered into existence and the existential experience of man; "the God-Man is himself the existential" (J. 1054). Of His existence Kierkegaard is as sure as of his own with the steadfast conviction of Browning's—

" . . . thy soul and God stand sure " (Rabbi Ben Ezra).

That initial faith in the existence of God in human history and in his own individual experience, is, for Kierkegaard, his datum; he accepts it as axiomatic and beyond either proof or dispute; it is, not rational, but faith-knowledge. That some such premise which is always in reality, not rational, but faith-knowledge, lies at the root of all thought is obvious; the rationalist could not reason unless he believed in the validity of reason and this he cannot know, he can only believe. For Kierkegaard this dual premise of the existence of his own soul and God was his "jumping-off point." He believed that both existences are knowable by the individual's inner experience of existence and are, indeed, only, by such an "inwardness," to be known at all. And it is this, to reason, apparent contradiction and "absurdity" of the entry of being into becoming, essence into existence, God into history which constitutes the tension and paradox of life and necessitates a dialectical mode of thinking—a simultaneous Yes and No.

Therefore the datum of existential thinking and the existential test of truth, for Kierkegaard, are dual—the existence and experience of, not only self, but God. It is this supremely important fact which differentiates the "existentialism" of Kierkegaard from that of the Nazis. The latter accept and affirm the existence of Man (in the abstract) only; Kierkegaard accepts and affirms the existence of both man and God. Therefore the criticism of existential philosophy delivered by Miss Dorothy Emmett that it implies "no external standard of truth and morality above the individual decision" (Kierkegaard's Existential Philosophy: "Philosophy," July, 1941), while true of the Nazi form of existentialism, is false for that of Kierkegaard. For the latter, in his experience of existence, posits both the subjective standard of self-knowledge and the objective standard of knowledge of God. For him the Nazi form of existentialism



is unexistential since it omits the greater part of existential experience.

The test of truth for Kierkegaard and all existential Christian thinking which accepts his dual premise is thus an existential decision or apprehension of the self when confronted with the objective reality of life and God. It is not some arbitrary and arrogant "private judgment" of the self upon life and God and as such subject to the manifold corruption and fallibility of all human judgment. It is that truth and conviction which are struck from the meeting of the subjective and inward "passion" or feeling of the "whole man" with a reality and revelation which, though apprehended subjectively, are, in fact, utterly objective to him.

It is, indeed, like his own apprehension, embodied in and conveyed to him by tradition. For tradition (that which is handed across the generations to the individual) both conditions the "passion" of the individual and confronts him in the "great tradition" of history and revelation. Thus the tradition of Christian truth is conveyed to him by the Christian Church. It is to this objective element in existential truth that Kierkegaard refers when he says that he accepts Christian truth "because my father told me so." Thus an existential decision after the pattern of Kierkegaard in fact includes "an external standard of truth and morality" as a major factor in its decision. The ultimate decision is itself dialectical; from the opposition and meeting of the individual soul and God a new condition, that of faith, is born. To pose the process in simple Christian language, the soul, when confronted by Christ, is constrained to obey that call of Reality; when it does so it becomes a "new man" and leads a "new life."

Existential thinking is thus based upon a primary postulate which is the precise contrary of that of Descartes from which the whole of the Cartesian and idealistic philosophy, liberal sociology, scientific evolutionism and humanism of the modern age derive. Where Descartes declared that "I think, therefore I am," Kierkegaard retorted, "I am, therefore I think." For the one abstract thought, for the other concrete and total existence was the foundation of faith. Both thus accept primary postulates which cannot be proved. The Cartesian and humanist accept their fundamental faith in the validity and sovereignty of the human reason upon the supposed evidence of human experience; Kierkegaard accepts his faith in the existence of himself

and God upon the evidence of an existential experience which includes both human feeling and divine revelation. His revolution in thought was thus of the most radical kind which can be conceived and one which, if accepted, must re-orientate the whole course of thought and life.

This fundamental faith not only provides the ultimate criterion of truth ; it also shapes to its pattern all thought and life proceeding from it. For Descartes and his followers truth is that which is true for thought ; for Kierkegaard and existential thinkers it is that which is true for life. For the former intellect, for the latter the whole personality in its "human predicament" is dominant and decisive. The one necessarily tends towards a predominantly rational and intellectual, the other towards a vital and intuitive way of life and thought.

The revolt against the Cartesian philosophy and that which ensued from it and dominated European thought in Kierkegaard's day is now general. It has recently been well expressed by Mr. H. J. Massingham. "What he (Descartes) did," he writes, "was to elevate man above his proper station, above, that is to say, his 'creatureliness' by his intellectual gospel of egocentricity. 'I am,' he wrote, 'because I think.' Neither God nor 'I' were realities, both being intellectual abstractions . . ." (The Tree of Life, p, 109). But, in Kierkegaard's day, such a denunciation of the dominant dogma of philosophy was a radical revolution in the realm of ideas. It is a revolution which is still in process to-day.

This revolutionary doctrine of the nature of human truth and human thinking gives to "existential thinking" characteristics which are quite contrary to those of the prevalent idealistic philosophy. In the first place, it is a different mode of thought and therefore begets a different type of thinker. While the tradition of Descartes produced philosophers and scientists who seek to be detached observers of life, "above the battle," that of Kierkegaard produced thinkers involved in the concrete battle of existence, and it is noteworthy that Kierkegaard repudiated the title of "philosopher" and preferred that of a "Christian thinker."

As Professor Karl Heim has said of Kierkegaard's type of thought, "a proposition or truth is said to be *existential* when I cannot apprehend or assent to it from the standpoint of a mere spectator but only on ground of my total existence" (God Transcendent, p. 75). Such thinkers are "educated by experi-

ence" R. p. xx) rather than by thought. Since their "concern implies relationship to life, to the reality of personal existence" (S.D., 3 and 4), they therefore renounce both "the high aloofness of indifferent learning" and "scientific aloofness from life." And since they are primarily concerned, not with thinking, but with living, their thinking is, to employ a phrase now popular in scientific circles, "operational"; it is "drawn from life and expressed again in life" (L. p. 214).

Therefore Kierkegaard and "existential thinking" repudiate all abstract thinking and thinkers. Thus he asserts that "the sciences . . . reduce everything to calm and objective observation" (J. 1051) and, therefore, that "the whole of science is a parenthesis" (J. 617). Again he denounces "the hopeless forest fire of abstraction" (P.A. p. 64) and is acid in his comments upon "dons" and "professors." The don is "a man in whom there is nothing human, where enthusiasm and the desire to act . . . is concerned, but who believes it to be a learned question." "The truth" is crucified like a thief, mocked and spat upon—and dying, calls out: follow me. Only the "Don" (the inhuman being) understands not a single word of it all, he construes it as a learned problem." "One is to suffer; the other is to become a professor of the fact that another has suffered" (J. 1362). "Take away the paradox from the thinker and you have the professor" (L. p. 506).

"Parsons" come under the same condemnation but, in so far as they are "observers" of the Passion of God their offence is the more rank. He does not condemn the parson as such but the generality of professional parsons whom he knew. "The true priest," he says, "is even more rare than the true poet" (S.D. p. 166). He found small reason to change his view of parsons at the end of his life. ". . . one thing I adjure thee," he cries in almost his last published utterance, "for the sake of God in heaven and by all that is holy, flee the parsons . . ." (L. p. 582).

Second, existential thinking proposes a different objective to that of abstract philosophy and science; it is concerned, not with intellectual proofs or certainty but with pragmatic faith; ". . . certainty can only be had in the infinite, where he (the existing subject) cannot remain, but only repeatedly arrive" (U.P. p. 75). For Kierkegaard this "prolix knowledge . . . this certainty which lies at faith's door and lusts after it" (L. p. 339) is anathema. Therefore abstract philosophy unrelated to life (as he conceived the Hegelian system to be) is both futile and

fatal for faith, which alone matters. For while "a logical system is possible, a system of existence is impossible" (L. p. 308). "... existence must be content with a fighting certainty." (L. p. 310). The quest for certainty, which is the quest of such a philosophy, has thus nothing whatever to do with existential truth, or with Christianity as Kierkegaard conceives it, "wherein," he writes, "lies the misunderstanding between Speculation and Christianity" (L. p. 301). Therefore, for him, "Christianity and philosophy cannot be reconciled" (J. 32).

Third, since existential thinking is concerned with "the reality of personal existence," it is, not objective but subjective, not coldly external to life but inward with an "endless passion" of "inwardness" (U.P. p. 185), and, not impersonal, but profoundly personal. "... the real task is to be objective to oneself and subjective towards all others" (J. 676).

But by "subjectivity" Kierkegaard does not mean mere individualism or that the individual judgment is the measure of all things. The term is used by him in opposition to the Hegelian claim to objectivity or personal disinterestedness in the effects of speculative thinking. The subjective thinker, for Kierkegaard, is not he who judges solely by subjective standards and private judgment but he who is concerned with the truth for him and his own concrete situation. Moreover by subjectivity he also implies personality, a spiritual person derived from and dependent upon a transcendent God known to him in his own "inwardness."

This emphasis upon the personal apprehension of truth is, perhaps, Kierkegaard's most important contribution to modern thought; it is one which gives him a spiritual paternity to that "personalism" which, with Maritain and many more, is now in the vanguard of philosophical and political speculation. In Professor Theodor Haecker's judgment—"The being and essence of the person are the elements which Kierkegaard brought into philosophy" (Soren Kierkegaard, p. 29).

Fourth, existential thinking is, not dispassionate (as philosophy aspires to be) but passionate. "Passion is the real thing, the real measure of man's powers. And the age in which we live is wretched, because it is without passion." (J. 396). For him both truth and faith are passions. But he equates passion with *pathos* in its proper Greek sense of feeling or suffering—a suffering to which mind and soul as well as body are subject. He is careful to discriminate it, in this sense, from what he calls "unshaven

passion" (J. 488) and insists that "passion must be purified" (J. 590).

He emphasises the fact that "passion and feeling are open to all men in an equal degree"; here is the basis of the universalism which he constantly and vehemently affirms. Such an exaltation of "passion" or feeling as a primary means for the apprehension of truth is therefore profoundly democratic in tendency. For, since all can feel, but few can reason in the meaning of rationalism, truth is thus within the reach, not merely of a learned élite, but of every man who has been schooled by suffering.

This conception of "passionate" thinking is also, though Kierkegaard repudiated the pseudo-mysticism which, as he wrote, "has not the patience to wait for God's revelation" (J. 321), closely akin to the mystic approach to reality. Thus, "by love may he be gotten and holden; but by thought never," it is written in the "Cloud of Unknowing" where a form of knowledge is expounded ". . . not coming from without . . . by the windows of the wits, but from within." Such a *via mystica* is evidently of the same order as the Kierkegaardian way of "passion" and "inwardness."

It seems clear, indeed, that he ranks "passion" or feeling higher than reason in the scale of apprehension of existential truth. Upon the premise that it is "the whole man facing the whole mystery of life" who can alone reach reality, it must be so. For, while reason is rare and at one remove from reality, feeling is universal and immediate.

In so far as it denies to abstract reason and intellect the monopoly of truth, existential thinking thus tends towards anti-intellectualism and even irrationalism. For Kierkegaard "the intelligence and all that goes with it has done away with Christianity . . . the fight is against intelligence." In the modern tendency towards irrationalism and the popular feeling against "intellectuals" and "high-brows" Kierkegaard's revolt against the tyranny of rationalism is peculiarly modern in its trend. But the tendency towards irrationalism in such "corrective" sayings has been exaggerated by some of his successors. Thus a modern disciple of Kierkegaard, Miguel de Unanuno, declares that "reason is the enemy of life. A terrible thing is intelligence . . . All that is vital is irrational" (*The Tragic Sense of Life*, pp. 90-91).

It seems very doubtful whether Kierkegaard would have endorsed such statements. Intellect, abstract reason and analy-

tical science are, for him, not primary, but secondary; they are servants of the human spirit who have usurped the sovereign seat of the existential decision of the "whole man" and, as such, are to be fought. But he nowhere suggests that reason is not an important element in the apprehension of the whole man to which he appeals, and he himself attacks what he believes to be a false use of reason with the weapons of reason. Indeed, he specifically declares that "the race must go through reason to the absolute" (J. 1256). "Life can only be explained after it has been lived" (J. 192), he wrote, and he himself devoted his life to explaining it. He does not deny the need to explain life; he is concerned to put rational explanation in its proper place in the approach of man to reality.

Moreover, the reason which Kierkegaard attacked was neither reason in the Greek sense of "*nous*" nor that "natural reason" to which, according to St. Thomas Aquinas, "all are compelled to assent" (*Summa contra Gentiles*, I, i, ii); on the contrary the "existential thinking" which he desired had much in common with these conceptions of reason as also with the "understanding" of the Wisdom literature of the Old Testament. It was the cold, abstract, analytic and arrogant reason of the Cartesian school which Hegel, as he thought, had inherited, which he condemned.

Fifth, the whole man, by virtue of such "passion" in existential thinking, is believed to be capable, in Dr. W. M. Horton's words, of "consciousness of an extra dimension of reality inaccessible to the cool intellect but accessible to a warmer and more vital faculty" (*Contemporary Continental Theology*, p. 90); existential thinking opens the door to new realms of reality and "faith-knowledge" of which "intellect" can know nothing. "With the eyes of the heart I read it" (R. p. 121), Kierkegaard declares. It is a mode of comprehension of which Pascal wrote: "le coeur a ses raisons que la raison ne connaît point" (*Pensees*). For, with that "eye of the heart," so the existentialist claims, the "world of reality" which is "the world of qualities" (S.D. p. 156) (not of quantities) can be perceived. By such an existential approach, in Rilke's phrase, "the heart is born into the whole" (*Sonnets to Orpheus*).

Sixth, since man's existential apprehension of reality is that of his "human predicament," a state of constant and, in time, irresolvable tension between "mighty opposites," that tension and conflict can no more be eliminated from real thinking than from real life. He is everywhere inescapably conscious of con-

tradiction and paradox in his existential experience; it is the paradox, the clash of contraries in life which causes its passion. Therefore, for existential thinking, paradox must also be "the passion of thought" and ". . . the thinker who is devoid of paradox is like the lover who is devoid of passion—a pretty poor sort of fellow" (L. p. 335). "Take away the paradox from the thinker and you have the professor" (L. p. 506). "The paradox," Kierkegaard writes, "is really the *pathos* of the intellectual life" (J. 206). It is "a category of its own" (J. 633), with its own dialectic.

The predominance of paradox in existential thinking and in the thought of Kierkegaard is thus, in his use of it, no wilful or obscurantist irrationalism but (since it is the very texture of the "tension of life") also the very texture of the only real reasoning which the human mind, thus conditioned by tension and paradox, can achieve. All reasoning which seeks to smooth out that paradox is therefore both unrealistic and arrogant.

Seventh, since the speech of paradox is dialectic and "existence is surely a debate" (R. p. 114), the dialectic of paradox is the proper mode of existential thought. This dialectical mode of thought has been lucidly described by Canon V. A. Demant. "Dialectical thinking . . . bids us look for the unity behind any pair of conflicting opposites and leads us to expect a re-emergence of something which will stand in relation to the original unity of both as the same and not the same, like it but on a new plane" (Christian Polity, pp. 152-3). It is thus "the opposite of continuity thinking which conceived change as the sum of increments of movement in one direction."

The necessity for such dialectical thinking is proved, for Kierkegaard, by his existential apprehension, through passion or feeling, of the double paradox of his own experience and the Incarnation, the two, for him, axiomatic facts from which all his thinking derives. Of the paradox of his own experience he has written in "Repetition" and his Journals; for Christianity "the eternal truth has to come into time, this is the Paradox" (L. p. 319). Yet ". . . if man is to receive any knowledge about the Unknown (God) he must be made to know that it is unlike him, absolutely unlike him" (P.F. pp. 36-7). "As a sinner man is separated from God by a yawning qualitative abyss" (S.D. p. 199).

Therefore, again to quote Dr. Horton, "a truly reverent theology, which knows that God is in heaven and man on earth,

must never pass directly from human thought and experience to God, as Schleiermacher and Hegel sought to do. It must reverse the Hegelian dialectic . . . look for no synthesis on the earthly plane, but balance every thesis with an antithesis, every Yes with a No, and then, standing helplessly in the contradiction, appeal to God for a revelation, an act of grace " (*op. cit.* p. 101). The dialectic of paradox thus leads direct to a doctrine of despair—despair of all attempts of the intellect or any other human faculty fully to comprehend the paradox either of man's own existence or that of God.

Existential thinking thus leads to an abyss which thought cannot cross; Kierkegaard's conclusion is that of Jan van Ruysbroek—" . . . we must all found our lives upon a fathomless abyss " (The Sparkling Stone)—an abyss which can only be crossed by the " leap in the dark " which is faith, that " happy passion " (P.F. p. 59). But, for existential thinking, faith itself remains a " tension." Existential truth is thus a " troubled truth " (J. 915) which points to despair and so to the decision of faith.

In the meaning of Kierkegaard " existential thinking " is thus a mode of thought which accepts the " tension of life " and is therefore concrete not abstract, subjective and personal not objective and impersonal, passionate (in the sense of suffering) not dispassionate, which seeks, not rational proof for thought but the assurance of faith for life and claims to explore a dimension of reality closed to the analytical reason, which carries the paradox of life into the process of living thought and employs in that thought a dialectic which the recognition of that paradox requires, which expects its synthesis, not in time and the mind of man, but in eternity and the Mind of God.

It is a mode of thought which begins, as has been seen, with a religious affirmation of the existence of the self and of God and ends with a declaration of despair and points to the " leap " of faith as the only " radical cure " of that despair. It is conditioned and " operational " thinking of a kind which completely reverses the " continuity " systems of Cartesian, idealistic and evolutionary philosophy and science. Its fundamental proposition is that " . . . truth is bound to the situation of the knower."

It is thus, in all respects, a mode of thought which is remarkably modern and apposite to our age. It is also one which, as Dr. Tillich has pointed out, speaks the same language of thought



(though not of faith) as Marxian Communism. For, such a truth "bound to the individual situation in Kierkegaard" is of the same order as the Marxian dialectic which is bound "to the social situation in Marx" (*op. cit.* p. 63). In the case of Kierkegaard, owing to his initial and axiomatic faith, not only in the existence of self but also in that of the "God-Man," it inevitably leads to a Christian theology reconsidered by such an "existential thinking." That theology remains to be explored.

#### WRITTEN COMMUNICATIONS.

Rev. L. STEPHENS-HODGE, M.A., wrote: I am sure we are all grateful to Mr. Channing-Pierce for his readable account of the life and teaching of Søren Kierkegaard.

Kierkegaard's experience puts me in mind of Hosea. Hosea's wife Gomer proved unfaithful to him, and out of this bitter experience the prophet was able to see just what Israel's unfaithfulness meant to Jahweh. And in his own act of buying back Gomer out of the slave-market Hosea saw the lengths to which God's loving solicitude for his people was prepared to go.

In all this, Hosea remained the innocent party. (I cannot help feeling that Hos. i, 2: "The Lord said unto Hosea, Go, take thee a wife of whoredom," is retrospective; Hosea later came to see that the Lord's hand had been in this business all along, that it was His doing.) But in the case of Kierkegaard and Regina Olsen, it is the "prophet" himself who has done the wrong. Granted that, as a result, Kierkegaard was led to the desperately needed re-emphasis of the Divine Transcendence and Human Sinfulness, what exoneration, if any, can be found for his unpleasant treatment of Regina? Was he ever reconciled to her and did he ever have the assurance of forgiveness? His idea of being a "penitent" seems at best sub-Christian. In spite of his plea for a personal or existential approach to Christianity, he seems to have been singularly defective in personal relationships. Is this just to be set down as "paradox"?

Rev. H. S. CURR wrote: I have read this admirable essay on Kierkegaard with equal profit and pleasure. The author has rendered valuable service to many thoughtful people by making

available so much information regarding the great Danish thinker in a form which is both popular and scholarly.

I regret that I am unable to endorse his estimate of Kierkegaard's significance. To my thinking an even more drastic revolution, consisting in an even more thorough reaction, is required by modern theology. Kierkegaard, like Barth, has rendered yeoman service by the strength and cogency of his protest against the dominance of a philosophical school whose teaching has for its latter end the substitution of humanism for religion in the ordinary acceptation of that term. It was even more necessary on the Continent than here, since the English love of compromise and aversion to extremes manifest themselves even in philosophy and theology.

Has the reaction gone far enough? Tested by New Testament standards, the answer must be an emphatic negative. That is manifest in Kierkegaard's religious experience, which is said to be the head and fountain of his philosophy. There can be no doubt that there was clamant need for the re-emergence of these elements, which can never disappear from religious experience without serious danger and loss. But that is not the whole account of the matter. Man must pass from the unrest and darkness caused by sin to the peace of God with its three strands—peace of conscience, peace of mind, and peace of heart. The Slough of Despond is only a passing stage in the soul's pilgrimage, but Kierkegaard never seems to have scrambled out on the farther side due to his failure to take account of the supreme paradox of religion stated in Paul's classic words; "I have been crucified with Christ; and it is no longer I that live, but Christ liveth in me; and that life which I now live in the flesh I live in faith, the faith which is in the Son of God, who loved me, and gave himself up for me" (Galatians 2, 20 R.V. margin). The spiritual experience of Kierkegaard is very different from that of Paul, Augustine, and Luther, who trod the same path in essence. The love of Christ constrained them.

Regarding the existential philosophy and its relations to Cartesian methods, one is apt to think of Milton's words that new presbyter is but old priest writ large. Kierkegaard transfers the centre of gravity from thought to the object of thought. "I am" must obviously be a fact of self-consciousness. The person who makes such a claim must surely be aware of it. Indeed, justice does not

seem to be done to the Cartesian principle. On the other hand, Kierkegaard has rendered invaluable service by his emphasis that there are other paths to reality as well as that of ratiocination. The heart has its own reasons, especially in the realm of religion. Even in science results are reached first by means of intuition, imagination, or even scientific instinct, if such a strange phrase may be permitted and pardoned. They are then placed on an impregnable foundation by logical processes. To enthrone reason as a kind of despot is a great mistake which the history of humanism illustrates and demonstrates. But there is no reason at all why reason should not rule as a constitutional monarch. But that, perhaps, is precisely the position of the great Danish thinker.

W. F. SPANNER, Esq., R.C.N.C., wrote: The author of this paper has given a timely outline of the life and work of one whose influence cannot be doubted. I am not at all sure that I have been able to grasp the meaning of many statements in this paper, and I personally would have welcomed more definition.

The story of Kierkegaard's life is tragic, and I am not speaking as an unkind critic when I say that I cannot help feeling—if I have understood the learned author rightly—that Kierkegaard allowed the tragedy of his own life to tinge with a certain bitterness his outlook on the world. He seems to have been a stranger to the triumphant certainties of the Christian Faith. "I *know* Whom I have believed" was the witness of the Apostle Paul, and the Apostle John declared, "We *know* that we have passed from death unto life." Historic Protestantism has confessed the blessed possibility of such knowledge, and multitudes of humble believers have testified to it as a result of their experience. Our knowledge is of necessity limited—we know in part—but the important point, as I see it, is that our gracious God has so revealed Himself to sinful men that it is possible for us to have a true (although partial) knowledge of God, and rest in the assurance of His grace and favour in Christ Jesus. True faith in the historic Christian sense is not a "leap in the dark"; it is based on knowledge. "Faith cometh by hearing and hearing by the Word of God."

I have found difficulty in understanding Kierkegaard's view of the nature of faith and would be grateful if the author could more

fully elucidate this point and in particular relate Kierkegaard's view to the historic Christian view embodied, say in, the 39 Articles, and the Westminster Standards.

Mr. E. W. BATTERSBY wrote: Mr. Channing-Pearce is to be complimented on the thoroughness of his study of Kierkegaard, and for the able way in which he presented the metaphysical teachings with clarity. I shall have to limit my comments to pages 9 to 12 of his lecture. They are as follows:

Our knowledge is, undoubtedly, the sum-total of our experience in the form of an eternal kaleidoscope, but then it has no value apart from the interpretation we give it. Therefore, although experience is the co-relate of existence, it is not of the same importance as the individual philosophy one formulates. So, Kierkegaard's "existential experience," "which includes both human feeling and divine revelation" (p. 41), that he stresses, in contradistinction to the Cartesian theory, appears to me to have been exaggerated in importance.

Similarly, the statement "passion and feeling are open to all men in an equal degree" (p. 44), on which Mr. Channing-Pearce comments "for, since all can feel, but few can reason in the meaning of rationalism, truth is thus within the reach, not merely of a learned élite, but of every man who has been schooled by suffering," does not convey sufficiently clearly the idea that it is only through learning, or the refinement of one's interpretation of the incidents in one's life, that one can bring about perfection of character.

Krishnamurti has written in this respect: "To me the memory should not be the memory of experience itself, but rather the memory of that which is the outcome of the experience. You must forget the experience, and remember its lessons. That is true memory." (Biography by Carlo Suares.)

I agree with Miguel de Unamuno's statement quoted on p. 44 that "all that is vital is irrational," and that is one more reason why intellectual development, rather than the accumulation of a disentangled mass of ecstatic emotions, should be the dominant factor in one's life.

I cannot, however, concede to Unamuno that "reason is the enemy of life," for it brings out quality of life, through self-discipline,

and growth to maturity through the restraining and corrective influences of society.

Pitfalls are to be found in the exaggeration of the value of either rationalism or emotionalism. "Thinking," however, we would do well to understand, is, according to the definition of Professor Dewey, "a term denoting the various ways in which things (*i.e.*, of experience) acquire significance" ("How We Think," ch. III), and that it is only by the logical organisation of subject-matter that we can attain to growth of mind. Therefore, I fail to comprehend why "all reasoning which seeks to smooth out that paradox (*i.e.*, of existential thinking) is both unrealistic and arrogant." It is true that there are many things that one cannot understand, or which one cannot reconcile, because their natures are fundamentally different, but that need not stop us attempting to form some opinion on the world we live in, be it only to discover or apprehend the existence of these basic contraries, if not to propound conjectures as to their possible use, relation or value.

#### AUTHOR'S REPLY

The discussion was submitted as usual to the writer of the paper. In reply, he has expressed his great regret that, owing to pressure of work, he finds himself unable to reply to the various points raised with the fulness which they deserve.

War conditions having rendered it impracticable to hold an Ordinary Meeting on March 18th, 1944, the Paper for that date was circulated to subscribers and is here published, together with the written discussion elicited.

## *CURRENT THEORIES OF THE ORIGIN OF LIVING ORGANISMS*

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

**T**HAT men of science have not yet discovered how the world of life originated is shown by the number of theories of its origin now in the field. These theories fall into two categories: Evolutionist and Creationist.

### EVOLUTIONIST THEORIES.

According to evolutionist theories all plants and animals are the modified descendants of microscopic organisms that evolved from inorganic matter millions of years ago.

1. The theory of monophyletic evolution is that all living organisms are modified descendants of a common ancestor. This to-day seems to be the most widely-held of the theories of origin.

2. The theory of polyphyletic evolution is that the living organisms of to-day are modified descendants of a number of primal species, all of microscopic size. Some adherents of this theory postulate less than ten of these, others put the number much higher, thousands or hundreds of thousands. The adherents of this theory seem to be increasing in number.

3. The theory of Hologenesis was formulated in 1918 by the Italian Rosa ("Ologenesi. Nuova teoria dell' Evoluzione"). It is that, millions of years ago in most parts of the world, inorganic matter gave birth simultaneously to myriads of microscopic organisms, each having the property of evolving. For many generations their descendants resembled the parent forms, until, at what Rosa called the period of maturation, each of these, instead of producing offspring like itself, gave birth to two daughter species, differing both from the mother and one another. Each of these daughter species followed the same course as the parent species, and after a time their descendants split up into two daughter species. And this process continued. According to Rosa, a periodic splitting up or dichotomy is a property of living organisms. In some species this dichotomy occurs comparatively often and the daughter species do not differ greatly from the parent. In other species the dichotomy is much less

frequent, but the resulting species differ greatly from the parent form and from one another. Sooner or later a time comes when a species loses its power of splitting up and it may then persist unchanged through many geological ages, its range becoming less and less extensive until it dies out. This theory has been formulated in order to account for some features of the geological record which other evolution theories fail to do. It has not many adherents. It assumes that living organisms are endowed with certain properties for which there is no evidence.

#### CREATIONIST THEORIES.

According to creationist theories all the main types of plants and animals, simple and complex, were created in their present form and have undergone little modification since they were created.

4. The theory of successive creations is that there have been a number of creative acts at various times, and that the later creations have replaced largely or entirely the earlier ones. At one time this theory was held by most palaeontologists; but D'Orbigny seems to have been the only one to state the theory in detail. In 1852 he wrote: "A first creation appeared with the Silurian stage. After the annihilation of this by some geological cause, a second creation took place in the Devonian stage; and successively 27 times distinct creations have come to re-people the whole earth with plants and animals after each geological perturbation which had destroyed the whole of living nature." That what appear to be the same species occur in successive creations presented a difficulty. This and the enunciation of Darwin's theory of evolution, so simple and specious, caused the younger geologists of that time to discard the theory of successive creations for that of evolution. But, as the more we learn about the fossils, the greater become the objections to evolutionist theories, a reaction has recently set in, especially on the continent of Europe, and the theory of successive creations is again coming into favour. As evolutionists in England are apt to ignore the views of creationists, let us notice some that have been expressed within the last ten years.

The French zoologists L. Vialleton ("L'Origine des Êtres Vivants" (1930)) and J. Lefèvre ("Manuel Critique de Biologie", (1938)) liken the panorama of life, as shown by the fossils, to a set-piece firework of which the various parts explode successively. The emanations from the first part go off and fill the scene for a

time; then another part, hitherto dormant, explodes and its emanations cover the debris of the first part, and so on. A new explosion does not prolong its predecessors; it comes from another engine. The continuity of the successive outbursts is not evolutionary, although all emanate from one firework. Everything happens as if this firework has been so constructed that each part goes off at the desired moment.

The Belgian Zoologist Maurice Thomas writes (*Revue des Questions Scientifiques* (1940)): "Life seems to have taken on new forms whenever it seemed good and has done so at the beginning of each geological period. The laws of heredity show that an organism can reproduce in its lineage only similar individuals capable of very limited variation. The transformist philosophy can clear these limits only by a perilous leap into the realm of philosophy. As it still constitutes one of the great trends of thought, we may, *purely from a desire to conciliate and to take account of the fact that it still constitutes one of the great currents of human thought*, accord the rights of citizenship to transformism, while flatly refusing to allow it the scientific character claimed by its adherents to the exclusion of other theories of living beings."

The Swedish botanist Heribert Nilsson asserts ("Hereditas," vol. 24 (1938)) that the completely distinct land floras of the various geological ages cannot be explained by evolution. "The postulated ancestors of new floras cannot be found." "Mendel has given us an entirely new concept of the constitution of species and of variation. Species should be regarded as the syntheses of the biological ground elements which are as constant as the atoms of Chemistry. With Lamarck, Darwin and de Vries we get no farther, Cuvier and Mendel point surely to the path leading to a new full comprehension of the constitution of species . . . In what mighty synthesis the biological ground elements were constituted we know not, but there is visible proof that in this synthesis the flora of, so to speak, a great geological slice of the earth was completely built up at one stroke, both higher and lower species. This is also in accord with the finding of the exact sciences: if the components be present, complicated end products are formed as easily as simple ones. In this connection time means nothing."

The French Geologist Paul Lemoine writes ("Encyclopédie Française," Tome V (1937)): "The theory of evolution is impossible." Like H. Nilsson he believes that the classes or families of living organisms correspond to the families of chemical



compounds, that biological classifications reflect, not evolution, but families of allied chemical constitution. He writes: "Only some 80,000 combinations have been realised by chance in nature during the present epoch: many others were realised in past epochs. Probably when man discovers how to originate life, he will be able to realise a vast number of new types and will not leave it to nature to cause new types to appear by chance as has happened in the past. He will create living organisms, not only of existing or extinct types, but new ones endowed with the qualities he desires."

The English Palaeontologist L. Merson Davies writes ("The Bible and Modern Science," 2nd edn.) (p. 68): "There is a totally indefinite GAP between the first two verses of Genesis . . . the language of the second verse further implies that it does not at all refer to a primitive creation of the world. . . . There was at LEAST one creation before our own, and it ended under the effects of a PENAL disaster more complete even than the Deluge of Noah, since no survivors of any sort remained." He shows that if this disaster were the prolonged freezing of the earth resulting from the blanketing of the sun it would leave no geological traces. As regards the difficulty mentioned above of the fossils of some animals of a later creation being indistinguishable from those of an earlier one, he writes: "Let us beware . . . of the danger of arguing from the evidences of very ancient forms of life similar to our own, to the very great age of our own creation. The correspondences between those forms and our own (as the fathers of palaeontology stoutly held from the first) may be purely analogical: and it is certain that we can never prove them to be anything else. 'Descent,' as Dr. Bather remarked, 'is not a corollary of succession.'"\*

5. The theory of one great creation is that all the main types of plants and animals came into being as the result of one creative act and have undergone little or no modification since they were created.

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\* The botanist J. C. Willis has formulated what seems to me to be a theory of successive creations, but he describes it as a theory of evolution. He writes ("The Course of Evolution" (1940), p. 191): "The family, consisting probably of one genus and one species, is probably first created by a single mutation, whilst later ones are usually less marked than the first and give rise to further genera and species." He considers that the facts of palaeontology can be explained easily "only by the concept . . . that mutations on the whole were larger the farther back in the past one goes from species through genera to family and class."

Can a class which springs ready-made from another class correctly be called a product of evolution?

It is incumbent on the adherents of this theory to show that it is *prima facie* compatible with the late appearance in the rocks of the known fossils of many types of plants and animals, such as the flowering plants and mammals.

Some adherents of this theory have attempted to do this by asserting that geologists are mistaken in their belief that the deposition of the sedimentary rocks was a process extending over millions of years. These creationists contend that practically all these rocks were laid down in a few months in one huge flood—Noah's flood. This theory was formulated when the science of geology was in its infancy. Later it was discarded, but was revived recently with the object of harmonising the geological record with one interpretation of the account of creation in the first chapter of Genesis. It is impossible to accept this theory for many reasons, of which one is: the thickness of the sedimentary rocks is far too great for them to have been deposited in a single flood; another is: the fossils are so segregated and arranged in the rocks that all cannot have been laid down in one deluge.

Without question the deposition of the sedimentary rocks extended over a period of millions of years. In face of this, is the theory of one creation tenable? It is submitted that it is.

All theories of evolution and of successive creations are based on the assumption that the fossils found in the rocks of each geological period include representatives of ALL the classes of plants and animals existing in the period, that the absence of fossils of a class in the known rocks of a period denotes that the class in question had not then come into existence. These assumptions seem unjustified for two reasons:

First, most of the marine rocks known to us contain much terrigenous material, and the distance to which this can be carried by currents is limited. The bulk of the marine deposits accessible to us seem to have been formed within two or three hundred miles of the shore and, in consequence, the fossils they hold are of *organisms which lived near land*. Further, there is evidence that most rocks devoid of terrigenous matter, *e.g.*, chalk and some limestones, were laid down near land. Thus the known marine fossils represent, not all classes of sea plants and animals, but merely those living near the coasts.

Secondly, most of the ancient land rocks have disappeared because all rocks exposed to the atmosphere are subjected to continual weathering. No land deposit can persist longer than a few million years unless it become submerged beneath the sea

and there protected from sub-aerial denudation. A rock laid down on low ground or near the sea has a fair chance of eventually becoming submerged; one formed at high elevations has not. In consequence *almost all the older fossiliferous land rocks that still exist were laid down at low elevations and the fossils they hold are those of lowland plants and animals.* It is doubtful whether any high level deposits formed before the Tertiary epoch exist to-day. Thus the early land fossils represent, not all classes of plants and animals, but merely those of the lowlands.

The absence of fossils of any class of organism in the known rocks of any period, such as fossils of flowering plants in the Triassic, may denote that these plants did not then exist, or merely that none of them lived in the areas where the known Triassic rocks were laid down. According to the theory of one creation the latter is the correct explanation.

In brief this theory is that all the main types of living beings were brought into existence by one creative act in considerable numbers, each type in the parts of the earth that were then best suited to its habits. For example, flowering plants and mammals and birds among vertebrates, being adapted to cool or cold conditions, were created in the polar regions and elsewhere on tablelands and hills, and the bony fishes in the polar seas and open oceans. Pteridosperms, among plants and reptiles and amphibia among vertebrates, being adapted to a hot or a warm climate were created in the tropics and elsewhere on lowlands, and the cartilaginous fishes in tropical and coastal seas. In the long course of the history of the earth this distribution underwent great changes in consequence of what Joly describes as "great cycles of world-transforming events" which caused the extinction of many kinds of animals and plants and a vast amount of migration culminating in the survival of only the types now living and their present geographical distribution.

In each of these cycles of world-transforming events, writes Joly ("The Surface History of the Earth," p. 85): "the succession of events is the same. The continents sink relatively to the ocean. The waters flow in over the lower levels, vast areas become covered by transgressional seas. These seas persist over very long periods—fluctuate in area—advance and retreat many times, but always still advancing until at length a time is reached when retreat overtakes advance, and little by little the land advances again. And now a strange climax is attained. Just when the seas have been most enduring mountains begin to rise . . . the uplift may amount to many thousands of feet.

Then succeeds comparative repose. Evidence of cold climatic conditions often attends the period of greatest continental elevation. These conditions generally pass away after some thousands of years, telling of renewed sinkings of the land, and this period of very slow sinking endures over millions of years, approximating ever more to the time when once more the seas shall flood the continents, and so the cycle of events begins all over again. This extraordinary history is no myth. It has been traced in many parts of the world."

The cold periods mentioned by Joly have probably exercised a more profound effect on the life of the earth than have the advances and retreats of the sea. It is my belief that these cold periods have been interruptions of a secular cooling of the climate of the earth. This is not the view of some authorities, but it is supported by such facts as : fossils of corals occur in Cambrian rocks of Alaska (Lat. 65° N.), in the Silurian of the New Siberian Islands and the Carboniferous of Siberia. Fossils of amphibia occur in the Devonian rocks of Greenland, those of reptiles in the Permian of the North of Scotland, and in the Triassic of Spitzbergen. Fossils of the mudfish *Ceratodus*, now confined to the tropics, occur in the Jurassic rocks of Spitzbergen. The fossils further show that a rich flora flourished in Greenland in the Cretaceous period, and that turtles, crocodiles and palms lived in England in the Eocene period. Large areas of the Arctic and Antarctic regions now ice-bound formerly supported a rich flora and fauna.

Whether or not there has been a secular cooling of the earth is immaterial to the theory of one great creation, but the cold periods are of the greatest importance to it. A considerable fall of temperature in a locality results in either the extinction or the emigration of all the local plants and animals unable to tolerate the fall. Those in the warmest parts are killed off, there being no warmer place to which they can move. These cycles explain the fact that the fossils show that every locality has been occupied by successive floras and faunas, each of which generally lacks some components of its predecessor and has new components which are clearly not modified descendants of those of its predecessor in that locality, unless modified beyond recognition. Often no species or genus is common to the two. Thus, to quote the French palaeontologist, Arambourg, "the idea of migration is forced upon us, because at certain epochs faunas not descended from those they replace in the locality appear suddenly. This fact is very marked in marine faunas. These, so to speak,

DIAGRAM I.—Periods during which the classes of animals are known to have existed.

Period or System	Protozoa	Coelenterata	Vermes	Echinodermata	Molluscoidea	Mollusca	Arthropoda	Vertebrata
	Foraminifera Radiolaria	Hydrozoa Anthozoa (Corals) Spongiae	Gephyrea Chaetopoda	Holothuroidea Echinoidea Asteroidea Cystoidea Blastoidea Crinoida	Brachiopoda Polyzoa	Cephalopoda Gastropoda Lamellibranchiata	Arachnida Crustacea Insecta	Aves Mammalia Reptilia Amphibia Pisces
Present								
Tertiary Epoch								
Upper Cretaceous								
Middle Cretaceous								
Lower Cretaceous								
Upper Jurassic								
Middle Jurassic								
Lower Jurassic								
Upper Triassic								
Middle Triassic								
Lower Triassic								
Upper Permian								
Middle Permian								
Lower Permian								
Upper Carboniferous								
Middle Carboniferous								
Lower Carboniferous								
Upper Devonian								
Middle Devonian								
Lower Devonian								
Upper Silurian								
Middle Silurian								
Lower Silurian								
Upper Ordovician								
Middle Ordovician								
Lower Ordovician								
Upper Cambrian								
Middle Cambrian								
Lower Cambrian								

(a)

(b)

(b)

## NOTES.

The vertical lines represent the duration of each class of Animal as shown by the known fossils. The dotted portions indicate that some authorities do not admit the existence of the Class in question during the period they represent. The lines are drawn parallel, because there is no fossil evidence that any Class is derived from any other. Each is sharply differentiated from the others at the time of its earliest known fossil.

(a) Fossils of the Lamellibranchs *Fordilla* and *Modioloides* occur in Lower Cambrian deposits; some authorities, however, deem these to be the shells of Branchiopod Crustaceans.

(b) Fossils of Insects and Amphibia occur in the Fern Ledges of New Brunswick, Canada, which biologists on account of the fossils they hold deem to be Carboniferous, but, on geological grounds, Bailey and Matthew consider them to be Upper Silurian (Trans. Royal Soc. Canada, Series 3, vol. 12 (1918/1919).

The reason for the differences of opinion regarding the date of rocks is that, as "a fossil out of place would be fatal to the evolution theory," when a fossil is found in too early a rock the adherents of the theory have either (1) to dispute the nature of the fossils, as at (a) above, or (2) (in the case of a human fossil, assert that it was intrusively buried. Or (3) dispute the date previously assigned to the rock containing the fossil as in (b) above, or (4) believe that the species evolved precociously.

As rocks are dated to a considerable extent by the nature of the fossils they hold, it is probable that some are really older and others younger than the geological period to which they are assigned.

faunic waves which roll in in the course of stratigraphic history generally coincide with the great phenomena of the relative displacements of seas and continents." These new types must be either immigrants or new creations. It is here contended that they were all immigrants from the open seas or from higher ground.

Let us now briefly survey the fossil record and see which of the above five theories best accords with it. Diagram I, which deals with animals, shows that in none of the rocks laid down during the immense stretch of time before the Cambrian Period have any unquestionable fossils been found, despite the fact that these rocks occur in all parts of the world, are of great thickness, often underlie the Cambrian rocks, and are in many cases undisturbed or modified and well-suited to hold fossils. By contrast, the Cambrian rocks everywhere are well stocked with fossils which represent all the great groups (phyla) that compose the animal kingdom. This is the strongest possible evidence of the creation of a great marine fauna at the beginning of the Cambrian Period. As the rocks of this period and the next, the Ordovician, and practically all the Silurian period, were laid down in the sea, the fossils they hold are of marine animals and plants. If the evolution theory be true, then all Major Evolution took place before the earliest known fossil was laid down, which seems incredible. Nor is this all, the Cambrian fossils include those of nearly all the classes and most of the sub-classes of animals, also those of the only class of marine plants (see Diagram II). Thus, if there have been successive creations, all except the first have been minor ones, limited to the creation of Classes and smaller groups. Of the 23 Classes of animals which have marine representatives, fossils of no fewer than 17 occur in Cambrian rocks. Of the 6 Classes of which no fossils have been found in these rocks four almost certainly existed in the Cambrian period: the Blastozoa, Crinozoa, Echinozoa and Polyzoa.

The Blastozoa (now extinct) were either never a large class or always lived mainly in the open sea, for, in all, fossils of only some 25 genera have been found, of which two (one in Russia and one in the U.S.A.) occur in Ordovician rocks.

Only a few fossils of Echinozoa (sea-urchin group) have been found in pre-Carboniferous rocks, viz., of one genus in Ordovician, three genera in Silurian, and four in Devonian. The main emigration to coastal seas occurred in the Jurassic period. Thus originally both these Classes seem to have been denizens of the

open oceans, and this explains the failure to find their fossils in Cambrian rocks. Of the Polyzoa (sea-mats) and Crinoidea (sea-lilies) no fossils have been reported from Cambrian rocks, but in Ordovician rocks fossils have been found of some 400 species of Polyzoa, representing 17 families, and of nearly as many species of Crinoids, representing 14 families. This means either that these two Classes came into existence early in the Ordovician period, or that at that time they migrated in numbers into coastal waters. Probably the latter is the correct explanation, because in a number of similar cases of such sudden appearance of a group a solitary fossil has been found in a rock of an earlier period. For example, until recently the earliest known fossils of amphibia were those in Carboniferous deposits, but a Devonian rock had been discovered bearing the impression of what appears to be the footprint of an amphibian. Quite recently two skulls of amphibia have been found fossil in Upper Devonian rocks.

The earliest known fossils of marine reptiles and mammals have been found respectively in Triassic and early Tertiary (Eocene) rocks.

Is it possible that these Classes of large animals can have existed during the whole of the Primary era, without any of their fossils having been found in the rocks of that long period? It is submitted that this may be answered in the affirmative, but as these animals belong to classes of which the great majority of the members are dwellers on land, it will be convenient to survey the land fossils before attempting to show how this is possible. Before passing on to the land flora and fauna, a few general remarks on the Cambrian fauna are desirable. Prof. W. K. Brooks wrote of the Cambrian species ("The Foundations of Zoology," p. 216): they "outline the whole fauna of the modern sea-floor. Far from showing us the simple unspecialised ancestors of modern animals, they are most intensely modern themselves in the zoological sense, and they belong to the same order of nature as that which prevails at the present day. . . Nothing brings home more vividly to the zoologist a picture of the diversity of the Lower Cambrian fauna and of its intimate relation to the fauna on the bottom of the modern ocean than the thought that he would have found on the old Cambrian shore the same opportunity to study the embryology and anatomy of pteropods and gastropods and lamellibranchs, of crustacea and medusae, echinoderms and brachiopods, that he now has at a marine laboratory." In the Cambrian coastal seas lived molluscs having shells like those of mussels, limpets and whelks,



DIAGRAM II.—Periods during which the classes of plants are known to have existed.

Period or System	Thallo- phyta	Bryo- phyta	Pteridophyta			Gymnospermae	Angio- spermae
	Algae Fungi	Hepaticae (Liverworts) Musci (Mosses)	Psilophytales (Horsetails) Proto-articulineae	Equisetinae (Horse-tails)	Sphenophyllumae (Club-mosses)	Filicales (Ferns) Lycopodales (Club-mosses)	Pteridospermae Cycadales Benettitales Ginkgoales Coniferales Cordaitales
Present							
Tertiary Epoch							
Upper Cretaceous							
Middle Cretaceous							
Lower Cretaceous							
Upper Jurassic							
Middle Jurassic							
Lower Jurassic							
Upper Triassic							
Middle Triassic							
Lower Triassic							
Upper Permian							
Middle Permian							
Lower Permian							
Upper Carboniferous							
Middle Carboniferous							
Lower Carboniferous							
Upper Devonian							
Middle Devonian							
Lower Devonian							
Upper Silurian							
Middle Silurian							
Lower Silurian							
Upper Ordovician							
Middle Ordovician							
Lower Ordovician							
Upper Cambrian							
Middle Cambrian							
Lower Cambrian							

a

d

c

c

c

c

c

b

g

e

## NOTES.

(a) Some authorities deem *Muscites polytrichaceus* and *M. bertrandi* from an Upper Carboniferous deposit in France to be Mosses.

(b) W. C. Darrah found a fossil in a Cambrian deposit in Sweden which he considers to be the shoot of a land plant.

(c) Fossils of Psilophytales, Equisitinae, Spenophyllineae, Cordaitales and Filicales occur in the Fern Ledges of New Brunswick. (See note (b), Diagram I.)

(d) *Psygomophyllum* from the Upper Devonian of Bear Island may be the impression of the leaf of a Ginkgo.

(e) Fossils *Dadoxylon hendricksi* occur in deposits in Cornwall deemed to be Upper Ordovician and Lower Devonian by the Geological Survey.

(f) The fossil *Angiospermum americanum* from a Carboniferous deposit in the U.S.A. is held by its discoverer, Dr. Noe, to be part of the stem of a monocotyledonous flowering plant. Seward and others consider it to be that of a Pteridosperm very like the Maize plant.

(g) The fossil *Buthrotrepis harknessi* found in an Ordovician deposit in England is deemed by its discoverer, Nicholson, to be a sea-weed, but Sir J. Dawson considers it to be an Equisetum and he changed its name to *Protoannula harknessi*.

That six Classes of plants have become extinct as opposed to only two of animals may be ascribed to the fact that the sea is less affected than the surface of the earth by climatic changes resulting from geological disturbances.

also protozoans, lamp-shells, jelly fish, annelids and echinoderms (sea-lilies, sea-cucumbers, starfish and brittle stars) which no one not an expert is able to distinguish from forms now living. This, I think, may be said of corals, although some authorities place the Cambrian forms in an extinct order. Some Cambrian crustaceans are almost indistinguishable from living ones, but no fossils of shrimps, crabs and lobsters have been found in Cambrian rocks and the majority of the Cambrian crustacea belong to an extinct order, Trilobita. Trilobites varied in length from  $\frac{1}{4}$  inch to 20 inches and must have looked like large wood lice. Some were able to curl the body as wood lice do. As regards fishes, the Cambrian rocks have yielded only one or two fragmentary fossils, and these indicate that the fishes they represent were unlike any now living. Fossils of the Teleosts (bony fishes), which form the greater part of the fish population today, have not been found in any rocks laid down before the Cretaceous period. Table I shows how the late appearance of these fishes, marine reptiles and mammals and lobsters and crabs is accounted for on the theory of one creation. Fossil shrimps occur in Upper Devonian deposits. These may have lived in lakes.

Unless the Fern Ledges of New Brunswick, Canada, are of the Silurian period, the earliest known rocks laid down on land or in fresh-water are Lower Devonian. Although the Silurian rocks are marine, fossils of a millipede and three species of scorpion have been found in them—remains of creatures washed out to sea. As the existence on land in the Silurian period of so advanced an animal as a scorpion is embarrassing for the evolution theory, some of its supporters assert that these Silurian scorpions lived in the sea and later changed their gills into lung-books and came to live on land without undergoing any change in appearance!

Unless the Fern Ledges be Devonian, fossils of land animals in the known Devonian rocks are very few: they are two or three insects—spring-tails; some millipedes and (found recently in Greenland) two species of amphibians of the extinct order Stegocephalia. Fossils are more plentiful in deposits in lakes and lagoons; they are of some molluscs and crustaceans and many fish. One of the Crustaceans is *Esteria* which still lives in saline springs in deserts. The fishes represent five sub-classes—the extinct Ostracoderms and Arthrodira, and the existing Elasmobranchs, Ganoids and Dipnoi (lung-fishes). The only sub-class not represented is the Teleostei (bony fishes) which today con-

stitute the majority of fishes. On the other hand the Devonian plant fossils are abundant. As Diagram 2 shows, all the great groups of plants existed in the Devonian Period, and, of the 18 classes which constitute the vegetable kingdom 10-or perhaps 11 occur in the Devonian rocks, as opposed to 12 now existing, which include 6 of the sub-classes known to have existed in the Devonian period: algae, fungi, Equisetums (horse-tails), Lycopodiums (club-mosses), Filicales (ferns) and Gymnosperms. But no fossils have been found of liverworts, mosses and flowering plants, which to-day form the greater part of the flora. The Devonian fungi and algae differed little from those now living; the ferns were like those of to-day but more robust; the club-mosses and horse-tails were mostly much bigger than any now living, some were tall trees. The Gymnosperms differed from the pines of our time in that their seeds were in catkins and not in cones, and their leaves were broader than pine "needles." The branches, like those of our pines, were all near the summit of the trunk. Of the known Devonian organisms, Dr. J. W. Evans writes: "The vegetation, like the animal life, was probably confined to streams, lakes and marshes, while the high ground was left unprotected by vegetation." It is true that the known Devonian fossils are only those of plants and animals that lived in low-lying localities, but the inference that none existed elsewhere seems unjustified, if only because these Devonian plants represent no fewer than ten classes. Some authorities maintain that the known Devonian deposits were laid down in lakes, but Gregory and Barrett are probably right in suggesting ("General Stratigraphy," p. 100) that they were deposited by rivers that carried much water at some seasons and little in others; these, on emerging from narrow gorges, spread coarse sands and pebble beds in low strips of coast land. Changes in the course of such rivers gave rise to lakes. As these disappeared by seepage or evaporation their fish buried themselves in the mud and died there, hence the tangled masses of their fossils which occur in such rocks as those of Dura Den in Fifeshire; a slab exhibited in the Museum at South Kensington holds the remains of over one hundred fishes. The fact that beds of shingle rivers are not the resorts of many animals may be the explanation of the paucity of animal fossils in the Devonian rocks now existing.

The Carboniferous rocks were deposited under very different conditions, in swamps near the sea in great deltas. Geikie suggests that some of these swamps were analogous to the man-

grove swamps of to-day; the trees grew seaward, dropping their roots into shallow waters and gradually forming a belt of swamp jungle several miles broad. Throughout both Devonian and Carboniferous periods the land seems to have sunk, very slowly in the Carboniferous so that generally the silt from the rivers kept pace with the subsidence. At times when the subsidence was less slow than usual the many intercalated marine strata were formed. In Carboniferous times the climate seems to have been moist and hot and very favourable to life in the coastal areas. The flora, save being more luxuriant, differed little from the Devonian. Animal fossils are abundant. They include those of all the three extinct orders of amphibia, a variety of spiders that spun webs to catch their insect prey, and no fewer than 12 orders of insects, including dragon-flies, may-flies and cockroaches. Many were very large; one dragon-fly had a wing expanse of 28 inches. Fossils of insect larvae of nearly 120 species have been found, nearly all of which were aquatic. Except possibly in rocks formed quite at the close of the period no fossils of Carboniferous land reptiles are known. This was because fossils of these animals rarely occur in the same deposits as those of plants and Carboniferous land rocks are rich in fossil plants.

At the close of the Carboniferous period one of the great cycles of world-transforming events turned swamps into relatively dry and hilly regions or into arid wastes in which inland seas like the Caspian replaced estuaries and fresh water lakes. (Seward.)

These upheavals, which ushered in the Permian period, involved a fall in temperature which caused much migration and extinction of plants and animals. The land vegetation became impoverished. Many Carboniferous families of animals became extinct: nine of insects which were replaced by five new families, nine families of amphibia were replaced by seven new ones.

A feature of the Permian rocks is that they hold hundreds of thousands of fossils of reptiles. The manner in which these fossils appear upon the scene, which may be taken as typical, has an important bearing on the origins of new groups of animals. The following figures are based on Zittel's "Textbook of Palaeontology." Fossils of 42 genera, representing 13 families and 3 orders of land reptiles (turtles are excluded) are recorded from rocks of the Lower Permian period; 4 in South Africa, 2 in Russia, 4 in Germany, 2 in France and 30 in the U.S.A. Usually all the genera of a given family appear in the same

continent, but there are exceptions, thus the Poliosauridae turn up in the form of 7 genera in the U.S.A., 2 in France and 2 in South Africa. Often a family extends its range in course of time. Of these 13 Lower Permian families 8 seem to have become extinct in it, 2 persisted into the Trias, the others died out in the latter part of the Permian. In the Middle Permian rocks fossils of 77 new genera occur belonging to Lower Permian families, and 66 genera belonging to new families; most of these have been found in South Africa; all became extinct in the Permian period, save one which lasted till the Upper Trias.

Let us notice how these facts bear on the various theories of origins. Most evolutionists believe that the reptiles originated in one locality from a single species of amphibian. The descendants of this common ancestor gradually developed into full-fledged reptiles, which became divided up into species, genera, families and orders. All this evolution and the dispersal from the place of origin to South Africa, Russia, France and the United States must have taken a very long time, during which a great many fossils were laid down. As none of these have been found, the diffusion must have occurred without any of the animals entering coastal areas. This I cannot believe. The difficulty as regards migration does not present itself to polyphyletic evolutionists or to Rosa, because, according to them, reptiles may have arisen from amphibia in several parts of the world. Those who believe in successive creations may hold that there were successive creations of reptiles, the first being early in the Permian period, or that there was only one creation early in the Permian, and the reptilian groups which first appear in later rocks are immigrants. The former view means that a number of families became extinct very shortly after their creation. According to the theory of one great creation, the reptiles, along with other land organisms, were created long before the Permian period, each in a locality of such latitude or altitude that the climate was best suited to its constitution at the time of creation. The lack of their fossils in known Devonian and Carboniferous rocks is because these rocks were deposited in localities unsuited to reptiles for various reasons such as not providing proper food or the sun's rays were so powerful as to cook eggs on the ground. The geological disturbances at the end of the Carboniferous period both lowered the temperature and rendered the coastal tracts suitable for reptiles; in consequence those then living nearest to the sea migrated to the coastal tracts; these immigrants provided the known Lower

Permian fossils. But the early extinction of these reptiles suggests that even their new habitat was too cold for them, they soon died out and their places were taken by immigrants from farther afield. Subsequent changes in environmental conditions have led to further extinctions and migrations. Thus the successions of faunas and floras in the known land rocks may be accounted for.

After the Permian period the climate improved. Fossils are abundant in Triassic and very abundant in Jurassic rocks. The vertebrate fossils are mostly of reptiles, of which new orders appear successively including bipedal and quadrupedal Dinosaurs and Pterodactyls. The known Triassic and Jurassic fossils include some isolated teeth and parts of jaw bones believed to be those of placental mammals, which seem to have been carried from a distance by rivers. The Stegocephalia became extinct in the Triassic period and the earliest known fossils of modern amphibians—frogs and tailed forms—occur in Upper Jurassic rocks. In these last the earliest known fossils of birds have been found—those of the extinct *Archaeopteryx*. The Upper Triassic rocks contain the earliest known fossils of three classes of plants: Cycads, Maiden-hair Trees and the extinct *Benettitales*, also of two fragments of flowering plants, proving that these existed at that time.

The Cretaceous period is marked by the world-transforming event that brought about the great Cenomanian transgression of the sea. The accompanying fall in temperature caused the extinction of a host of plants and the great majority of land and marine reptiles. The plants thus killed off were rapidly replaced by Flowering Plants, and the reptiles more tardily by placental mammals, the earliest known fossils of which occur in Upper Cretaceous rocks. In the Lower Cretaceous rocks of Greenland and Western Siberia occur, mixed with many types of Jurassic plants, fossils of about twenty kinds of Flowering Plants, including those of the poplar, plane, cinnamon and breadfruit. The sudden spread of the Flowering Plants was rapid. The fossils of the Middle Cretaceous deposits of the U.S.A. and Portugal show that they constituted 30 and 35 per cent. of the local flora. In the Upper Cretaceous deposits of New Jersey and Dakota the percentages were 70 and 90. In the latter have been found fossils of 132 species of Flowering Plant representing 64 families.

What may be the earliest known fossils of mosses also occur in Cretaceous rocks (see Diagram II). In the Upper Cretaceous rocks of Europe and North America a few fossils of birds have

been found ; these, like Archaeopteryx but unlike any birds now living, had teeth ; some were aquatic, others flightless. They seem to have become extinct by the end of the Cretaceous period. In the Eocene of North America and Europe occur the earliest known fossils of toothless birds ; these fossils include those of the owl, falcon, sandpiper, rail, quail and woodpecker.

The earliest known fossils of placental mammals occur in the Upper Cretaceous of Asia—these represent Insectivora and Carnivora. Little is known of the early Tertiary rocks of Asia, but those of Europe and North America indicate that, as in the case of flowering plants, a great many placental mammals have migrated from the far north. In the Palaeocene four new orders of placental mammals make their first appearance, and in the Eocene several orders now extinct, and even- and odd-toed hoofed animals, bats, rodents and primates, and, in N. America, Edentates. Sometimes a family appears simultaneously in both Europe and North America, *e.g.*, the horse, tapir, pig, rhinoceros, cat and dog families.

The late appearance of the flowering plants and the mosses in the known rocks necessitates that of the placental mammals, butterflies and birds owing to the fact these animals are directly or indirectly dependent on flowering plants for their food.\* As to man, he cannot exist in any part of the earth devoid of grain-bearing and fruit-giving plants. The original home of most of the grain plants now living seems to have been in the far north, for to-day these constitute nearly one-fourth of the Arctic flowering plants, one-twelfth of the English and one-twenty-third of the South African.

The rocks of the Eocene period are the latest in which fossils of orders make their first appearance. This suggests that the Eocene is the earliest period of which the rocks laid down at high elevations have been preserved. New families, however, appear in the later rocks ; some of these are immigrants from the north. The known fossils of Eocene horses are of small four-toed species. These are followed by those of larger three-toed species, and

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\* This does not apply to fish-eating birds. Birds' eggs are more liable than those of reptiles to be destroyed by the heat of the sun's rays. Therefore birds which nest on the ground, as many sea birds do, may originally have been confined to high latitudes, or have been based on islands far from the equator. To-day in hot climates birds that nest on the sand take precautions to prevent eggs being overheated. The terns near Ghazipur on the Ganges, after April, lay their eggs on moist sand. Young Indian Skimmers lie up in hollows scratched by themselves, and often throw sand on their backs. Swallow-plovers nest by creeping plants, in the shade of which the young lie up.



TABLE

FACTS ABOUT GROUPS OF MARINE ANIMALS OF

Name of Group	Period in which First-known Fossils First Appear	Localities in which Earliest-known Fossils Occur
Teleostei .... (Bony Fishes)	Lower Cretaceous ....	Europe, Brazil, Queensland ....
Chelonia (Turtles)	Upper Triassic ....	Wurtemberg, Scotland (Nairn) ? ....
Pythonomorpha ....	Upper Cretaceous ....	England, France, Belgium, Holland, N. Germany, N. Italy, Morocco, Nigeria, S. Africa, U.S.A., New Zealand
Thalattosauria ....	Upper Triassic ....	California ....
Champsosauridae ....	Upper Cretaceous ....	N. America, France, Belgium, Timor ....
Ichthyosauria ....	Middle Triassic ....	Nevada, Spitzbergen ....
Plesiosauria ....	Upper Triassic ....	England, Germany ....
Mesosauria ....	Upper Carboniferous ....	S. Africa ....
Nothosauria ....	Lower Triassic ....	Franconian Silesia, Saxony, Thuringia ....
Cetacea ....	Middle Eocene ....	Alabama, Egypt ....
Sirenia ....	Middle Eocene ....	Jamaica, Egypt, Italy ....
Pinnipedia ....	Miocene ....	Europe, U.S.A. ....
Crustacea—		
Lobsters ....	Upper Trias ....	Europe ....
Crabs ....	Middle Jurassic ....	Europe ....

## NOT

Some authorities deem these rocks (Beaufort Beds) to be Middle Permian.

A. Original habitat was the open ocean or sea bed far from land. As various world-transforming events killed off groups of animals in the coastal seas immigrants from the open sea replaced them. This explanation can apply only to animals that do not have to come to land to breed, such as fishes, Ichthyosauria, Plesiosauria (?), Pythonomorpha (?), Cetacea, Sirenia, lobsters and crabs.

B. The original habitat was the polar seas; later falls in temperature caused late migration equatorwards.

C. Originally based on a large island or small continent which later became submerged. The submergence caused some of the marine animals based on them to resort to existing continents for breeding purposes.

## III.

## WHICH FOSSILS APPEAR LATE IN THE KNOWN ROCKS.

In Earliest Period Fossils occur of		Latest Period in which Fossils occur	All the known Fossils are of		Suggested reasons of late appearance in the known Rocks
Families	Genera		Families	Genera	
4	6	Still	Living	—	A, perhaps D in case of fresh-water forms.
2	3	Still	Living	—	C or D.
4	15	Up. Cret. ....	4	15	C ?
1	2	Up. Trias ....	1	2	D ?
1	2	Up. Cret. ....	1	3	A or B.
3	7 or 8	Up. Cret. ....	5	21	A.
1	3	Up. Cret. ....	4	25-35	A ?
1	2	Permian ....	1	3	A ? or C ?
1	10	Up. Trias ....	1	21	D.
1	3	Still	Living	—	A.
1	3	Still	Living	—	A or D.
3	6	Still	Living	—	B.
1	4	Still	Living	—	A or D.
1	5	Still	Living	—	A.

## E.S.

D. Original habitats were fresh water lakes at high elevations. Subsequent fall in temperature led to migrations to coastal lakes, lagoons and the sea.

Owing to the paucity of the known fossils it is not yet possible to make definite pronouncements regarding the causes of the late appearance of the fossils of some groups, particularly of Thalattosauria, Champsosauridae, Mososauria, lobsters and crabs. Fossils of Crustacea (other than of bivalves of which fossils occur in Cambrian and other early rocks) are comparatively scarce, and a considerable fraction of these are so fragmentary as to render it difficult to determine the group to which they belong. Accidents of a kind that result in the fossilisation of most kinds of Crustacea are very rare. Of the 30 genera of lobsters of which fossils are recorded in Zittel's Palaeontology 11 occur in one deposit—the Jurassic limestone of Solenhofen (Germany).

finally the living one-toed genus. This does not necessarily mean that the one-toed is descended from a four-toed horse. It may be that the three- and the one-toed species are later immigrants which followed the southward movement of the type of grass on which each fed.

A fact which has a bearing on the present and past distribution of land animals and plants is that, although most parts of each continent have been under the sea at some periods, certain areas have always been above water since Cambrian times, *e.g.*, Brazil, parts of Canada and the U.S.A., and of Russia, Siberia, China, Malaya and much of Africa. There remains for consideration the late appearances in the rocks of the fossils of the bony fishes (Teleosts) and marine reptiles and mammals (see Table I).

These, it is submitted, present great and real difficulties to theories of evolution, and minor ones, more real than apparent, to theories of successive creations and more apparent than real to the theory of one creation. According to the last, animals whose young are born in the water—fishes, Ichthyosauruses, Plesiosaurians, whales and Sirenia—were created in the oceans far from land; later world-transforming events drove some sections of them into coastal waters. The late appearance of marine animals that have to come on to the land to breed—turtles and some extinct reptiles—is because these were created in the polar regions or elsewhere in lakes at considerable altitudes or on islands which have become submerged; and this may have been so in the case of the Sirenia. That the Teleosts were originally confined to the open ocean is indicated by (1) the fact that their earliest known fossils occur in considerable variety in widely-separated localities (see Table I) and (2) two waves of immigration to coastal areas, one as the result of the Cenomanian transgression in the Cretaceous period and the other as the result of the Montian transgression at the beginning of the Eocene period. The first drove into the coastal seas of Europe and the U.S.A. seventeen families, mostly of fishes of which the air-bladder is connected with the gullet; the second caused an influx of thirty-two families of which the air-bladder is not so connected. The available data for the groups that come ashore to lay eggs or breed are at present insufficient to justify pronouncements as to their centres of origin. They suggest a northern early home for the turtles and an arctic one for the seals. We may, however, notice that, as the existence of a marine reptile as early as the Carboniferous is not in accord with evolutionary concepts, some authorities would relegate to the Middle

Permian the deposits in which the earliest known Mesosaurs occur. Still more unfavourable to evolution theories is the fact that the earliest known members of each group of marine reptiles and mammals exhibit, fully developed, all the peculiarities of the group, and no fossils intermediate between any of them and the hypothetical land ancestor have been found.

From the foregoing it is clear that the creation theories explain the fossil record far better than do those of evolution, and, as the latter involve impossible transformations, they ought to be abandoned. As between the theory of one creation and that of several, the former is the more simple, but it is far from being proved; indeed, the fossil record is such that it may never be proved. However, if it be correct, discovery after discovery will be made of fossils of flowering plants, bony fishes, placental mammals, land reptiles and turtles and other groups in rocks considerably older than those in which any of their fossils have been found up to date. Each new discovery of this nature will add to the evidence in favour of the theory; but, so long as biology is dominated by transformist philosophy, each of these discoveries is likely to be challenged.

#### WRITTEN COMMUNICATIONS

DR. L. R. WHEELER wrote: Though present evolutionists commonly assume that abiogenesis must have occurred, this is not true of all. Dr. J. Gray\* criticised this assumption violently in 1933. Bower, botanist, and MacBride, zoologist, believed in the divine creation of the first organisms, which was always taught by Darwin† and Wallace.‡

I doubt whether such a believer in polyphyletic evolution as Berg supposed that primal species were all of microscopic size; anyhow, though he did not expressly teach creation, he too, attacked abiogenesis vigorously (§, last ch. and p. 2). Rosa's Hologenesis theory has few adherents indeed.

It seems an over-simplification to say that all creationist theories involve the creation of all the main types of organisms in their

\* Gray, J. (1933); *The Mechanical View of Life*; Adv. of Sci.

† Darwin, C. (1859); *Origin of Species*; last paras.

‡ Wallace, A. R. (1889); *Darwinism*, p. 474, etc., Macmillan (*cf.* *World of Life*, 1914; Chapman & Hall).

§ Berg, L. S. (1926); *Nomogenesis*; Constable.

present form or very near it. Wallace's evolutionism involved at least three major creational actions; Ramsbottom has shown clearly that Linnæus ultimately believed in evolution from species to genera as well as in the creation of primal species\*; I myself believe in creation-mutations + evolution within families and/or genera, etc.

Thomas, the Belgian zoologist, does not allow for the appearance of new "good" species among plants through polyploidy (auto- or allo-), which British botanists regard as absolutely certain (*cf.*, † among much other evidence).

I agree that Dr. J. C. Willis' (*op. cit.*) theory of "evolution" through—or mainly through—large mutations implies, or is at least congruent with, successive creations, and the evidence he marshals against Darwinian struggle and selectionism is very impressive—for plants only. His theory, based on life-long experience, supports the view that creation need not always be *ab initio, ex nihilo*, but may go on from what the Creator had already created and "saw that it was good" (*cf.* notes on p. 10).

I am glad that millions of years are recognised as necessary for the deposition of sedimentary rocks, and it may well be that some classes of organisms have existed during a geological period and not yet been found among its fossils. But in a previous paper Mr. Dewar argues from the absence of fossils of intermediate forms that such forms never existed on the earth.‡ Is it logical to adopt an entirely opposite conclusion here (and on p. 11) with regard to the total absence of fossils of certain important classes from vast geological periods, especially as such classes are—or have become—adapted to widely different habitats?

I do not think the simultaneous creation of "all the main types of living beings" possible (despite the vagueness of the term "type") because of the vast numbers of genera, etc., involved and the limited land areas available for them. A sample of this immensity of genera is given in this paper, pp. 16-17. To me it is incredible that these swarms of extinct reptiles and of other organisms existed simultane-

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\* Ramsbottom, J. (1938); Linnæus and the Species Concept; *Proc. Linn. Soc.*, 150, Pt. 4.

† Stern, F. C., and Sprague, T. A. (1944); papers in *Proc. Linn. Soc.*, 155, Pt. 2.

‡ Dewar, D. (1942); *What Animal Fossils Tell Us*, Trans. Vic. Inst. LXXIV.

ously with all the genera that died out before their time and with all those that lived on to the present day.

Further, there is in successive creational and/or evolutionary theories evidence of Design in Nature which does not exist if all types of organisms were produced together at one time (*cf.* \*). This is a philosophical argument. The absence of evidence for simultaneous creation is surely a scientific one. Cold periods can hardly be considered as interruptions to cooling, though warm periods would be; the former are intensifications of a process which scientists are agreed has occurred on the Earth.

Granted that the Cambrian fauna was very rich, it was admittedly marine. There remains the possibility or probability of the further production of all the great phyla of the Plant Kingdom except the sub-phylum Algæ, of the most important, if not all, classes of Vertebrates, and of the Class Insecta, which outnumbers all the other animal classes put together. These events, including the appearance of all flying animals, should not be regarded as minor ones. Further, the appearance of the Mind-cum-Soul of Man is, as Wallace said, † a creation of the highest importance. I think it quite incredible that this dates from Cambrian times.

What is truly said about the Cretaceous and Eocene periods later supports the views of our great botanists and some zoologists that great mutations—of the nature of fresh creations—produced these enormously important branches of the Realm of Life (*cf.* ‡).

Genesis i. is not the only portion of the Bible that deals with organic creation. Progressive creation is indicated in many passages, *e.g.*, Psalm civ—“ He bringeth forth grass for the cattle; and green herb for the service of men ”; at least an evolutionary interpretation is possible, *cf.* Psalm xcvi, 5.

Eskimo Man exists on fish and flesh without grain or fruits§; the Masai used to feed on meat and milk, but these are certainly derived from grasses, etc.

The Sirenia live in the fossil-producing sea or river areas; whales

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\* Dewar, D. (1942); What Animal Fossils Tell Us; *Trans. Vict. Inst.* LXXIV

† Wheeler, L. R. (1942); Co-Operation for Existence; *Hibbert Journal*, July.

‡ Wheeler, L. R. (1944); Survival; *Biological and Human*; *Hibbert Journal*, April (in the press).

§ Encyclopaedia Brit. (1930); art.—Eskimo; 8,710b.

often get stranded on land. It would be strange if these orders had existed since the Cambrian without leaving early fossils.

Still, even on Mr. Dewar's hypothesis, a great deal of subsidiary evolution or adaptation must have occurred in such a class as the Teleostei, which he suggests were originally confined to the open ocean, for many bony fishes are now exclusively fresh-water animals or haunt the sea bottom at all sorts of depths, or frequent shallow water near shores.

So, fortunately, there is no hard and fast line between his or other creational hypotheses and belief in evolution or mutation to some extent. But for various reasons, some indicated briefly above, I do not think his conclusion of a solitary creative instant, or even epoch, followed by many millions of uncreative years, is acceptable. And it is out of keeping with the time proportions of Genesis i, however thoroughly we believe that with God a thousand years are but as yesterday. But this paper contains many instructive ideas and useful criticisms of atheistic evolutionary theories.

Recent relevant criticisms of selectionism are given in a Royal Society Discussion.\*

Lt.-Col. L. M. DAVIES, D.Sc., Ph.D., F.R.S.E., F.G.S., wrote : Mr. Dewar well stresses the difficulty to evolution afforded by the nature and abundance of the oldest known fossils. According to evolutionists, life began in shallow coastal waters ; and animals slowly adapted themselves, by extremely prolonged processes, to life at a distance from the coast, *e.g.*, on the bottoms of the great ocean depths or in the surface waters of the main oceans far from land. Yet among the earliest fossils known to us are types which seem to be fully adapted to both of these. Thus, we find highly specialised Trilobites (*Eodiscus*, *Goniodiscus*, etc.), with relatively huge cephalon and pygidium and greatly reduced thorax, which are unlike less specialised Trilobites in being devoid of all traces of eyes, and apparently adapted for life in the perpetual darkness of abyssal depths ; and we also find Pteropods (*Hyolithes*) with perfect swimming organs, as fully suited for life in surface waters as their counterparts are to-day. Where are the ancestries connecting,

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\* Royal Society (1936-7) ; Discussion on . . . Natural Selection ; *Proc. R. Soc. B*, CXXI, p. 43 seq.

through prolonged ages, these extreme members of totally different phyla with their supposed common progenitors of shallow-water origin? There are many rocks in which the ancestries should be found if they ever existed, for we have masses of pre-Cambrian sediments (*e.g.*, the huge Cuddapah series of India) which are quite unmetamorphosed and undisturbed, and perfectly suited to have preserved remains of life. Yet the required ancestries simply are not there. Life bursts upon us, in the closely succeeding Cambrian; and it is highly differentiated and specialised life from the first.

As Mr. Dewar has indicated, I believe in *at least two* separate and successive creations, not in one creation. But my reasons for doing so are Scriptural. I believe that the Bible talks of several creations. I cannot go into that matter here, but it is discussed in my book.

I have no personal objection, of course, to the idea of only one creation (if it can be reconciled with Scripture, which I strongly doubt), and I am interested in Mr. Dewar's able arguments on its behalf. But I find it difficult to picture a Cambrian world containing all types to which the rocks bear witness, in addition to ones now existing; and it is difficult to account for the non-appearance through vastly long ages of now ubiquitous types, like grasses and toothless birds, if they were in existence all the while. These purely physical objections may not be fatal ones, however; and the fact that so experienced a naturalist as Mr. Dewar can argue for its possibility shows how little science can *prove*, one way or the other, regarding the distant past. We all ultimately walk by faith, not sight; but how few realise the fact!

Mr. O. R. BARCLAY, B.A., wrote: Mr. Dewar's paper is most interesting and contains much useful information. There is, however, one distinction which he has not made and which seems to be basic in the question.

Leaving aside questions of interpretation, there are three main *biological* problems involved in any consideration of evolution:

(1) Are types of organisms absolutely rigid or are they capable of change in the course of time?

(2) If they change, how far can such changes go?

(3) If they change, by what machinery do these changes come about?



The first of these may be termed the problem of "Descent with Modification." The second the problem of "The Extent of Descent with Modification"; and the third that of "The Machinery of Descent with Modification." These three problems are quite distinct and it is due to a confusion of the first two that a good deal of the trouble seems to have arisen recently.

As far as I can see, Mr. Dewar, together with nearly all biologists, would say that Descent with Modification seems to have taken place, at least on a very small scale; *e.g.*, the races of man are all derived from Adam and Eve by descent (with, obviously enough, some modification). But on the question of "The Extent of Descent with Modification" Mr. Dewar's position is not clear. Some conservative Christians would limit it to a process within the Species, others draw the line at the Family, and still others at the Phylum, etc. Now these units (Species, Family, etc.) are all quite arbitrary, human ideas, and Mr. Dewar avoids the terms in this context, and says: ". . . all the main *types* . . . have undergone little or no modification since they were created."

It would be very interesting to know where Mr. Dewar draws the line, and whether he does not think that in any case it is a very arbitrary and uncertain thing to do. It is a matter of what he means by "type." It seems to me that there are very good reasons for accepting "Descent with Modification," and I am quite unable to put an exact limit to this process. It does not seem to me to be contrary to Scripture to say that it *may* have extended to a whole Phylum, all the members of that Phylum being, therefore, derived by descent (with modification) from a common ancestor. Mr. Dewar's wide knowledge makes his view on this question of considerable value.

Dr. PHILIP G. FOTHERGILL wrote: Mr. Dewar puts the case for special creationism extremely well in his various writings and in this paper the palæontological evidence seems to support his thesis. But this evidence as presented seems to me to be mainly negative, aimed at showing the invalidity of the current evolutionary theory. We can assume that the great groups of organisms, unicellular animals, unicellular plants, algæ, fungi, pteridophyta, gymnosperms, angiosperms, fishes, reptiles, birds, mammals and Man have each

to their own group their characteristic mode of life, and, with Paul Lemoine, we can believe that the members of these groups have a similar, or allied, chemical constitution. Perhaps such large groups as these were created at one time by the fiat of the Creator. It is easy to hold to this view if we interpret "time" in its newer physical sense—the sense of relativity in which space and time are parts of the same general nature (space-time), which our human intellect on account of its limitations separates into two categories. But, excluding this newer as yet little appreciated concept, as biologists, we deal only with perceptual space and time, and physical space and time. Hence, it would seem that we must allow for *some* sort of evolution within these great groups of organisms because we can trace within them series of changes which logically indicate that some kind of *progressive differentiation* has occurred.

Mr. Dewar cannot here appeal to the theory of successive creations because he has already cast his vote in favour of one creation only. It seems to me, then, that he is forced to postulate the creation at one time, not only of the large clear-cut divisions of living things, but also of each genus, or even species (in the biological sense). It is incumbent upon him, then, to explain the *resemblances* between organisms which some biologists believe indicate the reality of evolutionary sequences. For instance, among the flowering plants especially, the gradations from one genus to another are often very small—the same habit persists, but morphological changes are often so slight that a disputed type will be put in one genus by one man, in another by someone else and yet a third will create a new genus for it.

In this connection Mr. Dewar could possibly appeal to the environment by saying that, as many different kinds of things were created at one time suited to certain environments, then those put in a similar environment must of necessity show many structural similarities. The *differences* then require explanation. This appeal could not, however, apply in the following case. The bryophyta and pteridophyta have totally different habits; from, say, Marchantia, on the one hand, to a Tree Fern, on the other, is a large jump. Yet in their reproduction they show many features in common—they both belong to the archegoniatae and so possess archegonia and antheridia. They live also in totally different habitats and they show alternation of generations characterised by chromosomal

differences. In one case the gametophyte is the important generation, while in the other the sporophyte is the main one.

In some cases the evidence of the rocks does contradict that obtained from other lines of evolutionary enquiry. For instance, as evolutionists we consider that the mosses are more primitive than the ferns, but palæontology does not at present support this view, for mosses appear much later in the rocks than the ferns. Nevertheless in the palæontological records, viewed as a whole, there does seem to be an increase in the complexity of the form, structure and organisation of animals and plants, if only because man, the mammals, reptiles, angiosperms and gymnosperms appear much later than the lower organisms. Within the phyla themselves there are many fairly clear-cut evolutionary lines, but few of them are perfectly continuous. In many cases these evolutionary lines, as Mr. Dewar shows in his diagrams, run parallel down to the dim beginnings of living things and never seem to anastomose. Cats are always cats, dogs are always dogs; there are no intermediates. Another point here is that a new fossil as it is found can be at once put into an existing phylum.

Many palæontologists, like H. F. Fairfield Osborn, will agree that palæontology shows unmistakably that the various major groups of organisms run back to remote ages as a series of parallel lines with no convergence anywhere. Hence we can only conclude that the major groups have always existed together since the origin of living things. They all show simultaneous development each along its own special line. To explain this Osborn brings in the principle of aristogenesis, or the idea of adaptive reaction and interaction of internal and external energy systems. Mr. Dewar concludes, however, that evolutionary hypotheses must be discarded and that of special creationism substituted, and he limits special creation to one major act whereby all these large groups were created at one time. Are there any other possible alternatives? A. H. Clark\* provides us with another explanation which is just as feasible as Dewar's appeal to special creation. To solve this difficulty of distinct phyla existing from earliest times he appeals to embryology and brings in the hypothesis of primogenesis.

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\* "Zoogenesis," *Jour. Wash. Acad. Scs.*, 19, 1929, 219-231, and other papers.

Clark assumes that the first living things were unicellular—we know that living things start life as single cells which then divide; the daughter cells may or may not become separated. Primitive cells also after division would have to remain attached or separate. Those that separated became the protozoa, while from the attached ones were developed the metazoa. Those that remain attached may adhere irregularly or regularly. The irregular masses of cells could give rise to the sponges. Embryology provides us with a clue as to what could happen to those primitive cells which remained adhering in a regular order. If the divisions continued regularly a hollow ball of cells would result resembling a blastula. If one wall of this collapses a symmetrical gastrula would be produced. If the gastrula stage persists to adult life, then we get a coelenterate type of animal. As Clark says: "The appearance of the protozoans, the sponges and the coelenterates was presumably simultaneous. Each is the logical outcome of a special type of cell division."

Finally, all other animals that we know pass through a gastrula stage in their ontogenetic development. Hence primitive gastrulae could give rise simultaneously to various forms of higher animals. Clark then accounts for the existence of the parallel evolutionary lines in a perfectly reasonable way which finds its parallel in the development of an embryo from the fertilised cell. All these kinds of cell division could take place simultaneously given the original creation of a primitive cell. Environmental factors may possibly have determined the exact method by which these cells would divide—roughly, those in water would tend to become protozoa, sponges and coelenterates, while those on land would tend to become metazoa.

Dr. A. MORLEY DAVIES wrote: As I have had no opportunity to refer to scientific literature my criticism of Mr. Dewar's views is general.

His preliminary survey of Evolutionist and Creationist theories is a useful summary. I am glad that he has tracked down the original of the Hologenesis theory, as I know of no English translation of Rosa's book.

There are two other theories which Mr. Dewar might add in any further expansion of his paper.

Among Creationist theories there is P. H. Gosse's, which I have described pretty fully in my book "Evolution and its Modern Critics."

Among Evolutionist theories is one which I heard propounded at a lecture by Professor Przibram, of Vienna, some years back. He is an ardent Lamarckian, but the most remarkable—to my mind fantastic—deduction which he made was that every species had a separate ancestral line from the beginning of life.

Mr. Dewar, in his support of Single Creation, is returning to an early view of Cuvier's, at a date before William Smith had founded stratigraphy on a palæontological basis (or before Smith's views had gained general acceptance). Cuvier accounted for differences in successive faunas by extinction followed by migration from some other habitat. He abandoned the idea when he realised that it demanded an improbably large number of original habitats from which faunal migration should take place.

Mr. Dewar tries to overcome this objection by suggesting possible habitats from which no fossil evidence can be got, and grounds for believing in periodical extinctions and migrations. I admire his ingenuity in using the arguments put forward by evolutionists to explain the imperfections in the record as arguments for the One Creation Theory, but I am not shaken in my evolutionist views. It seems a greater strain on credibility to suppose that successive migrations of portions of enormous faunas should mimic so closely an evolutionary succession. I admit that it is an imperfectly evolutionary succession, but I feel that a succession of migratory portions of a fauna would have a vastly larger number of evolutionary anomalies. To consider Mammalia only, for instance: if all mammals living and extinct lived together in upland regions from the Cambrian to the Trias, in surroundings to which they were perfectly adapted, is it likely that when at last migration took place it was only the most primitive orders which migrated and survived in a new habitat? (The view that these small Mesozoic mammals migrated on floating wood which would not support larger mammals is hardly consonant with the idea of an original upland home; besides, the smallest of the higher mammals, such as mice and shrews, would equally be able to travel on floating wood.) And if these primitive mammals were the easiest to adapt themselves to

new conditions, and could survive through the later Jurassic, Cretaceous and Paleocene periods, why should they become extinct just as the presumably less adaptive higher mammals were at last following them into their habitats ?

Similar difficulties arise at every point in the sequence of Tertiary mammalian faunas. And parallel difficulties in the case of all other phyla. If the extinction of successive faunas is due to the arrival of more advanced competitors, how did all these faunas manage to survive for such enormous periods when they all lived together in some unknown habitat ?

#### AUTHOR'S REPLY.

Dr. FOTHERGILL'S contribution to the discussion is interesting and valuable. In his view we must allow *some* sort of evolution within the great groups of organisms because we can trace within them a series of changes which logically indicate that some kind of progressive differentiation has occurred. I agree that the fossils suggest that in the course of time some species have undergone change, but—and this is important—the changes to which the fossils appear to testify are small, and I would describe them as differentiation rather than evolution. In the hands of the breeder the jungle fowl, *Gallus bankiva*, has undergone differentiation into several breeds, but this, in my view, is not evolution. Curiously enough the best examples of changes to which the fossils bear witness are furnished by animals on the verge of becoming extinct, as though they assumed strange forms in an unavailing effort to adapt themselves to increasingly unfavourable conditions, *e.g.*, *Micraster*, *Zaphrentes*, *Gryphea*, *Inoceramus*, etc., some account of which I have given in my "More Difficulties of the Evolution Theory." The larger changes that transformists imagine to have taken place, such as the supposed transformation of *Eohippus* into *Equus* and *Moeritherium* into *Elephas*, are on a footing very different from that of *Micraster cor-bovis* into *M. cor-anguineus*. Here transitional fossils exist. But there are no known fossils transitional between *Equus* and *Elephas* and any other known genera. That *Equus* is derived from *Eohippus* and *Elephas* from *Moeritherium* is theory unsupported by fossil evidence. The most that can be said is : If *Equus* be derived from a small four-toed horse, *Eohippus*

is as likely to be that Eocene ancestor as any other known genus. Fully twenty different pedigrees have been drawn up of the supposed genetic intermediaries between these two genera.

The point at issue is the extent to which animals and plants have changed in form since their origin. The transformists assert that it is almost limitless. In my view it is very limited. Dr. Fothergill says that in plants the gradation from one genus to another is often very small. I agree; but from this it does not follow that such transition has in fact taken place. Moreover, this is not the case with families; these are sharply divided. Dr. Willis, for this reason, believes that each plant family was created by a single mutation ("The Course of Evolution," p. 191). This is a theory of successive creations. As to whether such mutations have occurred, all that can be said at present is that no breeder scientific or practical has produced a new family of plant or animal. Nor have they produced a new genus. In the case of animals the fossils give but little support to the view that a genus often becomes gradually changed into a new one. As regards mammals we read (Zittel's "Textbook of Palæontology," vol. III (1925), p. 295): "It is particularly surprising to find in Europe at least the origin of a new genus from geologically older genera exceptional." Yet fossils of a large proportion of living genera occur in Miocene deposits; that is, on the present system of dating rocks, more than 20 million years ago; yet not one of these in all this long period seems to have thrown off a new genus. In this connection it is interesting to notice that Dr. F. E. Zeuner writes ("Monograph on *Troides* Butterflies," *Trans. Z.S.*, Lond. (1943), p. 174): "One will be fairly close to the mark if one accepts a period of 500,000 to 1 million years as the time for the evolution of a good species." As the earliest known fossils were laid down (on this computation) 600 million years ago, this means that since the beginning of Cambrian time no living species can have had more than 600 or 1,200 ancestral species. We know that no fewer than nine of the living genera of whales were in existence in the Miocene period. According to the transformists all these 9 genera have evolved from a single genus of ancestral whale, which in turn gradually evolved from a Cretaceous land mammal. Thus there cannot have been more than 50 or 100 species linking any of these nine living genera with its hypothetical

land ancestor. If the transformation were gradual these intermediate species would be numbered by hundreds. Facts such as these seem effectively to dispose of the idea of evolution by very small steps. They plainly indicate creation in some form.

Osborn's assertion: "Palæontology shows unmistakably that the various major groups of organisms run back to remote ages as a series of parallel lines" is precisely what the theory of a single creation asserts. Although Dr. A. H. Clark's idea as to how the different phyla originated does credit to his imagination it is on a par with Rudyard Kipling's account of the way in which the elephant got its trunk. Could anything be more fantastic than the notion that a protozoan (one-celled animal) gradually evolved into a Metazoon (many-celled animal) ?

In reply to Dr. Morley Davies, I did not mention Gosse's theory as I deem it too fantastic to merit notice. It is that the fossils represent, not animals and plants that ever existed, but organisms projected in the mind of God before He created the actual animals and plants. I am grateful to Dr. Davies for stating Przibram's views, of which I was not aware. His theory, like those of Sergi, Berg, Haack, Belogolovy, Kleinschmidt and others, seems to come within the second of my categories of evolution theories.

To Dr. Davies' question as to the likelihood of the most primitive orders being always the first to migrate I would reply that, in my view, the farther we go back in time the more must the conditions of existence, such as climate and food, have differed from those of the present time; in consequence in any given locality the older the fauna the more different it should be from that of to-day; this is what we find. But are we justified in asserting that the earlier members of any class are more primitive than the existing ones? for example, are the known Paleocene placental mammals of North America more primitive than those that now live in that continent? I think not, because the known fossils of that period are all so fragmentary, consisting mostly of more or less complete jaws. Thus teeth are almost all we have to go on. Evolutionists assert that the most primitive placental animal had on each side of each jaw three incisor teeth, one canine, four pre-molars and three molars, or 44 teeth in all. This dental formula is thus represented: 3.1.4.3. But, as the Insectivore *Necrolestes* has four incisor teeth on each side of each



jaw, it seems to me that the "primitive" formula should be 4.1.4.3. No known Paleocene placental mammal has so many teeth. As regards incisors, some have only two, and one genus one, on each side of each jaw. Again some Paleocene placental mammals have only three or two pre-molars, and a few only two molars. According to the evolution theory all such creatures have lost a number of teeth and so are not primitive. Moreover, one of them (*Coryphodon*) had the canines so greatly developed as to merit the name of tusks. Clearly, then, until we know more about the anatomy of these early mammals it is premature to call them all "primitive" and to base an argument on this. Moreover, I submit that the evolutionist is treading on very thin ice when he adduces the known fossils of placental mammals as evidence for evolution. Mammals of sorts are believed to have been in existence in the latter part of the Triassic period, but no fossil of a placental mammal has been found in any deposit earlier than the late Cretaceous, where fossils of *Insectivora* and *Carnivora* first appear, but by the middle of the Eocene period the following orders had made their appearance in the known rocks: Primates, Edentates, odd- and even-toed Ungulates, Chiroptera, Cetacea, Sirenia, Rodentia, Hyracoidea, Proboscidea and eight extinct orders of placentals. If all these be derived from a common ancestor that lived in the Cretaceous period, it is a case of "explosive evolution" that ceased as abruptly as it began, since none of these orders has evolved appreciably since its appearance in the known rocks. Either this must have happened, or they were created in the Eocene period, or they migrated then to the localities in which their earliest known fossils occur. The last seems the most probable explanation of the phenomenon, and in that case the issue between the evolutionist and the creationist is how and when they originated.

Dr. Davies says that the order of the appearance of the great groups points—albeit imperfectly—to an evolutionary succession. But this does not apply to the greatest groups of all, the phyla, because these all appear simultaneously in the Cambrian. And within the phyla it applies only to the vertebrates, the classes of which make their appearance in the following order: fishes, amphibia, reptiles, mammals, birds. As no one thinks that birds are derived from mammals, the transformist has to believe that reptiles

gave rise to both mammals and birds, and so have achieved in the comparatively short time of their existence more than the fishes or the amphibia who have been longer in existence. Within the vertebrate classes the appearances of the orders do not fit in comfortably with the evolution concept. The egg-laying mammals—the Monotremata—are the most primitive, but they appear much later than either the Marsupialia or Placentalia. Bats are more highly evolved in the direction of flight than are the flying squirrels, phalangers and lemurs, but they appeared long before these last; similarly the more highly evolved whales and sea-cows appear in the rocks earlier than the less-evolved seals and walruses. So it is in the other classes; the turtles appear before the lizards, the frogs before the salamanders; the sharks and great Arthrodira (the only fishes that could move the head on the body) appear before the bony fishes (Teleosts).

The other phyla exhibit also many evolutionary anomalies. Of the land Arthropods the earliest to appear are the very highly developed scorpions and web-making spiders. The Cephalopods are admittedly the highest class of the Phylum Mollusca, nevertheless their fossils occur in the earliest known fossiliferous rocks. So do those of another highly developed order, the Pteropoda. As regards the latter some transformists assert that the Cambrian Pteropods are not really Pteropods, but an "early assay in Pteropod specialisation"! Thus the successions of the various groups of animals as shown by the known fossil record present plenty of difficulties to the evolutionist.

As regards extinction, in my view, much more of this has been caused by earth-transforming events than by competition with more advanced organisms.

Dr. Wheeler points out that many evolutionists (even Darwin, to the great disgust of many of his followers) have acknowledged one or more acts of creation. Notwithstanding this I deem Darwin, Wallace and Berg evolutionists; it is open to those who do not go the whole hog to call themselves limited evolutionists. If asked where I would draw the line between evolutionists and creationists, I should suggest that those who believe that a new natural family cannot originate gradually by the accumulation of small variations should be termed creationists, while those who believe that new

families, orders and classes have originated by the accumulation of variations or small mutations should be regarded as evolutionists. Applying this test, both Dr. Wheeler and Dr. Willis are creationists. If a member of family A arose by a sudden mutation of a member of family B I should deem family A to have been a special creation.

Dr. Wheeler asks : Is it logical to suggest, on the one hand, that some classes have existed during a geological period and yet have not been found among its fossils, and, on the other hand, that fossils of intermediate forms are absent because they never existed ? I think it is, because I suppose that the flowering plants and placental mammals were originally confined to highlands of which the early rocks have been destroyed with the fossils they held. This cannot apply to such creatures as whales and ichthyosauruses, which, according to the evolutionist, are derived from land animals, because their supposed transformation must have taken place at the margins of the oceans, *i.e.*, in the very areas where most of the existing fossiliferous rocks were laid down. Of course, it is open to the evolutionist to say that these marine creatures all evolved in the shallow seas surrounding large islands far from any continent, which have become submerged, and that is why no transitional fossils have been found. But, even if such islands did exist, there remains the insuperable difficulty that these supposed transformations involve the existence of impossible animals. I have repeatedly challenged evolutionists—and I here repeat the challenge—to draw or describe the skeleton of a *possible* creature mid-way between a whale or a sea-cow, on the one hand, and a land quadruped, on the other. I extend the challenge to a half-way creature between a seal and a bat, on the one hand, and an ordinary land mammal, on the other. Dr. Wheeler points out that the Sirenia (Sea-cows) live in the fossil-producing sea or river areas and whales get stranded on land, and he remarks “it would be strange if these orders had existed since the Cambrian without leaving fossils.” This is a formidable difficulty both of the one-creation and of the evolution theory. As regards the latter the difficulty may be thus stated : The whale-bone whales constitute a sub-order of the Cetacea which appears suddenly in the Miocene in the form of eight genera in several parts of the world. No fossils have been found linking any of these genera with the hypothetical ancestor of all the whales. Between this last and each of these

genera of whales a line of some 20 successive species must have intervened, making in all some 80 intermediate species, the evolution of which must have occupied from 10 to 20 million years (see above). In the Eocene two sub-orders of Cetacea—the Archeoceti and the Odontoceti—make their first appearance, the former in the form of four genera (one of which, Zeugledon, being represented by eight species). The latter appears in the form of two genera. Assuming a line of 12 successive species linking each of these six Eocene genera with the ancestral species of whale, we get about 36 intermediate species of which the evolution occupied from 5 to 12 million years. Not a single fossil has been found of the above 116 intermediate species. Fully 200 successive species must have existed linking this ancestral whale with the last of its land ancestors, and the evolution of these would occupy from 100 to 200 million years and would mean that the last land ancestor existed at some time between the middle Carboniferous and the middle Triassic period. But not a single fossil has been found of these 316 (probably many more) hypothetical intermediate species. The same applies to the sea-cows to a lesser extent.

The difficulty to the one-creation theory presented by the late appearance of the Sirenia and Whales is somewhat lessened by the recent discovery off the Chalumna River in South Africa of the fringe-finned ganoid fish *Latimeria chalumnae*. This fish is five feet long and belongs to a family of fish, the Coelacanthidæ, represented by a number of fossils in Devonian, Carboniferous, Triassic and Jurassic rocks and two fossils in Cretaceous rocks. No fossil of this family has been found in any later rock. Before the above fish was caught it was believed that the family had become extinct in the Cretaceous period. Apparently the family has existed throughout the Tertiary period without leaving any record in the rocks known to us. Despite this the theory of one creation is an unverified hypothesis, and must remain such until a number of classes of animals and plants yield us fossils in much earlier rocks than those in which they have hitherto been found.

Dr. Wheeler takes exception to my remarks about Major Evolution. I use this term to describe the changes supposed to have given origin to the phyla or great groups of animals. As all these are represented in the Cambrian rocks and no new phyla have

appeared since them, all Major Evolution, if such occurred, ended before the Cambrian period.

I do not agree with Dr. Wheeler that the earth is not large enough to hold simultaneously all the genera of organisms now living and those that lived in the past; I think it could have accommodated even all the species. Consider the birds and mammals. There are not more than 28,000 species of living birds; assuming as many extinct species existed we get 56,000. Four hundred and ten living species of bird (one seventieth of the total number) have been recorded from Britain, of which the area is 87,000 square miles. An area 70 times as great, *i.e.*, one rather less than that of South America, could accommodate 56,000 species. As to mammals, about 13,000 species of these now exist; assuming that the extinct species number 52,000 we get a total of 65,000. Allowing an exclusive area of 500 square miles for each species, the 65,000 could be accommodated in an area of  $32\frac{1}{2}$  million square miles. The land surface of the earth is about  $55\frac{1}{2}$  million square miles. As a number of different species live in the same area the actual range of each species would be more than 500 square miles. Of course, were all species past and present living at the same time the average population of each species would be smaller than it is to-day.

I am obliged to Dr. Wheeler for pointing out that Eskimo man is able to subsist entirely on fish and flesh. But he is dependent on dogs and boats and complicated tools to enable him to secure his food. In other words, he is civilised. When I said that man cannot exist in any part of the world devoid of grain-bearing and fruit-giving plants I was speaking of uncivilised man without special adaptations to very abnormal conditions.

In reply to Col. Merson Davies, I do not see that the one creation theory as enunciated by me conflicts with the Scriptures. It attempts to account for the distribution of the fossils in the sedimentary rocks. If we accept the days of Genesis i as literal days, then the existing fauna and flora were created some 6000 years ago. In this period very few fossils can have been laid down in comparison with the number embedded in the crust of the earth, and these few fossils must all be of the post-Pleistocene period. As Genesis i, 2, coupled with Isaiah xlv, 18, seems to indicate that an earlier creation was destroyed before the creation of the existing one, then all the

Pleistocene and earlier fossils, including man, are the remains of an earlier creation or earlier creations. I know of nothing in the Bible that suggests that more than one creation preceded the existing one. On the other hand, there is in the Scriptures nothing that negatives the idea of more than one earlier creation.

## 854TH ORDINARY GENERAL MEETING

HELD AT THE NATIONAL CLUB, 12, QUEEN ANNE'S GATE,  
LONDON, S.W.1, ON MONDAY, APRIL 3RD, 1944, AT 4.30 P.M.

AIR COMMODORE P. J. WISEMAN, C.B.E., IN THE CHAIR.

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

The CHAIRMAN then called upon Mr. Ruoff to read the paper entitled "The Philosophy of Religion" for the Rev. E. W. Hadwen, L.Th., B.D., who was unable to be present.

The Meeting was later thrown open to discussion in which the Rev. A. W. Payne, Mr. Ruoff and Mr. Bunker took part.

The following elections have been made: Laurence H. Bunker, Esq. (Member), Frederick R. Dain, Esq., M.A. (Member), Rev. J. Graham Miller, LL.B. (Member).

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### The Rev. S. Runsie Craig Memorial, 1944.

In accordance with the terms of the Trust the Council have selected for the 1944 Memorial the paper on "The Philosophy of Religion," presented to the Society on April 3rd, 1944, by the Rev. E. W. Hadwen, L.Th., B.D., as affording strong confirmation of the genuineness of the "Faith once delivered to the Saints."

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#### THE PHILOSOPHY OF RELIGION.

By the Rev. E. W. HADWEN, L.Th., B.D.

THE function or process implied by this title needs to be carefully defined. It is possible to think of Philosophy and Religion as two entirely separate spheres with different and conflicting elements which it is the function of both to investigate and appraise with a view to the harmonising of them. This, however, is not here contemplated, for there is much in Philosophy which is outside Religion and much in Religion that cannot even be "dreamed of" in Philosophy. Philosophy is more extensive than religion in relation to Nature, whilst religion is more intensive in relation to human nature. Philosophy is largely speculative, progressing tentatively from postulates: religion is experiential, moving forward from factual data. Of philosophy proper we may say the idea of God is the last and highest postulate that might be laid down as the result of a long, intricate chain of inferences and probabilities, but

religion begins with God, in some form or conception as a fundamental datum. If, therefore, philosophy and religion sometimes appear contradictory it may be because they view truth and facts from entirely different angles and, in some respects, operate in quite distinct fields of thought and investigation, and not that they conflict with each other in matters of essential and ultimate truth.

Again, we need to distinguish the Philosophy of Religion from Theology. Theology is a science in that it is a system of thought involving a process of investigation, comparison and co-ordination of definite conceptions of God and the soul. It may be very crude and confused as in many non-Christian religions. It may be highly developed as, for example, in the Institutes of Calvin. But while speculation and inference dominate in Philosophy, instinctive belief and dogmatic definition characterise Theology. Theology, therefore, has its own peculiar sphere and is apart from Philosophy proper.

Still further, we must consider religion which, in our title, covers, I suppose, religious beliefs and practices of all names and forms. Religion is neither a science nor a philosophy, but a way of life; not fundamentally abstract or theoretical, but essentially instinctive and experiential involving beliefs and practices that rest on an ultimate consciousness of personal relationship with the Divine. The conception of the Divine may be polytheistic and the religious responses animistic, and, indeed, these may take a great variety of forms; but there is an ultimate instinctive religious property in mankind, and it is upon this and its various definitions, expressions and ramifications that the philosophy of religion concentrates.

To make this as clear as possible I record a few authoritative definitions. Principal Caird writes: "It is not religion only, but the history of religion which the philosophy of religion has to explain." Its function is, he says, "to unfold relations of the human spirit to the Divine and to determine the ideas of God and the soul that are involved in religious experience."\* Professor C. S. Shaw: "Religion must first be distinguished from science and philosophy. The precincts of worship may fittingly be determined . . . Philosophy properly consists in a view of both soul and world . . . and seeks by an indirect method to indicate the ultimate meaning of life and the final essence of the world.

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\* J. Caird, "Introduction to the Philosophy of Religion," p. 314 (1880).



. . . Philosophy of religion consists of something more than the mere sentiments of worship and of the beautiful, respectively."\* Professor A. M. Fairbairn defines it as "the dialectical or reasoned interpretation of the consciousness of man as expressed in his religions and unfolded in his history . . . it has to do with the causes which made all religion possible, and the conditions which turned the possible into actual religions."†

One of the difficulties of this subject is to avoid confusing it with dogmatics. They deal largely with the same subjects, handling many identical factors of evidential value and consequently they interact on many points. Dogmatics seeks to support by evidence a religious system already believed in, whilst philosophy sets out to investigate the underlying factors and elements of the system and, by a rational process, establish their credibility.

The field before us is as extensive as human nature and all its history, and therefore, any adequate treatment of our subject would require acquaintance with all religious history and a sound knowledge of the subject of comparative religions. We content ourselves by looking at a few of its leading features.

1. *Man's Universal Religious Consciousness.*—The more this has been investigated the more impressively true it has appeared. Human nature is not wholly self-sufficing. Man is possessed of an innate craving after something other than himself: his being feels after a greater, since it is by its constitution a dependent entity. "Man did not become religious when he heard that there were gods; he only had the idea of God and believed in Him because he was religious."‡ Doctor Fairbairn puts it this way: "Man is religious not by chance but by nature, not by choice but by necessity."§ This religious instinct takes on a variety of expressions and creates for its gratification many different ideas and forms of worship, but "within the local (religion) there lives and moves what may be termed a universal Spirit, a life we may feel rather than analyze."

Now philosophy of religion seeks to correlate these phenomena. Whence came this religious instinct in man? Is it false or true? Can it be related to any-

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\* C. G. Shaw, "The Precinct of Religion," pp. 18 and 20 (1902).

† A. M. Fairbairn, "The Philosophy of the Christian Religion," pp. 227 and 229 (1902).

‡ A. Sabatier, "Outlines of a Philosophy of Religion," p. 272 (1897).

§ *Op cit.*, p. 215—Fairbairn.

thing or anyone in the universe that really and adequately satisfies it? If so, is this satisfying quality to be found in the Divine? Does the instinct itself oblige our reason to postulate God? To quote once more, "Philosophy of religion is concerned with 'concrete religion' and enquires why religion as an objective fact and living organism has appeared, and how it has behaved; when it arose, its relations and issues in human history and experience. It recognises religion as a universal fact which has to be construed through what is universal in human nature; it seeks to discover the forces and the factors that modify the universal fact into the infinite variety of forms it assumes in time and place and to determine the worth of these modifications."\* Doctor Brunner says, "Religion in the sense of longing for God is the greatest of all man's characteristics."†

This fundamental urge towards the Divine gives to human nature and life a definite character and value. Man's existence is dignified with definite meaning—an intensive value which we call the soul. Our business is, therefore, to trace man's consciousness of himself, of the world with which he feels himself to be associated by nature and instinct, and of this spiritual "other" which his soul demands and, having traced them, to discover their relationships with one another and endeavour to find a synthesis. "The proper attitude of religion" says Professor Shaw, "can only be found when the temporal and eternal are reconciled; how this may be done is a special question for Philosophy of Religion."‡

Christianity, however, as it has its own theology, has also its own distinctive philosophy. And it is concerned primarily with the individual man as a responsible person made in the image of God and held accountable to Him for his moral conduct. "In the case of Christianity which is the climax of religion, the unity of soul and world appears in response to a religious need which is felt when the soul as self-contained rejects the whole world. The commandment to love and hate one's life could have no meaning to a savage living in nature and in conflict with alien tribes, and he could discover no value in the Kingdom of God."§

Religion is not an end in itself. It is a means of attaining

\* Fairbairn, *op. cit.*, pp. 186 and 187.

† E. Brunner, "The Philosophy of Religion," p. 112 (1937).

‡ Shaw, *op. cit.*, p. 32.

§ Shaw, *op. cit.*, pp. 178-9.

contact with the Divine or, in the more specifically Christian sense, a means of the Divine establishing contact with the human. "What men want is not religion but something by means of religion, and what God bestows is not religion but something for the sake of religion."\*

A further question arises. Why is this universal consciousness in man so confused and his religious instinct thwarted? Why, again, does this religious bent, accompanied by conscience, so frequently create a cringing attitude in presence of the thought and power of the very Being for whom it longs? Most religions attribute this condition to some conscious disparity between man and his ideals, to a sense of alienation from, and a feeling of unworthiness in relation to, the Divine. Niebuhr quotes Gilson to the effect that "This incessant pursuit of an ever fugitive satisfaction springs from troubled depths in human nature . . . The very insatiability of human desire has a positive significance; it means this: that we are attracted to an infinite good."† Christianity calls this disturbing element sin and defines it as lawlessness, transgression, iniquity and the like. This is the essential barrier not only between man and his God, but also between man and his self-attainment. "The essence of man is his freedom. Sin is committed in that freedom. Sin can therefore not be attributed to a defect in his essence. It can only be understood as a self-contradiction, made possible by the fact of his freedom but not following necessarily from it."‡ Hence the philosophy of the Christian life, based upon the fundamental theology of Atonement for human sin wrought out by Jesus Christ, is concerned with the necessary readjustment of man personally to God in heart and conscience as also in thought and conduct. To quote Professor Shaw, "The religious world order is neither that of nature nor of Spirit, but is found in humanity which is a synthesis of the two. St. Francis with his holy love is more of an argument for God than Anselm with his Ontological proof. . . Logicians may seek to demonstrate God, seers may indicate traces of His shining presence in the world, but saints who are with Him reveal His Being directly."§

2. The reasonableness of belief in God and of religious worship is another feature of our subject. "Religion is sense and taste

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\* Brunner, *op. cit.*, p. 106.

† R. Niebuhr, "Nature and Destiny of Man," Vol. I, p. 131 (1942).

‡ Niebuhr, *op. cit.*, p. 18.

§ Shaw, *op. cit.*, p. 245.

for the Infinite." This sense and taste come within the range of scrutiny and definition, but the Infinite transcends both. Nevertheless, man with his *capax Dei* feels affinity to the Infinite and by a process of thought, contemplation and common religious experience arrives at some attempts at definition of it. His knowledge, however, is only partial. This is true even of the Christian man. But partial knowledge is not false knowledge and limitation does not imply unreality or illusion. Even Saint Paul declares, "We now see through a glass darkly . . . we know in part." But the very terms "limited" and "finite" applied to the human mind and human knowledge imply the "unlimited" and the "infinite." It is asserted that "when you try to find in religion available data of knowledge, both experience and reason pronounce the attempt to be futile." But we cannot allow that religion and reliable knowledge are opposites, nor that the instincts and emotions are independent of reason. Just as "the correlations—subject and object, thought and reality are indissoluble, distinguishable and yet indivisible" so the instincts and the emotions, the spirit and the reason in man are integral elements mutually reacting and dependent. The assertion, therefore, that religion which is instinctively natural to man is at the same time irrational is itself irrational and involves a profound contradiction. Belief in God and the worship of God are not contrary to reason, though they defy complete rational explanation. Yet rational explanation is not necessarily the highest and fullest satisfaction to man's personality. Such satisfaction may be found in the mystical experiences and the practical expressions of religion—the exercises of faith and hope towards God, the practice of prayer and the operations of love and goodness towards one's fellows; and such mighty forces, so real and unmistakable to the soul, defy contradiction even though the reason be unable to grasp and interpret them. God is "supra-knowable" and religion which concerns the whole personality leads man into realms of thought and belief where reason is inadequate as an interpreter or expressive agent; but where, nevertheless, it need find nothing foreign to itself.

Religious knowledge is not cast in a philosophical mould, but "philosophy would have no power to deal with religion if religion were not implicitly rational." God is not known or proved by anything foreign to His own being. He reveals Himself *in* thought and *to* thought. "All true thought of God is itself divine thought . . . Nothing that is absolutely inscrutable to

reason can be made known to faith." Brunner pertinently remarks, "It is not reason that is opposed to revelation, but man's pride in his rationality, science, philosophy and culture.\* He goes on to quote Luther to the effect that, "The judgment of reason is reliable as to negative conclusions; but as to positive it is deceptive (he means in reference to the assertions of theology)."

A modern tendency is to exaggerate the place and function of reason, to regard it as the final judge and arbiter both of objective truth and subjective experience. If, however, as we contend, religious truth and experience although verifiable by reason, yet in some respects transcend it, then, reason cannot in those transcendent particulars be regarded as arbiter and judge. Reason as an instrument is itself limited as are human thought and emotion. "In religion as elsewhere," writes Professor Caird, "philosophy is based on experience, but it is something more than a mere result of empirical induction."† Indeed the same writer declares that all our human faculties are together inadequate to produce a complete explanation or interpretation of religious history and experience. And Niebuhr declares, "No pattern of human reason, but only the will of God can be the principle of the form and order to which human life must be conformed."‡ To quote another authority, "As a spiritual being man is conscious of an end which transcends all particular and finite satisfactions, of a life above and beyond them, of being his own end and law."

In Christianity knowledge and faith are mystically yet none the less really related and these again operate by means of love. Thus reason and emotion, thought and affection are co-ordinated in a common experience of apprehending and absorbing truth and spiritual energy, which, by the grace of God, operate in the soul. These possessions are employed in service to humanity, rendered both as a loving obligation to God and a Christian duty to our neighbour, and such a life brings us self-harmony. By this means any contradiction between the ideal and the actual vanishes for "religious progress is not progress *towards*, but *within* the sphere of the Infinite."

As conscious creatures we possess a "potential infinitude," and true religion conveys to us a principle by which we can see that

\* Brunner, *op. cit.*, p. 187.

† Caird, *op. cit.*, p. 303.

‡ Niebuhr, *op. cit.*, p. 30.

God is all in all, and we can see this "without denying reality to the finite world and to every individual human spirit, or without denying it except in so far as it involves a life apart from God. Who is at once the presupposition and the end of all finite thought and life. That which raises man above the animal and provides for him an escape from the limits of his own individuality, is that he can, and even, in a sense, that he must, identify himself with a consciousness that transcends all that is particular and relative."\*

3. We now turn for a moment to glance at the intimations of immortality. Such intimations cannot be denied. Some may think to suppress them as a delusion and a snare; mere figments of the imagination; vague wanderings of the still uncivilized mind. But surely, in view of what we have been saying, the most deep-rooted of all our instincts and the most refined of our thoughts reaching out with conscious desire for the Infinite imply a context of immortalities. We can hardly think of an Infinite who is not also an Immortal, for the truly Infinite must transcend time and the material order and therefore belong to the sphere which we call eternity.

We readily admit that this aspect of man has been set forth at times too plausibly and that many analogies between human nature and nature in general, between the soul and recurrent Spring, for example, do not constitute proofs of human immortality. Poets have delighted to sing of the immortal elements in man and have made free use of these analogies. Yet the whole conception and purpose of religion tends to support the view "that man was made for a happier world" and that his mind and spirit can find no adequate fulfilment within this realm of time and space.

The conditions and occupations of the future world are, in some religions, far from ennobling, and, indeed, often repulsive to the truly civilized. The Christian religion, however, takes the "immortality" of man for granted. Jesus Christ consistently regarded this life as a probation, leading up to a Divine judgment and a further existence, yet He lays down a vital corrective. He made it quite clear that immortality as the ideal, never-ending life was not the inherent property of natural man and recognised that though all human beings will survive this temporal life not all will enjoy the fruition of immortality. Hence we

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\* Caird, *op. cit.*, pp. 233, 243, 248.

must distinguish between mere conscious existence after death which may even be an experience of pain and woe, and what our Lord calls eternal life which surely means not only life everlasting, but life that is instinct with the Divine properties, rich because filled from the immortal fountain of the Divine life of love and joy. Our view is that such a consummation is intimated by man's natural capacity and desire for what is pure and permanent and that, since we cannot believe the Creator would impart such qualities only to mock us, they may, they *must*, be provided for in His great scheme of things. And this brings us to the vital subject of

4. *Revelation*.—All religions claim the the sanction of revelation and so we have rival revelations and a vast quantity of religious literature. Suffice it to say that the Christian Revelation is obviously most in keeping with our highest notions of what God should be like and of how we should expect such a Being to reveal Himself. If we view man as everywhere conscious of a desire for the Infinite and as one who, in the midst of his personal confusion through sin and in the midst of a confused material order, finds his true unity, his selfhood, in the great Infinite Unity, we must expect a unity of revelation. So Niebuhr writes, "The simple fact is that both the obviously partial and unique and the supposedly universal values of history can be both appreciated and judged only in terms of a religious faith which has discovered the centre and source of life to be beyond and yet within historical existence. This is the God who is both Creator and Judge revealed in Biblical faith . . . Without the presuppositions of the Christian faith the individual is either nothing or becomes everything. In the Christian faith man's insignificance as a creature is lifted into significance by the mercy and power of God in which his life is sustained."\*

Christian Revelation is for us a "recorded" substance—a spiritual reality of thought and personal qualities which came upon chosen men as a Divine impact and therefore a record of historical facts bearing upon every human faculty of perception and belief and issuing in the acquisition of a knowledge which while capable of rationalization is essentially spiritual and supra-rational. I suppose it is on this view that Brunner says, "We can neither experience nor understand divine revelation, but only believe it."† A statement with which we may find it

\* Niebuhr, *op. cit.*, pp. 97-98.

† Brunner, *op. cit.*, p. 79.

difficult wholly to agree, for since the Revelation is itself living by reason of the fact that the Spirit of God who inspired it still operates within it and by means of it, we may, in a sense, experience it, and as it is set forth in human language and is therefore rational we may in a measure understand it. And surely man, in his natural state, is not incapable of response to the Divine Revelation nor devoid of faculties whereby he may recognise the symbols and the approaches of the Divine. Otherwise all we have said about the universal religious consciousness ceases to have any practical meaning. God must always take the initiative in Revelation and grace, but there must also be responsive conditions in the man whom He approaches and these necessary conditions are, of course, the gift of God, though not dispositions created by grace, but rather faculties natural to man as originally created. To the Revelation of God in Jesus Christ man may respond instinctively, morally and rationally. The business of Philosophy of Religion is "to unfold the relations of the human spirit to the Divine and to determine the ideas of God and the soul that are involved in religious experience."\*

Any philosophy of life which is to be of permanent service to mankind must be Christian. "True progress," says Niebuhr, "is possible only upon the ground of a Christian culture."† When we Christians confess that we live our lives "in Christ" or "by the faith of the Son of God," and that our living is really the outworking of saving qualities imparted to us by the grace of God we are only saying in the language of religion what philosophy declares to be in true accordance with the fundamental principles of human nature. "Strictly speaking, Christianity is not a view; but a type of life; not a system, but a new conscious process."‡ To quote Sabatier, "Christianity is nothing if it is not in us at once an ideal which is never reached and an inner force which ever urges us beyond ourselves."§

The perfect synthesis which the philosophy of religion seeks is found in Jesus Christ, who realised it in human nature and human experience. This perfect attainment therefore is a fact of history, and the Christian religion exists to enable men by its faith and virtues to emulate Jesus Christ in His ideal character and life. He realised it in the clear consciousness of filial love

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\* Caird, *op. cit.*, p. 85.

† Niebuhr, *op. cit.*, p. 25.

‡ Shaw, *op. cit.*, p. 197.

§ Sabatier, *op. cit.*, p. 169.



and devotion to God and man, and He, as the new Head and Heart of humanity, now re-establishes such a filial relationship in every man who receives Him and who thus is a Christian in so far as the filial piety of Jesus Christ is reproduced in him. It is "this feeling," says Sabatier, "filial in regard to God, fraternal in regard to man, which makes a Christian and consequently is the common trait of all Christians." And this sublime experience he describes as "God giving Himself to man and realising in him His paternity, man giving himself to God without fear and realising in Him his humanity."\*

Our conclusion is, therefore, that Christianity is the supreme revelation of God, the sovereign unifier of the human personality and of human society, the adequate satisfaction of man's true nature and desire; and that the very essence of it is the Person of Jesus Christ Himself, Son of God and Son of Man, incarnate, redeemer, risen and interceding for us in heaven, the "one mediator between God and men" in whom and by whom the whole race and the whole universe move forward to the perfect consummation Divinely planned before the world began.

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\* Sabatier, *op. cit.*, pp. 149 and 150.

#### DISCUSSION.

The CHAIRMAN, Air Commodore Wiseman, having thanked Mr. Ruoff for the illuminating and understanding way in which he had read the paper, said: I am sure that you would wish to express our thanks to Canon Hadwen for the valuable paper which he has given us. In his opening paragraphs the author has defined the spheres of Religion and Philosophy. Religion begins with God ("In the beginning God"), while philosophical thinking may end with a knowledge of God. While philosophy subjects revelation to a critical examination, it cannot possibly claim to be an alternative to revelation. Had there been no such revelation as that contained in the Bible, philosophy could not have given us the same clear knowledge of God. Speaking in the philosophically minded Athens, the Apostle Paul described the general results of the philosophical thinking of that day as having got as far as to realise the certain existence of God—but He was still to them "the unknown God." He could say to them, "Whom ye ignorantly worship Him declare I unto you. God that made the world and all things therein, seeing

that He is Lord of heaven and earth, dwelleth not in temples made with hands. Neither is worshipped with men's hands, as though He needed anything, seeing that He giveth to all life, and breath and all things . . . For in Him we live and move and have our being . . . He hath appointed a day in the which He will judge the world in righteousness by that man whom He hath . . . raised from the dead." The Apostle's statement was not based on the "wisdom of the philosophers," or on "a general consensus of opinion," but on revelation, and in his case of a direct contact with the risen Lord who would be the Judge of all mankind.

On page 96 he refers to the innate religious instinct in man. I would have liked him to have developed the explanation why man is so often at enmity with God, and so often wishes to throw off his sense of dependence on God.

Under the heading of *Revelation* the author refers to Brunner's statement "We can neither experience nor understand divine revelation, but only believe it." It was over this question whether sinful man had any capacity for Divine revelation that Barth and Brunner parted company. Brunner did not go as far as Barth; the latter insisted that man cannot receive the Divine revelation unless the Spirit of God has already worked in him. Brunner, while maintaining that man could neither achieve revelation nor merit it, considered that he had the innate capacity to receive it.

Can a man by searching (without the aid of revelation) find out God? On its scientific side I submit that this question has been answered by Professor Wilhelm Schmidt's work, that the ideas of God contained in the Old Testament are not merely the result of an evolutionary development.

Apart from revelation, God as He is known to us in the Bible would still be the "unknown God" of the philosophers. And since God has become known to us by the greater historic revelation of Jesus Christ "manifest in flesh" we have "beheld His glory."

Mr. PERCY O. RUOFF said: The lecturer cites Gilson that the insatiability of human desire means attraction to an infinite good, and makes this comment upon the statement: "Christianity calls this disturbing element sin, and defines it as lawlessness, transgression, iniquity and the like." The Bible presentation of sin is (in its

essence) breach of the laws of God, and not "insatiability of human desire."

Mr. Hadwen says that God "reveals Himself *in thought to thought.*" If this means that by thinking man can discover God, the answer that the Holy Scriptures give is found in the Old and New Testament alike—in the former, Zophar, in the Book of Job, says, "Canst thou by searching find out God?"; and Paul, in the latter, affirms that "the natural man receiveth not the things of the Spirit of God."

Another statement perhaps needs qualification, viz., "Surely man, in his natural state, is not incapable of response to the Divine revelation." In a most remarkable interview between Nicodemus and the Son of God recorded in John's Gospel (chap. iii), Christ tells Nicodemus "the teacher of Israel," that a man must be born from above before he can see the Kingdom of God, adding "That which is born of the flesh is flesh, and that which is born of the spirit is spirit." From this it appears that man cannot respond apart from God.

Let it be added, however, that the paper serves a very useful purpose; it is written with much ability and clarity, and will be appreciated by thinking people.

Rev. A. W. PAYNE expressed gratitude for the paper, so suitable to the character of the Victoria Institute. The word *Philosophy*, of course, is the Love of Wisdom and the word *Religion* means "to rejoin," indicating the fall of man through sin and the need to return to God in repentance.

Christian theology teaches the unity of the Infinite with the Finite in the person of Immanuel, the Redeemer.

Dr. Dwight, the founder, I believe, of Yale University, said that the real theology was the religious teaching concerning God, who alone is its true subject and one object.

#### WRITTEN COMMUNICATIONS.

Rev. H. S. CURR, Ph.D., wrote: Mr. Hadwen has rendered timely and valuable service to the Institute by his paper. There is a vagueness about such a phrase as the "Philosophy of religion" which makes it to be very perplexing, and it is helpful to read such a discussion of the subject matter with which it is concerned as the

paper provides. The evangelical spirit and standpoint of the latter increase its usefulness enormously.

In endeavouring to frame a working definition of the Philosophy of Religion, I have been much indebted to an observation made by the late Professor A. S. Pringle-Pattison, who adorned the Chair of Logic and Metaphysics in Edinburgh University for so many years. In the course of a class lecture he remarked on one occasion that metaphysics is concerned with the presuppositions of the sciences. The latter take both being and matter for granted. But the metaphysician enquires as to what these entities may be. Again science does not concern itself with the nature of knowledge, while metaphysics never seems to make an end of trying to explain what it is.

On the same analogy, the philosophy of religion is occupied with questions with which theology is not concerned. The conception of God is an excellent example. All such theories regarding the Divine existence and nature as are designated by such titles as atheism, agnosticism, pantheism, polytheism, deism, and theism tacitly assume that the mind of man is warranted in accepting such a notion as that of God. "The fool hath said in his heart, There is no God." (Psalm xiv, 1.) But his words prove that he has got some notion of a Divine Being in his mind, even although it be utterly baseless. The question arises as to how he got it, and as to what it may be worth. In the same way, the zoologist affirms that there is no such creature as a unicorn, while the student of primitive culture and psychology will endeavour to explain the way in which the belief in unicorns arose. It might thus be suggested that the philosophy of religion deals with the validity and value of religious knowledge. It is the theological department of epistemology.

As the paper shows, Christianity offers its own peculiar problems to the investigator, and the more these are studied the profounder will be the conviction that the roots of the Christian Religion are so deep and wide and strong as almost to constitute in themselves a guarantee of its genuineness. Nevertheless, we must never forget the famous words of Hamlet in all such researches :—

There are more things in heaven and earth, Horatio,  
Than are dreamt of in your philosophy.

(Act 1, Scene 5.)

Mr. E. W. BATTERSBY wrote : " Philosophy is largely speculative, progressing tentatively." Whilst I agree that philosophy is of a highly speculative nature, I understand the term philosophy to imply something more comprehensive than idealism alone, as it embraces all conceivable attitudes adopted to explain the nature of phenomena, and thus includes the philosophy of materialism which is based on scientific data.

" Religion is neither a science nor a philosophy, but a way of life." May I point out that philosophy, too, professes to be not only an explanation of life, but when applied—a way of life.

Luther : " The judgment of reason is reliable as to negative conclusions ; but as to positive it is deceptive (he means in reference to the assumptions of theology)." Is one to understand that all the criticisms levelled at religion are true at face value, whilst nothing positive can be supplied in its place ?

" We can hardly think of an Infinite who is not also an Immortal." The Immortal indicates a concrete entity or substance which endures forever. The Infinite does not necessarily limit itself to identity, but can also be an endless series of progressions of similarities.

" The whole conception and purpose of religion tends to support the view ' that man was made for a happier world ' and that his mind and spirit can find no adequate fulfilment within this realm of time and space." This sounds to me as being altogether too pessimistic and I, personally, side with Democritus, the apostle of laughter.

" We must distinguish between mere conscious existence after death, which may even be an experience of pain and woe, and what our Lord calls eternal life." Does this imply that those in heaven have no consciousness, no memory of mortal events ? What about the story of Dives, which is authentic and not a parable, according to the scholars ; does it not contradict this ?

#### AUTHOR'S REPLY.

The Rev. E. W. HADWEN gratefully acknowledges the various opinions in reference to his paper expressed by some contributors and deeply appreciates the kindly reception given by Principal H. S. Curr and Air Commodore Wiseman.

In reply to Mr. Percy O. Ruoff, who points out that " sin is (in its essence) breach of the laws of God and not ' insatiability of

human desire,' " I must point to the earlier statement in the context : " Most religions attribute this condition " (*i.e.*, man's cringing attitude in presence of the thought and power of the very Being for whom it longs) " and my statement following the quotation is that amongst these religions Christianity " calls this disturbing element sin and defines it," etc.

In reference to his question on the phrase " God reveals Himself *in thought to thought*—if this means that by thinking man can discover God, etc.," the reply is that the writer contemplated no such inference. *Thinking* is a process or operation of the human mind and by such a process of searching man does not find God ; but *thought* is a faculty and a realm, and within this realm and to this faculty God reveals Himself. Moreover, the very statement criticised, when read as a whole, refutes Mr. Ruoff's suggestion, for the verb " reveals " implies a self-disclosure of God and an impartation from Him.

Finally, in answer to the criticism of the statement : " Surely man, in his natural state, is not incapable of response to the Divine Revelation," I hold the doctrine of prevenient grace, but I believe man in his natural state has (despite the fact of sin) some affinity to the supernatural realm and can will to receive or reject the overtures of God ; and this natural faculty is, of course, God's gift.

It is difficult to reply adequately to the criticisms of Mr. E. W. Battersbey, some of which appear to be evidence of misreading or misunderstanding of the paper. I deal with the items in order :—

1. The definition is right, I think, because of the qualifying word "*largely*."

2. I agree that Philosophy, like religion, is " a way of life." Perhaps the distinction would be clearer if we say religion is a way of *living*—a dynamic of life. At least it is intended to be.

3. The answer is No ; but it must be admitted that the final positive elements of Christianity are spiritual and moral, not primarily rational, though they are rationally interpretable.

4. " Infinite " spelt with a capital letter is, in Theology, a synonym for God, who certainly is not " an endless series of progressions of similarities " and who in Christianity does limit Himself within the space of Revelation to " identity."

5. The statement here objected to is but a commonplace of

Christian belief and thought, and the criticism seems beside the mark.

6. Here, I fear, is but a quibble. The contrast which I myself set forth is that eternal life is infinitely superior to mere conscious existence and the inference that eternal life is therefore not conscious is unwarranted and absurd. We commonly distinguish physical life as we think it ought to be from "mere existence."

## 855TH ORDINARY GENERAL MEETING

HELD AT THE NATIONAL CLUB, 12, QUEEN ANNE'S GATE,  
LONDON, S.W.1, ON MONDAY, APRIL 17TH, 1944, AT 6 P.M.

R. E. D. CLARK, ESQ., M.A., PH.D., IN THE CHAIR.

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

The CHAIRMAN then called upon the Rev. D. R. Davies to read his paper entitled "Christianity and Marxism."

The meeting was later thrown open to discussion, in which Dr. L. Richmond Wheeler, Dr. Farmer, Mr. Phillips, Mr. Mandeville and Dr. Clark took part.

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### *CHRISTIANITY AND MARXISM.*

By REV. D. R. DAVIES.

THE question we propose to examine in this lecture is that of the relation between Christianity and Marxism, which is both a metaphysic and a philosophy of history. It is as a philosophy of history that Marxism has exercised its undoubtedly great influence on the contemporary world. But Marxism, as a philosophy of history, derives from, or at any rate implies a metaphysic, a system or philosophy of ultimate being. Philosophically, therefore, Marxism is compounded of two main elements, namely, the metaphysics (if such it can be called) of Dialectical Materialism and the philosophy of Historical Materialism. Historical Materialism is Dialectical Materialism in terms of history, of men, events, institutions. To confine our attention to Dialectical Materialism, to the mere metaphysic, would be hopelessly academic and would miss the genius and the significance of Marxism altogether. Professor Macmurray has stated that the most characteristic idea of the Marxist outlook is the union of theory and practice. It is certainly fundamental in Marxism. Hence, to discuss Marxism in terms of theory only, of metaphysics only, is, in fact, to distort it. Marxism is a unification of theory and practice. And the practice is reflected in its philosophy of history, or, in other words, Historical Materialism.

It is surely unnecessary to argue at any length to-day for the importance of Marxism. Whether it is true or not; whether it is scientific or not, it is most certainly true that it has been passionately believed by vast masses of men throughout the whole world. Ideas assume considerable importance, irrespective of their truth or falsehood, when they move masses. And



Marxism has moved the millions at second and third remove. It was one of the decisive factors in the greatest historical event since the French Revolution of 1789. It is at least as significant for the Bolshevik Revolution as were Rousseau and the Encyclopedists for the French Revolution. There can, therefore, be no reasonable doubt about either the wisdom or the desirability of attempting to discover and analyse the relations between Christianity and so influential a system of thought as Marxism has proved itself to be. What I may term the evangelical obligation of theology is conclusive in this matter. Christianity cannot be effectively commended to a generation about whose ideas Christians remain in ignorance.

Only a few words of biography are necessary. Marxism, of course, derives its name from Karl Marx, who was born in Trier in 1818. He studied law and was intended to follow the profession of his father, who was a Prussian civil servant, a converted Jew. But at the university, which was dominated by Hegel, as was the whole of Germany at that time, Marx became associated with a radical group, later known as the Left Hegelians. So instead of becoming the devoted servant of the Prussian State, he evolved into one of its most powerful enemies, and spent almost the whole of his life, after leaving the university, in exile in Belgium, France and England. Most of his life was spent in London, in poverty and humiliation, dependent mostly upon the generosity of his very devoted friend and disciple, Engels. His life followed consistently the pattern of his philosophy, in that he combined theory and practice in his own behaviour. He wrote voluminously and organized incessantly. His great theoretical work was his "Capital." His great practical work was the First International. He was both its creator and destroyer. His life was devoted to the task of making Socialism both scientific and revolutionary, in the course of which he developed his ideas as a system of materialism, dialectical and historical. Like his racial predecessor, Moses, he never entered the Promised Land. The revolution which he saw just ahead of him did not materialize until 33 years after his death. But he sowed the seed and tended the plant to maturity. It is this activity which is summed up in the word "Marxism."

## I.

As a purely philosophical system, a metaphysics, Marxism is elementary. It defines Reality ultimately in terms of matter.

It differs from all schools of subjective idealism in its affirmation (a) that there is an external, objective, concrete reality, independent of man; (b) and that reality is matter. This reality, matter, is in no way dependent upon any thinking mind, upon any subjective process whatsoever. Reality exists whether man thinks it or not. In virtue of this affirmation, Marxism belongs to the school of materialism. It does what all the other materialists do. It takes one of the two entities of human experience, namely, matter, and makes it primary, and so reduces mind, the other fundamental entity, to a mere epiphenomenon of matter. Marx himself did little or nothing more than affirm matter to be the sole, ultimate reality of the universe. He never developed that position philosophically into anything like a system. Consequently, there is in Marxism no discussion of ultimate philosophical problems, and very little in the great classical Marxists except on particular points of controversy, e.g., Lenin's discussion of Kantian idealism (which denies the basic materialist doctrine of Marx) in his *Empirio-Criticism*. The fundamental problems in Marxism are sociological rather than philosophical, as can be seen by a perusal of such a classic as "The Fundamental Problems of Marxism," by Plekhanov, who still remains the outstanding Marxist theorist.

While, therefore, its identification of reality as matter places Marxism within the stream of materialist philosophies, it nevertheless claims to be different and distinct from them. And that claim must be conceded to this extent at least: that whereas all the other materialist systems proclaim a static doctrine of material reality, Marxism distinguishes itself from them by its doctrine of dynamic matter, matter in motion. Reality (matter) is in movement, and that movement is "dialectical." Hence Dialectical Materialism. This is where the influence of Hegel came in. Hegel's philosophy of absolute Idealism also emphasized the kinetic character of reality, which, however, he affirmed to be idea and spirit. Marx rejected the content of Hegelianism whilst accepting its form. Hegel argued that the Absolute Idea was in movement, not a straight linear movement, but dialectical. The Absolute Idea is, to begin with, undifferentiated. It then breaks up and in the process of breaking up it creates an opposite to itself, which in turn gives rise to a new form or entity in which the two previous opposites are combined into an integral unity, which again breaks up into dialectical process.

And so on. This is the famous Thesis, Antithesis, and Synthesis.\*

For Absolute Idea Marx substitutes matter and then predicates of matter the dialectical movement which Hegel described as the movement of Absolute Idea. Reality is, in the beginning, undifferentiated matter, which breaks up into thesis, out of which arises antithesis. In the opposition between these two there gradually emerges the synthesis, in which thesis and antithesis form a new unity. Then this new unity undergoes the merry-go-round of differentiation. And so on *ad infinitum*. Reality, therefore, is matter in a state of perpetual development (*Durfurchung*). It is in the course of this development that mind, society and history take shape. They constitute the detailed definition and identification of the original, undifferentiated reality (matter). Reality is thus not a thing, a substance, but a process. Stated in this way, Marxist Materialism has affinities with non-materialist and Christian philosophies, which will be discussed at a later stage of the argument.

Now Marx's system, or rather sketch (since it is no more) was merely a peg on which to hang his philosophy of history, otherwise known as Historical Materialism. That was the thing in which Marx was supremely interested. And it has remained almost the exclusive interest of Marxists. In any case, it is most certainly the dominating interest of all post-Marx Marxism. Marx was no metaphysician, systematic or otherwise. But he was sufficiently a philosopher to appreciate the necessity for a metaphysical foundation for his philosophy of history, which enabled him to convince himself, even though he convinced nobody else, that his historic formulas corresponded to the nature of the universe. What, then, is the Marxism philosophy of history, the system of Historical Materialism?

"The history of all human society"—so begins the Communist Manifesto—"past and present, has been the history of class-struggles." In all Marxist historical thinking, class is a basic category. Marx defines class by its relation between society, or any section of society, and the forces of production. Primitive society, *i.e.*, pre-historical, was an undifferentiated social unity. History is the process of the break-up of that primitive social unity into conflicting classes, that is, into sections of society opposed to one another because of their different relations to the

\* Hegel formulates the dialectic in his "Phenomenology of Mind." *Vide* selections from Hegel (Scribner & Sons, 1929), pp. 15-35.

means of wealth-production. The determining factor in the development of history is this struggle of classes for the ownership of the forces of production and the control of the product. The dynamic impelling history forward is class-conflict. The life-force of history is class-struggle. Thus, in the undeniable grandeur and sweep of the Marxist vision of history, mankind begins its planetary career in the idyllic simplicity and unity of primitive communism, then moves through the tragedy and conflict of historic class-struggle, finally to attain to the new synthesis and unity of a historical communism, in which all classes have been resolved into one grand human community. Whatever else may be said about this grandiose vision, it most certainly has about it a touch of nobility and vastness, penetrated by hope and faith. From the plain of primitive human unity down through the valley of class-conflict and division up to the bracing uplands of an achieved human unity—here is the formula or pattern of the Marxist philosophy of history, otherwise Historical Materialism.

The social mechanism by which the whole historic process of social development through class-conflict works is Revolution, which is the point of transition from one class-domination to another. So by Revolution Marx means a shift in class-power. When this happens, as in the French Revolution, there is a definite forward movement of history. One class moves off the stage to give way to another. This process has been operating from the beginning of history until now, in the capitalist era, when the classes in conflict have been reduced to two—the Bourgeoisie and the Proletariat. Capitalist civilization is the final phase of class-society. It is the final logic of the historical process in which the last class-battle is being fought out to the certain victory of the Proletariat. The triumph of the Proletariat (working-class) is the opening of a really new phase in man's historical destiny. On the one hand, it liquidates the remains of class-society by the abolition of the capitalist class. On the other hand, it lays the foundations of a really human society, of a single human community. All mankind is now incorporated into, and identified with, the sole remaining class, the Proletariat. This twofold process operates by means of the celebrated Dictatorship of the Proletariat. By the seizure of political power, the party of the Proletariat uses the State and the forces of production to crush all opposition. When that has been satisfactorily achieved, then human history will really

begin; the tentative beginnings of man's true destiny will emerge; there will begin the new human process, in which "the oppression of men will be replaced by the administration of things." What will happen in that final Eldorado of communist society can only be left to the imagination. The only thing which Marx himself ever ventured to say about it was that it would be a world in which everyone would work according to his ability and be rewarded according to his need. Perhaps we had better leave it at that.

Now this entire historic process operates independently of the human will. In *theory*, there can be no reasonable doubt that Marx affirmed the inevitability of the whole process. It grinds its way forward like a car of Juggernaut, relentlessly. The wills of men are mere instruments of the process. "The moving Finger writes, and having writ, moves on." Yet in *practice*, Marx (and all genuine Marxists) thinks and acts as though the human agent is, if not decisive, at least creative and effective, a feature which is closely parallel to Calvinism, which in theory was a suffocating determinism. Yet in practice Calvinists acted as though they were free—very much so. Trotsky explained this paradox by saying that communist responsibility was part of the historic process. Professor Laski has brilliantly elaborated a striking parallel between the Bolsheviks (who *were* classic Marxists) and the Puritans. "There is the same consciousness of election, the same realization of the infinite worth of grace, the same contempt for the normal habits of human nature, a good deal, too, of the Puritan's conviction that whatever denies his central truth is error from the devil, the infection from which cannot be destroyed too early."\* Man is the instrument of the historic process. Marxism claims to be the conscious realization of that fact, that it is the subjective reflection of that objective reality. Marx's analysis of Revolution is an interesting and relevant illustration of this claim.

Why do revolutions happen when they do? Can they not happen at any time? To this question Marx returns a clear negative. Revolutions happen only when the historical conditions are ripe—and not a moment before. They happen, that is to say, when productive class relations check and inhibit the forces of production. So long as a particular social system (class-relations) stimulates and increases the capacity to produce

\* *Vide* "Reflections on the Revolution of our Time," p. 72. (Allen and Unwin, 1943.)

wealth, revolution is impossible, whatever injustices it may inflict on men. But when a social system arrives at the point of interfering with and holding back the flow of wealth, then it breaks down and finally results in revolution, in the attempt by the oppressed class to wrest power from the hands of the oppressing class. The oppressed class is finally driven to this extreme measure by the failure of the system to satisfy its wants. The will to revolution is the product of the failure of a social system to function. The French Revolution of 1789-93 was the consequence of the breakdown of French Feudalism. The French Commune of 1871 was a premature attempt at Revolution before the historical conditions were ripe, before the capitalist system had yet exhausted its possibilities. Men cannot anticipate history.

## II

As compared with Christianity, Marxism has both affinities with it, and antipathies to it. Marxism is by no means wholly opposed. Ultimately, of course, there is a profound and absolute opposition between them. But in many matters of detail and emphasis, there is a quite remarkable approximation between them. We will note a few of these.

First, let us indicate the affinities.

(a) Marxian materialism is partly an affinity with Christianity, and partly an antipathy. It is not wholly opposed to a religion which affirms, as its central doctrine, that God once took to Himself a body of matter. Of course, in so far as Marxism asserts that spirit is mere epiphenomenon, mere product of matter in motion, it denies the fundamental doctrine that God is spirit. But in actual practice, Marxism relates matter and spirit so closely and organically, that it may be said that it does more justice to the Christian insistence on the necessity of matter than the systems of Subjective Idealism, from Plato to Hegel. From the Marxist relationship of spirit and matter comes its doctrine of the union of theory and practice. This corresponds both to the Christian doctrine of Incarnation, that in Christ Jesus spirit and matter were perfectly related, and also to the Christian ethic that obedience to the will of God must be expressed in behaviour and character. That is to say, that obedience to God necessarily involves conduct. And what is behaviour but the use of matter in personal and social relationships? Marxist materialism does not deny spirit, or invalidate it. Its matter is matter in motion.

It is a process in which mind is an essential element. This gives it some affinity to the Christian assertion of the primacy of spirit in which matter is also an essential element.

(b) The Marxian doctrine of the historic process as something independent of the human will has some point of contact with the Christian doctrine of Providence. It is impossible to read the Bible without discovering the belief that the world, and the movement of man within that world, are ultimately dependent on the will of God and subject to the over-riding purposes of God. History is finally governed by God's intention. Marxism asserts that history is finally governed by the working out of the historic process. That, of course, is not the same thing as the Christian belief, but it certainly has some affinity or kinship with it. The Marxian doctrine of the historic process is the de-personalization of the Christian doctrine of Providence. History, says Christianity, is governed by a Person who wills. History, says Marxism, is governed by a process which secures results.

Engels, Marx's faithful disciple, has shown how the social action resulting from the inter-action of numerous individual wills is something entirely different from any of the intentions of individuals. Individual persons intend one thing, but what the historic process fashions out of such intention is something entirely different. This is a profound insight into history, and is fully in accord with Biblical revelation. Isaiah, for instance (chapter xlv) tells how God uses Cyrus, an imperialist marander, to execute His judgment and purpose for Israel. The intention of Cyrus is the conquest of Babylon, which God uses for the purification and preparation of the Jew for a different kind of destiny altogether. History, which man endeavours to make into the means of his independence of God, becomes the scene of God's will to redeem the human race. There is, therefore, more than a superficial resemblance between the Marxist doctrine of historic process, and the Christian doctrine of Divine Providence.

(c) There is a third point of affinity with Christianity in the Marxist doctrine of Determinism, which it is misleading to describe as "Economic Determinism." It is hardly correct to say that Marx taught that man is determined mainly by economic forces. What Marx did teach was that men are determined by the total complex of social class relations which turn on the possession and control of the means of wealth production—which is a difference with a real distinction. Pure economic determin-

ism is crude materialism, which Marxism certainly is not. In a celebrated letter to J. Bloch (September 21, 1890), Engels deals with the popular distortion of Marxist Determinism. "According to the materialist conception of history the determining element in history is *ultimately* (Engels' italic) the production and reproduction in real life. More than this neither Marx nor I have ever asserted. If therefore somebody twists this into the statement that the economic element is the *only* (Engels' italic) determining one, he transforms it into a meaningless, abstract and absurd phrase."\* Among the factors determining the human will, then, are intellectual, social and spiritual elements.

Christian doctrine has never asserted the absolute freedom of the human will. Both Catholic and Reform theology has insisted upon the corrupting element of sin in the human will. In the conflict between egocentric individuals and societies, freedom turns into necessity.† The will is thus enslaved by sin. Marxist analysis of social development is the translation into concrete political, economic and social terms of the theological concept of the limitation of man's will in history, and is, thus, a genuine insight.

(d) Finally, we may note what is probably the deepest affinity between Marxism and Christianity, which is one, not so much of doctrine, as of ethos, flair and temper. It is an affinity of attitude, of appreciation of experience and history. This can, perhaps, be best described by saying that both Marxism and Christianity have the tragic view of life. The Marxist insistence on the inevitability of revolution as a means of resolving class-struggle has a profound correspondence to the Christian affirmation of the inevitability of pain and suffering as the result of sin. Thus both Marxism and Christianity are marked by a tragic realism. Both are far removed from the shallow optimism of Hegelianism and its Liberal derivatives in the XIXth century, with their delusive dreams of a painless progression to perfection. Marx was a Jew, and what Jew, with the Jew's terrible history, could ever be a mere optimist? He was characterized by a strain of what can only be adequately described as "prophetic insight." Indeed, it is not altogether fantastic to describe Marx as the last of the Hebrew prophets. He was essentially

\* *Vide* Marx-Engels' "Selected Correspondence" (Martin Lawrence, 1934). Letter 213.

† *Vide* the author's "Two Humanities," James Clarke & Co., 1940), pp. 64-71, for description of this point.



tragic. Marxism was inevitably permeated by the tragic view of life. It has a realistic estimation of the depth, irrationality and persistence of the vested selfishness of men in their social and class relations. A characteristic expression of this Marxist sense of tragedy is to be found in the profound judgment of Lenin in 1919, when he said that the world was entering on an era of wars, civil wars and revolutions. Events have proved that he saw more deeply into things than those—whose name is legion—who prophesied smooth things.

Christianity, rooted as it is in the Bible, is also tragic—essentially and profoundly so. At the heart of Christian Faith is the Cross, the supreme symbol of suffering and tragedy. It is one of the idiocies of modern thought that Christianity could ever have been identified with a sentimental Liberalism, with a romantic trust in the goodness and rationality of human nature. A religion which realized the meaning of the Cross, namely, that the response of human nature to perfect goodness was hatred and murder, has therefore much more in common with Marxism, with its realistic appraisal of human irrationality, than with any sentimental idealisms, however pious, spiritual and even religious they may happen to be.

Close and considerable as are the affinities between Marxism and Christianity, nevertheless the antipathies and disagreements between them are even more considerable and significant. Let us turn to an examination of some of them.

(a) Fundamental is the difference between the Marxist historic process and the Christian doctrine of God. Whilst there are elements in common, as we have already seen, the fact that historic process, which is the Marxist God, is process and is impersonal brings Marxism into violent conflict with Christianity, with its doctrine of God as the Lord and Father of our Lord Jesus Christ. It is ultimately the difference between an impersonal fate and a personal will, between matter self-existent and Divine creation of the world and man; between rationalism and revelation; between progress and redemption; between human achievement and repentance. Christianity is founded upon the revelation of a personal God. Marxism stems from a mere rationalist hypothesis.

(b) Equally fundamental and serious is the divergence between Marxism and Christianity in their respective doctrines of man and human nature, and vital for all questions of conduct and action. From this divergence springs the whole difference in

ethical principles and moral values. Two points relative to the doctrine of man call for comment.

(1) Marxism takes for granted, of course, that man is a purely social product. The individual is "the ensemble of social relations." This view was a protest, only partly conscious, against the prevailing individualism and its consequent view of society as a bundle of individuals. Society, on the contrary, according to Marxism, is the real unit in which the individual is but an element. The individual person therefore can be analyzed into his component elements, so that in him, there is no ultimate nucleus or core of being. He is completely social. He is simply the point at which social relations become conscious.

Now in contra-distinction to this view, Christianity holds that man was created by God out of nothing. This, of course, does not mean that the individual exists apart from society—which is the heresy of Protestant individualism. Christianity also insists that man is a social being, not however in the sense that he is a product of society, but in the sense that the individuality, the basic identity of the individual, comes to self-conscious realization only within society, in the interaction of social relations. Society, therefore, is not, as in Marxist theory, a self-contained and self-existent unity, but is a subordinate, dependent entity—subordinate to and dependent upon God. It is hardly necessary to point out that the ethical consequences of this doctrine of man are profound and fundamental. Society, not being absolute, cannot claim the absolute allegiance of the individual, which is owed to God. Society claims the service of the individual *because it is the creation of God*, not because of any inherent right of its own. This explains the Marxist paradox that whilst Morality (the basic sense of obligation) is relative, the moralities (the formal embodiment of obligation) tend to be absolute. That is to say, obligation to the class tends to become absolute, to override all other obligations. What promotes class-interest is right. The end justifies the means, etc.\* Thus, in practice, the doctrine that society is a self-existent absolute leads inevitably to the corruption of all morality, since power becomes an end in itself. It is not an accident that the dictatorships, both of the Right and the Left, have found the strongest

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\* For an acute discussion of the corrupting influence of moral relativism in relation to the Russian Communist Party, *vide* Mr. Arthur Koestler's "Darkness at Noon" (Jonathan Cape), one of the most searching novels of the last decade.

opposition in the Churches, which are the guardians of the doctrine that society is subordinate to God.

(2) But the greatest cleavage—so great as to be an abyss—between Marxism and Christianity in their respective views of human nature is to be found in the Christian dogma of Original Sin. Christianity asserts that, because of his radical sin against God, man stands in need of redemption. Man is incapable of solving the deep, historic problem of his divided being. That can only be done through the intervention of God which is, precisely, the message of the Christian Gospel, that in Jesus Christ, God became man for the redemption and reconciliation of the world. The whole historic process—such is the contention of Christianity—is cursed by a fatal contradiction. Man is fated to be self-destructive until he acquires a new nature and will, which is the gift of God in Christ, which man appropriates by faith. This is the profound insight of the Reformation doctrine of Justification by Faith.

Now Marxism agrees with the Christian affirmation of the self-contradiction of man—but only for part of the historic process. *Man is self-destructive throughout the class-phase of history.* But this self-destructiveness will cease on the morrow of the final revolution which will secure the triumph of the proletariat, destined to be the last class in history. When the Dictatorship of the Proletariat finally liquidates class-opposition, the proletariat itself will gradually disappear (the State withering away), and history will be relieved of its basic contradiction which has been its curse hitherto. Marxism, therefore, affirms two things about human nature: first, that man stands in no need of redemption (*i.e.*, salvation from the dilemma of history by outside power); because, second, man is himself capable, by organized class-power, of transcending the contradiction of his nature. In the final analysis, Marxism ceases to be tragic and becomes Liberal and optimistic and shallow. Utopia is within the power of man to achieve. At long last, human nature will be self-redemptive. This is an absolute contradiction of the Christian revelation about man, which affirms that the root of sin lies, not in social relations, but in the depths of the human heart and will, for which there is no *human* cure—only a divine one.

(c) Essentially related to this radical difference between Marxism and Christianity is another, equally final and irreconcilable, difference, namely, the Christian doctrine of the Kingdom of God and the final destiny (eschatology) of humanity. As we

have seen in the preceding discussion, Marxism believes in an earthly paradise of man's devising and creation, when all problems will become capable of solution. Where St. John, the divine, says "there shall be no more sea," St. Karl, the not-so divine, says "there shall be no more dialectic." The fulfilment of history, that is to say, the full realization of all the latent possibilities of human nature, lies *within* the historic process. The turbulent, torrential stream of history will flow at last, *on the same level*, into the wide, calm-bosomed sea. Now Christianity is a direct negation of this rosy illusion. The fulfilment of history, on the contrary, lies beyond and above the historic process. History, the scene of egocentric human will, with its fatal, contradictory impotence, will come to an end. The human experiment of man trying to be his own god will terminate at last, and God will Himself fulfil the human possibility. This is the essence of New Testament eschatology. History, to the end, will be an arena of frustration. Fulfilment—Realization—will be the act of God beyond Time, with its tears and tragedy. These two views of human destiny are complete opposites, which no dialectic, Marxist or otherwise, can ever reconcile or interpenetrate.

The Marxist vision of final destiny merges into mere liberalism and becomes inhuman, where the Christian vision remains transcendent and is alone human as well as divine. What can be more callous and monstrous than the idea of a final historic Utopia for a favoured minority of the whole human race? For that is what the classless society of Marxism amounts to. At a moment in the historic process will be realized the ancient dream of a golden age which has haunted man from time immemorial. But what about the myriad generations of the pre-Utopian era who toiled and suffered frustration and defeat and despair and endless agony, "their heritage a sunless day?" What of them? In the Marxist panorama of historic realization, they are no more. They were the raw material for the making of the superman of the latter days. A ghastly economy! The Christian answer to this problem is eschatological, transcendent and human. It is the resurrection of the dead. In that final Kingdom of God, that new heaven and new earth, the millions who suffered and died shall awake into a new life. That realm of God shall not be the possession of the latter generations only, but of all the vast unnumbered family of God. "I believe in the resurrection of the dead."

## III.

We have not, by any means, exhausted either the affinities or the contradictions between Marxism and Christianity, but we have indicated the most important and fundamental of them. They are sufficient—so we hope—to show the very considerable merit which attaches to Marxism as an intellectual system, as an attempt to deal with the stubborn problems of history and social development. Here was the creation of a very powerful mind, a mind, it is true, of quite extraordinary limitations; nevertheless, a mind of equally extraordinary insight into the meaning of historical development. We have to bear in mind that, in an age of unbounding prosperity, when the foundations of social order seemed forever secure and the world basked in a cloudless sunshine, we have to remind ourselves that Marx sensed the coming storms and convulsions which have broken on our generation, to our infinite cost and tragedy. On any number of questions, events have proved that Marx's reasoning was wrong. But equally they have proved that his insight was right and unerring. The logician in Marx, in the event, has been greatly inferior to the prophet in him. It is the prophetic character of Marxism which has made most valued contributions to contemporary Christian thinking. Marx more than anybody has unwittingly pioneered the idea of original sin *as a sociology*. And it is as a sociology that Christian dogma will impress a secularized generation most. If men to-day, to whom Christian theology and values have become so strange and alien, can be brought to see Christian dogma as sociology, the road to the reascendance of Christian theology will be open and will be trodden once again. The Marxist analysis of our capitalist society has made no mean contribution to the possibility of this in our time. It is most significant that the theologians who wield the greatest influence to-day, men like Berdyaev and Niebuhr, have been men who have felt the spell and the power of Marxism. So in the affinities and resemblances of Marxism to Christianity, but still more in its divergences from Christianity, Marx, without knowing it or intending it, has revealed the ultimate bankruptcy of mere humanistic thinking at its best. And what shall men say, when at last, they taste the bitterness of that bankruptcy? What but the words of the disciples of old—"Lord, to whom shall we go? Thou hast the words of eternal life."

## DISCUSSION.

The CHAIRMAN, Dr. R. E. D. CLARK, said : Many of us have been enjoying the books which Mr. Davies has written during the past few years. He has now added to our indebtedness by giving us a deeply interesting paper on Christianity and Marxism, a subject on which he is unusually well qualified to speak.

Before opening the meeting to general discussion there is one question which I should like to ask. In the paper four main resemblances between Christianity and Marxism are mentioned. Although the author does not pretend to have covered the subject exhaustively, this list is conspicuous for the absence of one or two apparent resemblances which have often been pointed out before, and I cannot help suspecting that Mr. Davies has some motive in excluding them. Thus, writers like Lorenz and Kolnai claim that the proletariat occupies the same psychological rôle as the Saviour in Christianity for, according to the Marxist system, it is the proletariat who bring about the final salvation of man and suffer and die in the process. Then, again, the Communist Utopia corresponds to the final Kingdom of God, though this point has been implicitly raised in the paper. It would certainly appear that Marxism has borrowed from Christianity rather freely. It would be interesting to hear whether Mr. Davies can throw any further light on the matter.

There is one further point of some interest. Can Mr. Davies tell us why it was that Marx supposed that when the Communist Utopia had at last arrived the historic process would cease ? On his view, one would have thought that the classless society would itself differentiate and the whole process start anew. What is there, in Marx's view, about a classless society which will prevent this from happening ?

Dr. RICHMOND WHEELER was sure they had all enjoyed Mr. Davies' able and interesting paper. But, in view of the terrible record of Marxism in practice in Russia and many other countries, and of its avowed basis in implacable struggle, he felt that it had been presented through somewhat pink-coloured spectacles.

For instance, the lecturer had praised the foresight of Lenin (p. 120) and Marx (p. 124), as compared with their contemporaries, in

foreseeing wars, revolutions and convulsions. Surely that was because each in his day was at the centre of the hidden forces of hate and strife, working on an atheistic basis for these evils in as many countries as possible. They knew the power of these evil forces better than well-meaning persons ; and that, as Lenin wrote, they were " limited by nothing—by no kind of law and by absolutely no rule " (*Complete Works*, xviii, 361, quoted by A. N. Field, *Why Colleges Breed Communists*, p. 80).

Dr. F. T. FARMER said : I should like to add my congratulations to Mr. Davies for giving us such a helpful review of this subject, and not being side-tracked on its many subsidiary aspects. I think, myself, it is a subject we should approach with humility for, as Mr. Davies has pointed out, there are features that are good in the philosophy of Marxism as well as bad. Let us remember that, although we have a different and indeed much higher faith, the followers of this new doctrine, which in many ways resembles a religion, have shown an enthusiasm for their cause which has scarcely been matched in the history of Christianity.

If I were asked what I regarded as the most significant feature of Marxism to-day, I should say it was its power to captivate people's minds. I do not think there is anything in history, at any rate since the early spread of the Christian Gospel, which has had anything like the drawing power that Marxism has on the world to-day. What is the reason for this ? I may be wrong, but I think there is only one answer, and that is that Marxism has actually achieved certain of the practical aims which Christianity has preached and striven for but still not achieved. I need not enumerate these in detail ; they are too familiar to us. To mention one or two, the recognition of the ordinary common folk as worthy of the highest place in the kingdom, the provision of necessities for the poor before luxuries for the rich, the substitution (to some extent at least) of the competitive spirit by one of service and co-operation for the good of all.

It is surely because of these that millions of people the world over have been swayed by this new " religion," and find themselves in a dilemma whether to follow it or Jesus Christ. As Stanley Jones relates of an Indian Christian, " I see the Russian Communists

producing something in an unchristian way which we ought to, but cannot, produce in a Christian way." That is the acute issue facing the Christian Church to-day. How are we going to meet it ?

Mr. A. KROLENBAUM said : In the course of his paper the lecturer suggested that Marxism is bound to make its followers conscious of a void in their souls, because it (Marxism) has not " the words of life." I found this true in the works of outstanding men who had made a name for themselves in the Marxist movement.

But this was true, in the main, until Russia's entry into the war. Up to that moment men like Max Eastman, Eugene Lyons, and some of the younger generation of English poets confessed their error of worshipping the Marxist State, which, experience taught them, was not salvational but totalitarian, as Hitler's or Mussolini's. Since, however, the Russian armies proved victorious, this self-analysis has stopped, or, at the very least, been postponed. In my experience from day to day as a missionary, I find the people exceedingly inclined to worship Marxism with the former fervour.

Britain's alliance with Russia implies our having to live in harmony with each other in the post-war world. What points of contact, then, are there between Christianity and Marxism to enable them to co-exist side by side, instead of being, as hitherto, mutually exclusive ?

Mr. D. C. MANDEVILLE said : I am concerned with the Marxist conflict as seen in industry—the two big classes in opposition. When does a revolution occur ? Mr. Davies has analysed the position. As long as the owner-class continues to give stimulus and increase to the production of wealth, there is no revolution. The despairing offer of " bread and circuses "—more social services and better working conditions—is of less importance and effect than progressive management, if by exercise of the latter revolution may be indefinitely postponed. " Progressive " does not necessarily mean the same as well ordered, or efficient, but in the writer's experience seems to represent a practice that is fundamentally Marxist.

This form of management does not consist in the exercise of arbitrary authority, where sanctions spring from the wealth, position



or superior experience of an individual, but in an appraisal of the material features of the situation and of its demands on manager and worker alike; not, "Do this, because I say so," but "The situation demands that we act so and so."

Again, the stimulus it gives to progress is not (as might be thought) continuous, well ordered, tending always to greater efficiency; but dialectical, striking across from extreme to extreme, seeking the full-bodied flavour of change rather than the more subtle reward of exact adjustment.

So long as this flavour of management remains and grows, the writer feels that Christians in this country would do well to take more heed of it—of the effective Marxist practice of our managing classes, than of the somewhat irrelevant Marxist theory of our Communists.

#### WRITTEN COMMUNICATION.

Rev. H. S. CURR, Ph.D., wrote: The Victoria Institute is fortunate in having secured such a paper as this, dealing with principles and problems which underlie the upheaval which has been troubling Europe since the beginning of the present century, and whose end is not yet by any manner of means. The clear and systematic fashion in which Mr. Davies discusses Marxism makes it comparatively easy for a wide circle of readers to grasp firmly and intelligently the main points at issue. That is done all the more effectively because Mr. Davies has been at such pains to do justice to those phases of this philosophy which can be described as eternally true.

I do not propose to refer to the discrepancies between Marxism and Christianity, such as the former's failure to recognise that the heart of man is incurably evil. The paper's treatment of these questions is so adequate that it may be left to speak for itself. I would rather confine my observations to two reflections. One is concerned with a radical defect in Marxism, and the other with an outstanding virtue.

The defect arises in the failure of Marx to take sufficient account of historical and geographical considerations. The *prima facie* impression, created by the information given by Mr. Davies, is that the outlook of Marx was confined to France and England. His characteristic teaching seems to have for its background the slum-

dom of nineteenth-century London, of which he doubtless knew only too much by melancholy experience. The echoes of the French Revolution also kept ringing in his ears. He appears to be so obsessed with his milieu, that he either forgot, or failed to investigate the history of mankind in all parts of the globe, ancient and modern. That would not require to be very profound or extensive. If he had read carefully the history of his own nation, as recorded in the Old Testament, with the comments of the prophets upon its course, he could never have simplified the march of history as he tried to do. He seems to use the famous framework of Hegel as a kind of bed of Procrustes, into which events must be fitted nilly willy. He appears to know nothing of the history of the United States of America during the period in which he lived. As for ancient history dealing with mighty empires and civilisations in all parts of this planet which have flourished for a season like green bay-trees, and then disappeared, leaving but few traces behind them, it seems to be impossible to explain the ebb and flow of its tides by Marxian principles.

The last words of the preceding paragraph fitly introduce one of the great merits of Marxianism. It serves as an eloquent and efficient reminder that human history is governed by laws like the processes of nature, operating in complete independence of man, and compelling his respect and obedience by tremendous penalties and tremendous prizes. Shakespeare, as usual, crystallises this truth in a way that cannot be bettered.

There's a divinity that shapes our ends,  
Rough-hew them how we will.

(*Hamlet*, Act V, Scene 2.)

It is not very easy to define the methods of this overruling factor. Its ways are like those of the wind which bloweth where it listeth. As far as these can be ascertained, it is hard to reconcile them with the Hegelian triad, thesis, antithesis, synthesis. Sir Isaac Newton came nearest to finding the secret when he said that action and reaction are equal and opposite. That is illustrated by the two Jerusalems. There is the old Jerusalem, with its sad and sordid story, and there is the new Jerusalem, of which it is written: "And I saw a new heaven and a new earth; for the first heaven and the first earth are passed away; and the sea is no more. And I saw

the holy city, new Jerusalem, coming down out of heaven from God, made ready as a bride adorned for her husband" (Rev. 21, 1-2 R.V.).

#### AUTHOR'S REPLY.

The points raised by Dr. Clark are, by implication, dealt with in my paper. (1) Since the proletariat is, in the Marxist assumption, the last class in the historic process, its messianic function is implied in its task, which is to liquidate class society altogether. The proletariat is the chosen instrument of history to effect this culmination. (2) Again, on the Marxist assumption, the purpose of history is to arrive at the final synthesis which will reconcile the opposites that have appeared in the course of historical development. That final synthesis will be the merging of the working class into the whole of society—the identification of the whole society with the last class in history. Marx does not say that history will then cease, but the old dialectical historical process will cease. Engels, Marx's collaborator, states that then true history will begin.

Dr. Wheeler seems to imply that the superior insight of Marx and Lenin was due to the fact that they were greater sinners than their capitalist brethren, which, if it were true, would put a premium on vice. But it is not true. It is a fact that both Marx and Lenin showed a better understanding of the social forces of their time than their contemporaries, partly because of their hostility to them, partly because they had a philosophy of history, where most of their contemporaries had none whatever.

It is not true to say, with Dr. Farmer, that Communist zeal and devotion have hardly been matched in the history of Christianity. They have been more than matched in the devotion and heroism of the mission field. Neither can I accept Dr. Farmer's suggestion that the popularity of Communism is due to its achievement of Christian ideals, though in a non-Christian way. Communism in Russia has not, in fact, raised the economic status of the very poor. There are greater inequalities of wealth in Russia than in Britain or America. It is precisely the record of Communism in Russia which has contributed to the unpopularity of the Communist Party in Britain and America.

Mr. Mandeville's point re progressive management raises too large an issue for comment here, except to say that the essence of Marx's case against capitalism is precisely that it makes "progressive management" as envisaged by Mr. Mandeville impossible. This is what Marxism affirms. Whether its affirmation is true is another matter.

I was very interested in Principal Curr's communication. There is a good deal of truth in the Principal's point about Marx's limited historical knowledge. Marx knew a good deal of European history in its modern phase. But he certainly did not seem to show the same familiarity with ancient history. I would not altogether agree with Principal Curr's point that Marx seemed to confine himself to France. He paid at least equal attention to Britain. But, on the whole, I think Principal Curr's contentions are sound.

In reply to Mr. Krolenbaum's remarks, I should say that our alliance with Russia is dictated by natural interests, not by any possibility of philosophical identity. We must, in fact, avoid the danger of obscuring the ideological differences. It is to the interest both of Russia and Britain to co-operate in international affairs. But no national interest can ever make Communism, based on atheism, anything but repugnant to any good European.

## 856TH ORDINARY GENERAL MEETING

HELD AT THE NATIONAL CLUB, 12, QUEEN ANNE'S GATE,  
LONDON, S.W.1, ON MONDAY, MAY 1ST, 1944, AT 6 P.M.

F. T. FARMER, ESQ., B.Sc., PH.D., IN THE CHAIR.

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

The CHAIRMAN then called upon Mr. E. H. Betts to read his paper entitled "The Contribution of Science to Religious Thought" (being the Gunning Prize Essay, 1943).

The Meeting was later thrown open to discussion, in which Dr. White, Air Commodore Wiseman and Dr. Farmer took part.

The following election has been made: F. W. Martin, Esq. (Fellow).

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### *THE CONTRIBUTION OF THE SCIENCES TO RELIGIOUS THOUGHT.*

(being the Gunning Prize Essay, 1943.)

By E. H. BETTS, Esq., B.Sc.

**I**N two remarkable passages Scripture distinguishes for us the two spheres of human knowledge which may be known as science and Christian thought. We have, first, the statement that "The invisible things of him (God) from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead." (Romans i, 20.) The eternal power and deity of God, then, which are a class of invisible things, are to be apprehended from the contemplation of the visible things around us. The second passage reads: "We speak the wisdom of God in a mystery, even the hidden wisdom which God ordained before the world unto our glory;" and of this wisdom and its secrets, the writer adds, "God hath revealed them unto us by his Spirit" (1 Cor. ii, 7, 10). The knowledge here spoken of constitutes another class of invisible things and is attainable only by revelation.

The two spheres are differentiated by the two modes—observation and revelation—whereby the respective bodies of knowledge are attained. The former mode, observation, of course implies no development of the elaborate or exact methods which we see in modern science. It is simply the commonplace observation

of nature. But out of this, science, as we know it, has grown, for it is true that science is merely the prolongation and elaboration of plain observation, having for its function the enlargement of our sphere of observation and its reduction to order. The latter, the revelation to men of hitherto veiled mysteries (which will be found to be centred in Christ and to include the counsels and purposes of God for man) gives us Christian thought proper. For in one sense Christian thought can be engaged with any topic. Nevertheless it is legitimate to include with this inner sphere of truth, any instruction which has as its aim our adjustment to God in relation to the subject of instruction. Since for such instruction, as for what we have called Christian thought proper, we are equally dependent on revelation, our two domains are now sufficiently defined for present purposes. Science, Scripture asserts, provides unequivocal evidence of the eternal power and deity of God; revelation instructs us in the thoughts, the purposes, the ways and the very nature of that God and in our due relations with Him.

It is well at the outset to compare the nature of Christian thought with that of the knowledge derived from the sciences. The latter give us scientific laws which are, in brief, general statements based on experiment and observation. These processes assume something which is incapable of proof, namely, the principle of the uniformity of nature. If such an assumption underlies every scientific formulation it must then be admitted that scientific knowledge is of the order of probable belief. This is admittedly, in general, a probability amounting almost to certainty—a certainty upon which we do not hesitate to act and to stake our health, our safety and our very lives in a thousand ways in ordinary life and especially in industries based on scientific knowledge. Nevertheless scientific knowledge does not give us absolute certainty. It gives us highly probable belief.

Turning to religious knowledge, we note that it is based on faith, that is belief. It is apprehension resulting from the acceptance of testimony—the testimony of God. Both religious and scientific thought are, then, of the nature of belief, or something held by conviction to be true but incapable of logical proof. Nevertheless both are capable of verification by experience, and it is widespread and repeated verification that gives scientific knowledge the certainty it has. One's belief in God and in the truths of Christianity is deepened and confirmed by the experiences of life, just as one's conviction of the truth of, say, the

Principle of Equivalence in the study of heat, is confirmed by every physical experiment in which measured transformations of mechanical work into heat are involved.

Looking next at the field of view or the subject matter of the two forms of knowledge, we note that the sciences suffer a limitation to which Christian knowledge based on faith is not necessarily subject. Science may take as its object anything and everything within the range of observation, but Christian knowledge is limited only by the testimony it believes, and therefore takes within its scope fields of knowledge that are outside the scope of Science. This implies that what is characteristically Christian thought and what is characteristically science are complementary fields of knowledge. For although in places they may deal with the same material, their objects and their problems, as indeed their methods, are different. Christian thought, and of course pious Jewish thought as well, even when it deals with the objects of nature so treats of them as to relate them to God and to refer the mind observing them to God. No one would regard this as true of science.

It follows that, in considering the relation between religious thought and science and possible contributions of the latter to the former, there is a rule of profound importance to be observed—a rule derivable from consideration of the very nature of faith. It is this. If faith and science are brought into confrontation science has no primacy over faith. There can be no apology for this dethronement of science from the position often demanded by her worshippers, so long assumed by her when faced with the doctrines of Christianity, and even ceded to her by many whose allegiance is due elsewhere. "Let God be true but every man false" is of the very soul of faith. "That thou mightest be justified in thy sayings and mightest overcome when thou art judged," is faith's address of fealty to God, and science must enter the halls of religious thought cap in hand if those halls are to be owned as the dwelling places of true *Christian* thought. There science may *serve*—and serve honourably and competently as handmaiden to faith, but not dominate as queen or judge. At the risk of unduly labouring it, the point must be pressed and emphasised. Only when faith, that is unquestioning reception of the testimonies of God, is allowed primacy, can science function appropriately in the furnishing and adjustment of Christian thought. We cannot go all the way with the hypothetical declaration of the trusting old lady who avowed that if God

had said that Jonah swallowed the whale she would have believed Him—for the simple reason that it was merely hypothetical and expresses no real conflict between science and faith ; but if more students of Scripture had shown equal good will towards the testimonies of God there would to-day be notably less confusion of thought and more Christian stability and steadfastness.

Christianity is essentially and uncompromisingly theistic. It presents a single Supreme Being who is complete in Himself and who is the author and sustainer of the universe,\* from which He is distinct and from which He is to be distinguished as a living, thinking, willing and therefore personal being. This view of the divine nature is virtually expressed in the opening verse of Holy Scripture : *In the beginning God created the heavens and the earth.* and is affirmed in the fundamental article of the "Apostles'" Creed : *I believe in God the Father Almighty, Maker of heaven and earth.* Let us endeavour first of all to see what modern science has to teach that is in any way related to these basic avowals of Christian faith. Theologians of repute waste little or no time nowadays seeking *à priori* "proofs" of the existence of God. It is felt that the only rational proof is of the nature of inference : a conclusion may be drawn from many kinds of data including the existence of the visible entities all around us. Now faith, as we have seen, is not inference. It is direct apprehension based on testimony. But while faith, as such, does not seek proofs, it is the basis of Christian thought about things which come also within the scope of the Sciences, and is therefore open to attestation, confirmation and clarification from them. Such must be the nature of the contributions that science may be able to make to these great beliefs which form the foundation and the footings of Christian thought. "He that cometh to God must believe that he is" (Heb. xi, 4) : that is faith ; "for the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead" (Rom. i, 20) : that is the ratification of faith and the rebuke of unfaith, "so that they are without excuse" (*ibid.*). Holy Scripture, as we have already seen, in the above cited verse explicitly and elsewhere implicitly gives its abundant approval to the contemplation of nature as an activity calculated to con-

\* The term is used in the old-fashioned sense, viz., *the whole created scheme of things*, and not in the modern scientific sense in which, e.g., our astronomers speak of "island universes."



firm the written utterances of Him whom we shall be led either in faith or through reason to invoke as the author of the phenomena of nature. "Through faith we understand that the worlds were framed by the word of God so that things which are seen (*to blepomenon*, the visible order as a whole—*Westcott*) were not made of 'things which do appear'" (*phainomenōn*, things which appear—cf. "phenomena"—as in contrast with the eternal, invisible things—see 2 Cor. iv, 18 (Gk.)).

The *undated* asseveration, "In the beginning God created the heavens and the earth" stands entirely beyond the frontiers of science. To this noteworthy fact science itself bears convincing testimony. Even the mechanical materialism of the nineteenth century recognised its truth.

"It appears to me," wrote T. H. Huxley, "*that the scientific investigator is wholly incompetent to say anything at all about the first origin of the material universe. The whole power of his organon vanishes when he has to step beyond the chain of natural causes and effects. No form of nebular hypothesis that I know of is necessarily connected with any view of the origin of the nebular substance.*"\*

Huxley's view of the relation of science to the study of origins is illustrated and corroborated by the attitude of his contemporary Tyndall, who in his pensive "Musings on the Matterhorn" allowed, he relates, his thought to run back through molten worlds "to that nebulous haze which philosophers have regarded, and with good reason, as the proximate source of all material things."† Tyndall's thought ran back a long way but had to rest content (and yet perhaps hardly content) with the nebular haze as a "*proximate source of all material things.*" And in the present century, to cite again an avowed materialist,

"Dialectical materialism does not state the nature of matter. 'For the sole property of matter,' wrote Lenin, 'with the recognition of which materialism is vitally concerned, is the property of being objective reality, of existing outside our cognition.'"‡

\* *Nineteenth Century*, 1886, cited by W. R. Inge, *God and the Astronomers*, p. 241: italics here added.

† *Loc. cit.*

‡ *Dialectical Materialism and Modern Science*, J. B. S. Haldane, who cites Lenin, *Materialism and Empirio-Criticism*.

Thus the newest phase of materialist philosophy—which bases itself on a very wide sweep of modern science\*—is forced, as was the older materialism, to regard matter as *given*, and to shelve all questions of its origin. This recognition of the impossibility of an interminable causal regress is science's tacit and grudging admission of a limit set to its investigations into origins and therefore of the presence of mystery in the universe—of the inexplicable, the occult. Faced with this, the *malaise* of men of science is apparent. To come down to very recent days, Sir Arthur Eddington displays not a little discomposure, quite losing, in fact, his logical coherence, when, compelled by consideration of the great Entropy Law to admit that the universe must have been once “wound up,” he immediately repudiates the idea as incredible and lugubriously admits, “But I can make no suggestion to evade the deadlock.”† Sir James Jeans keeps rather better faith with his own findings. In view, *inter alia*, of the universality of the Entropy Law he asserts that, “Everything points with overwhelming force to a definite event, or series of events, of creation at some time or times, not infinitely remote,”‡ and again, twelve years later, “There must have been what we must describe as a ‘creation’ at a time not infinitely remote.”§ The present Astronomer Royal's comment on this reads thus,

“What preceded this uniform distribution of matter? How did it come into existence? Was a definite act of creation involved? *I do not pretend to be able to give any answer to these questions. . . . Astronomy cannot take us any farther back in time.* I am writing as an astronomer, not as a metaphysician or as a theologian, and I prefer therefore to leave these questions unanswered.”||

These citations from men of science unite in demonstrating that in following the causal regress—a pursuit which is legitimate and proper to science—there is forced upon the mind, sooner or later, the recognition that the recession is endless. But the human mind revolts against the “infinite regress” and requires a resting place of some sort somewhere in the chain. The materialist, whether mechanical or dialectical, finds this as we have seen in matter as his ultimate datum. This however leaves

\* See, e.g., Haldane, *loc. cit.*

† *Nature of Physical World*, Ch. 4.

‡ *Eos, or the Wider Aspects of Cosmogony*, 1928.

§ *Mysterious Universe*, Ch. 5 (1940 reprint).

|| H. Spencer Jones, *Worlds without End*, pp. 248, 249. Italics here inserted.

the problem merely thrown back and still unsolved. Where candour rules the problem is admittedly insoluble to science. *There is in the very existence of the material universe that which is beyond the power of science to explain.* There remain two alternatives to human thought, and only two. Either we must adhere to the methods of science and leave the universe unexplained or we must step outside the sequence. This latter course Christian thought takes. It admits, or rather it asserts, complete dependence on a Prime Mover who must be essentially of another order and therefore, and again, essentially, beyond the range of scientific thought. "If you think strongly enough," wrote Lord Kelvin, "you will be forced *by science* to the belief in God which is the foundation of all religion."\* "By faith," declares the writer of the Hebrews Epistle, "we apprehend that the worlds were framed by the word of God, so that *things that are seen were not made of things which do appear.*"

We see then that the very rationalism of science in its search for origins lands us into the irrationality of the "infinite regress." Human thought in its frailty, as exemplified by the very organon of research, is proved incompetent to settle the question of origins, which thus stands out as the great prime surd of nature. Owing the frailty and confessing its dependence, Christian thought turns to One who transcends both nature and science—the Creator, and in so doing accepts its true place before Him, its creaturely place of *dependence*.

We may now well ask whether science throws any light on this creaturely dependence to the confession of which it has been, all unintentionally, instrumental in leading us. That Holy Scripture makes the point should hardly need mention. It is difficult to turn to a single chapter in either the Old or the New Testament in which it is not either asserted or implied, or both. And, further, the principle is in Scripture not limited to the need for revelation concerning the origin of the heavens and the earth. It will be found, though this cannot here be entered into in detail, that it is regarded as such an essential and fitting creaturely quality that all our relations with God and all our service for God should be marked by it. The Holy One who served as none other has served said, "Preserve me, O God, for in thee do I put my trust . . . thou maintainest my lot" (Psalm xvi, 1 and 5), while holy men of all ages have delighted in

\* *Nineteenth Century*, June, 1903, cited by Inge, *loc. cit.* (italics added).

the principle. And what, then, of Science? *Its recent teachings lay bare such conditions in the universe as to impose on man a sense of his utter physical insignificance, his utter helplessness under the contingency of even relatively slight physical changes and of the impending if distant termination—divine intervention apart—of both himself as a race and of everything that conditions his existence.* It is the amazing disclosures of our astronomers and physicists, mainly, that have forced all this upon our often unwilling ears. First, we learn that from the material and spatial point of view we must banish geocentrism from our thoughts not only, as taught by Copernicus, of our own solar system, but also of the galactic system of stars of which the sun is merely a rather more than average-sized member—which galactic system is itself only one amongst millions of “island universes.” The earth is not the hub of the solar system. The solar system is not centrally placed in the galaxy. The galaxy is only a tiny portion of the whole universe. Actually the centre of the galactic system is estimated to be some 30,000 light years\* away from us and is placed in the direction of the dense star clouds to be observed in the constellation Sagittarius. The diameter of the galactic system is about 150,000 light years. *In this universe, the earth, the home of man, is not the material centre of things.*† Further, the earth, metrically regarded, is relatively a minute body in the extreme. It may be likened in magnitude to an invisibly small speck of dust relative to the multitudinous and unimaginably immense orbs by which it is surrounded in space. And the space in which the earth and these greater bodies—as well as other and lesser ones—move, is so immeasurably vast in comparison with the bodies themselves that “even if every one of them were known to be crowded as full as it could hold with perfectly happy creatures, it would still be difficult to believe that life and happiness were more than a bye-product to the power that made the universe.”‡ *In this universe, the earth, the home of man, is, materially speaking a minute and insignificant speck.* Further, in all probability, life as found on the earth, is not and could not be found on any other planet of our system or indeed anywhere else in the uni-

\* A light year is a unit of length invented to reduce the number of figures required in stating the immense astronomical distances. It is the distance traversed by light in a year, that is nearly six million millions of miles.

† This, as we shall see later on, does not preclude the doctrine of anthropocentrism.

‡ Citation from C. S. Lewis, *Problem of Pain*, p. 1.

verse. Astronomers are not unanimous on this point, but at any rate, only in a slender temperate zone surrounding our sun are the physical conditions requisite in their co-ordinated totality to sustain life actually found. As far as science can reveal, gravitational force, atmospheric composition, atmospheric pressure, surface temperature, the existence and the proportions relative to land of oceans of water—one or more of all these fall below or exceed the limits critical for life in every other region of the universe; and in the vast and illimitable reaches outside the almost infinitesimally narrow friendly belt the divergences from the critical limits are so great as to be utterly destructive of all physical life. *The narrow orbital zone in which life flourishes is surrounded by a universe marked by conditions most bitterly hostile to life.*

The suitability to life, and particularly human life, of the physical conditions on earth, envired though this earth is by worlds and systems totally unsuitable and totally unadapted for the support of any life at all, has often been noted, and details made available.\* One or two *samples* only of striking arrangements and balancings can be given here. The mass of the atmosphere and hence its pressure, adapted as this is for the support of human life by breathing, is determined by gravitational force which itself is determined by the mass of the earth which is in turn determined by the size of the earth. If a decrease of 800 miles (one-tenth only) in its diameter were effected, the earth would be reduced to three-quarters of its present mass and the atmosphere then gravitationally retained would be so lessened that the greater part of the earth's surface would be covered with thick layers of ice and snow, and the remainder subjected, on account of the rarefaction and therefore diminution of the heat-retaining properties of the atmosphere, to such extremes of temperature that at most low forms of life, such as lichens only, could survive. *The maintenance of the temperature suitable to life is dependent on the size of the earth.* Further, we have a calculation concerning the relative proportions of terrestrial waters to the surface area of the globe. To double the mass of

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\* Reference may perhaps be made to a paper by Dr. Brian Porter Sutherland on "Inanimate Nature, Its Evidence of Beneficent Design," read at the Victoria Institute on May 12th, 1941; also "The Bible and Modern Science," by Lt.-Col. L. Merson Davies; "Man's Place in the Universe," by Dr. R. Russell Wallace, is full of "arguments from design" which could never be attributed to bias in favour of the Scriptures.

the earth and therefore at least double the volume of water contained in it, the diameter would have to be increased by some 2,000 miles (one-quarter) only. But such an increase would extend surface not to double, but only to one and a half times the present surface. This ratio change would result in miles-deep oceans covering the whole surface of the globe. Terrestrial life would have no footing. *The dimensions of the earth are just what they should be to give a dry surface as a home of life.* Actually, as Russell Wallace points out, a study of the larger planets seems to indicate that the mass of water varies more rapidly than the mass of a planet itself with increasing size. This makes the water-land ratio-change even worse than above indicated, and, into the bargain, the problem of adaptation itself a matter of much finer adjustment. But, further, the atmosphere also would be, by any such increase of terrestrial mass, rendered too heavy and dense to support human life as our bodies are now constituted. *The atmosphere is of the correct pressure for the support of life in virtue of the earth's suitable size.* Now, further still, a consideration of the above (somewhat condensed) statements suggests—what is true—that a “designer” in adapting the size of the earth to suit the atmospheric density to the needs of life might have difficulties about the mass of water. The facts of geo-physics show, indeed, that *a smooth spherical globe* of size sufficient to retain by gravitational attraction the correct atmosphere for human beings would contain enough water to cover its whole surface to the depth of two miles. This additional problem is solved by the shaping of the ocean beds, which are so hollowed out—with their abrupt deeps (35,400 ft., near the Philippines; mean depth of ocean floor, 12,000 ft.) as compared with the elevation of the land (29,000 ft.—Everest; average elevation above sea level 2,300 ft. only) that not only is there plenty of dry land-surface, but the proportions of water-surface to land-surface are also found so adjusted as to produce the amount of evaporation and therefore of deposition, viz., rainfall, snowfall, etc. (and therefore again the degree of glaciation) to make the earth well suited as a home for life. *The size and the shape of the earth are co-adapted to the needs of human life.*

These samples of modern scientific investigation are a very fragmentary selection only from multitudes. They present a commentary from recent science on the age-old words of Job in which he writes of the designing of the earth in terms borrowed from those descriptive of the planning of a residence: “Where

wast thou when I *laid the foundations* of the earth? Declare if thou hast understanding. Who *determined the measures* thereof, if thou knowest? Or who *stretched the line* upon it?" (Job xxxviii, 4-5, R.V.).

But if science exposes the littleness and frailty of man and the relative minuteness of the earth as his abode, Holy Scripture teaches precisely the same doctrine, and, moreover, bases such teaching, just as science does, on astronomical considerations. "When I consider thy heavens, the work of thy fingers, the moon and the stars which thou hast ordained, what is man that thou art mindful of him, or the son of man that thou visitest him?" (Psalm viii, 3 and 4; cited also in Heb. ii, 6). There is no geocentrism here. Science and Scripture are in harmony and the former abundantly ratifies and indeed re-inforces the "moral" of utter humility in the presence of the works of God taught by the latter. Nor does the passage selected stand alone. Psalm xix puts forward the impressiveness of the heavens as a fitting background against which is to be viewed *inter alia* "the fear of the Lord, standing fast for ever." If the science of David's day, science which stood at the early descriptive stage, led his mind to adopt an attitude of reverential fear and humility, modern science, far from contradicting the lesson, re-inforces it a thousand-fold. And Psalm xxxiii says "By the word of the Lord were the heavens made, and all the host of them by the breath of his mouth . . . let all the inhabitants of the world stand in awe of him" (vv. 6 and 8). Nor is the view here seen to be common to science and scripture a strange thing to theology as distinct from Holy Writ itself. Many commentators of many ages draw from the same considerations of celestial phenomena the lessons here stated—the recognition of man's littleness and the propriety on his part of humility and owned dependence on the Great Ruler of the universe. Incidentally, how splendidly free from all the absurdities of astrology is Holy Scripture whenever it touches on astronomical topics. In this respect how unlike the laxity and limpness of the modern untaught mind was that of the equally "untaught" shepherd psalmist! Modern Science as distinguished from popular retrograde thought scorns this pseudo-science just as three-thousand year old scripture refused to defile its pages with the least suggestion of it.

There is a significant analogy between the physical savagery and malignity towards life of the universe outside the restricted

belt known to be fitted to support life on the one hand and that "great and terrible wilderness wherein were fiery serpents and scorpions, and drought, where there was no water" on the other hand, into which latter the Lord, the God of Israel, *deliberately* led his people with the express object of teaching them humility and dependence on himself. To this end God not only selected the wilderness route, but detained Israel in it for forty years, and through Moses urged upon them to *remember* "all the way which the Lord thy God led thee these forty years . . . to humble thee and to prove thee . . . to do thee good at thy latter end" (Deut. viii). Far from apologizing for the apparent cruelty of his ways, the Lord specifically and purposely draws attention to them. Likewise, far from shunning the exposures afforded by modern science of the apparent unsuitability to life of the physical conditions of the universe in general, Christian thought sees in them fresh evidences of a planning disciplining Mind, the mind of One who would have man walk in ways of conscious dependence, drawing all his strength and security from the proper Source—from Him who has with such grandeur displayed his eternal power and Godhead. Unfaith, viewing the physical antagonism to life of the vast stretches of cold dark space and the inexpressibly cauldron-like material concentrations sparsely scattered throughout that space, regards the universe as no suited dwelling-space for life and is prepared to say that life "freakishly" and "by accident" must have "stumbled into it."\* Faith, and faith-engendered thought, in full view of all the same scientific data, but not leaving out of due account, as does unfaith, the maintenance of those fine balancings and correlations of the physical factors on which life so narrowly depends, sees in the apparent environmental anomaly superlative Design—design which has as its object to keep man in moral nearness to God and to give even to the votaries of scientific research demonstration of man's utter dependence. Beyond the physical environment faith sees an "other" who is acclaimed as the real environment and responds to Him, "Lord, *thou* hast been a dwelling place for us throughout all generations" (Psalm xc).† We have here, surely, not merely a splendid contribution of the sciences to Christian

\* *The Mysterious Universe*, Ch. V. But, be it noted, these phrases, to Sir James Jeans, represent an outworn theory now discarded.

† Slightly nearer, in literal rendering, to the Hebrew. Italics also added. Note that the name of God here significantly used is Adonay, the Universal Ruler.



thought, but an instance, *par excellence*, of the mutually complementary nature of the two spheres of knowledge.

The analogy could be somewhat developed, for the wilderness journey was for the Israelites, a temporary episode, to be superseded by the congeniality and plenty of the promised land. So too the present heavens and earth are to pass away, folded up as a discarded vesture, and in their place "we according to his promise look for a new heavens and a new earth wherein righteousness dwells" (2 Peter, iii, 13). Here also the plain bold Scriptural prediction is elucidated by modern science. We refer at this point to no universal "heat death" resulting from the perpetual and uninterrupted validity of the law of entropy, for no instructed Christian gives such a supposed demise for the universe a place in his scheme of prophecy. It is the electronic theory of the atom and the resultant conception of the "insubstantiality" of matter that furnish the contribution of science at this point. The epoch-making researches of Sir Joseph Thomson, Professor Niels Bohr and Lord Rutherford—to mention only three outstanding workers amongst a host during the last forty years—have shown that the atoms of matter are not only not "hard" and indivisible but are highly penetrable and divisible. Their components are protons or centres of positive electric charge\* and electrons or centres of negative electric charge in part combined with the protons to form a central nucleus and in part probably revolving around the nucleus, the electrons varying in number according to the position in the table of chemical elements of the particular substance † The number of electrons in the make-up of the atom is therefore an important factor determining the chemical properties of each particular substance. Determinations of the mass and size of protons and electrons indicate that the atom is largely constituted of "emptiness." It is further revealed to be the seat of tremendous stores of electromagnetic energy—energy which science has not learned to tap, although it has witnessed its effects. It is probably due to the tapping of the enormous reservoirs of energy stored up in atoms

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\* The term "charge," carried over from the physics of massive bodies to atomic physics, should not be allowed to mislead. In macroscopic science it necessarily implies the existence of something material bearing the charge. This must be discarded in thinking of the constituents of the atom.

† Neutrons and positrons are left out of account as it is not yet certain that they are permanent constituents of the atoms. Their existence may yet lead to serious modifications of our ideas about the status of the other constituents, viz, protons and electrons.

that the sun is able to supply radiation at such a prodigious rate as it has done for a great length of time. The same source of supply would of course be available in other stars like the sun. A rough idea of the magnitude of atomic energy may be gained from the observation that if, instead of relying on the ordinary chemical combustion of coal in the furnaces of a transatlantic liner we were able to release and utilize the internal energy locked up within its atoms, a handful of coal-dust in the bunkers of the largest existing liner would suffice for many Atlantic crossings. Now this picture of the internal architecture of the atom together with accompanying theories of the "annihilation" of matter, or better its transformation into radiant energy, serves to clarify the mental imagery in terms of which the scientifically informed Christian pictures out the foretold dissolution of the heavens and the earth and the making of all things new. The passage of matter into energy would scientifically account for the "dissolution" of the universe predicted for a day to come. The consequent unlocking of the stupendous stores of atomic energy never yet tapped by science would account for the heavens being "on fire" and for the "fervent heat" with which the elements shall "melt," these very words describing the results of a process almost certainly known to be actually taking place in the indescribably hot interiors of the sun and other large stars. The Apostle Peter (see 2 Peter iii, 10-13) was doubtless not instructed in modern physics and did not attempt to deal in naturalistic explanations of the mechanism of fulfilment of the prophecies of which he was the instrument. Consistently with the character of almost all the rest of scripture he wrote of events both past and future in such manner as to point the mind and the conscience to God.\* But modern science as we have hinted has a function complementary to this. It enables the believing mind to "think" these changes. It strongly denies to the unbeliever any right to level at these predicted shapings of things to come the charge of being "un-thinkable."

Tentatively, and with reverence, we suggest that the Christian's thoughts about the resurrection of the body also may become more vivid and more acceptable to the active believing mind through an acquaintance with the modern theories of the con-

\* But some of the older Scriptures, as Job and certain non-Davidic Psalms, give hints of a knowledge of Nature apparently hidden from (or lost to) other writers.

stitution of matter. The attractively naïve Biblical accounts of the resurrection of the Lord Jesus Christ are apt to raise problems in the minds of thinking Christians who are only acquainted with the superficial properties of matter. Who indeed has not lingered with wonder, if not difficulty, over the union in one risen body of apparent materiality and immateriality? "Handle me and see", said the risen, Lord "for a spirit hath not flesh and bones as ye see me have" (Luke xxiv, 39); but the same risen Lord "when the doors were shut where the disciples were assembled . . . came . . . and stood in the midst" (John xx, 19). Now we do not claim that a knowledge of the electronic theory will itself completely resolve the discord, but it will certainly help the mind in a way in which, say, nineteenth century ideas could not help. On the contrary these imposed further real difficulties; for how could a solid body composed of hard substantial atoms compressed together into a mass be thought of as passing through another similarly composed body? But if we think of the modern atom with its fine-spun texture of distantly spaced infinitesimal whirling points of electric force—for it offers nothing more "substantial" than that—at least half our difficulties vanish, for our matter, so constituted, becomes plastic and tractable, readily assuming various forms and properties, *given the required control*. We have already seen that the control of atomic energy is beyond human reach. This is only one of the many limitations set to human power. But faith attributes all power to the risen Lord. Not merely atomic energy but all the forces, electromagnetic or otherwise which hold electrons in their orbits or regulate the electronic "jumps" from one orbit to another—with release or absorption of radiation in determinate quanta of "action"—all are within his control, "by whom all things consist" (Col. i, 17).\* It is easy then to visualize a "changed" or a risen body to be subject to fashioning into tangibility or intangibility, to susceptibility to gravitation and the laws of dynamics, or insusceptibility to them, to high penetrability or the most resistant solidity—in fact to perfect mutability of properties and perfect versatility. We gratefully accept the contribution of modern science to our thought-forms as we more deeply enter into both the feelings and the thoughts of the Apostle Paul when he says

\* This has been rendered "All things subsist together in Him," and is not necessarily less true of the parts of the atom than of the parts of the universe as a whole: "all coheres in Him." (Moffatt.)

—not perhaps without a touch of wistfulness—“and we shall be *changed*.” If, finally, we be criticized for resting mentally on the already superseded Bohr model of the atom rather than utilizing the equations of wave mechanics we plead first, that the ablest exponent could not extract a helpful “picture” from these equations, and, secondly, that at any rate they would certainly add nothing of substantiality to the picture of the atom to which we have given preference.

But paradoxically enough, Holy Scripture, even in the very passages in which it remarks the littleness and insignificance of man in relation to those great works of God, the celestial bodies, affirms man’s dignity and exalted standing—his uniqueness indeed as compared with the remaining works of God’s hands, particularly the animals of the lower creation. “Thou hast crowned him with glory and honour; thou hast set him over the works of thine hands. Thou hast put all things under his feet, all sheep and oxen, yea and the beasts of the field, the fowl of the air and the fish of the sea and whatsoever passeth through the paths of the seas.” (Psalm viii, 5-8\* ; Heb. ii, 7-10). Man was created, indeed, Scripture teaches, in the image of God and after his likeness, and being constituted lord of creation was to subdue the earth. Primarily he was himself a truly noble creature fitted to be a creature-companion of God. Such was man in Adam in the intention of God. Such—and much more—man in Christ will be in the redeemed scheme of things. *According to Scripture man is dominant and unique.* And what says science? It supplies evidence abundant and convincing of man’s constitutional fitness for the position given him. The temptation is irresistible, at this point, to cite a formidable opponent of Scripture and of Christian theology who is also a consistent and inveterate protagonist of evolutionary theories which teach that man is but a developed animal; for such testimony can be relied upon to give the conclusions of science free of pro-Christian bias. In his recent book “The Uniqueness of Man”† Dr. Julian Huxley develops at length the thesis that *man is unique*. In outline what he propounds is as follows:—“Man is unique in virtue of his power of conceptual thought and his correlative employment of true speech; in the development (as a consequence of his powers of thought and speech) of a cumulative

\* Need it be pointed out that the Psalmist gives the Divine view of man, in retrospect and in prospect, rather than describing man as he now is?

† Published 1941.

tradition (that is, a constantly enlarging educational heritage); in the employment and progressive improvement of tools and machinery; in the dominant position held by him among organisms, leading as this does to further numerous unique characters, viz., greater variability than any other ('wild') species, a far wider range than any other species, dominance in type without splitting into separate species; in being continuously sexed and not discontinuously sexed like the higher mammals other than man; in his reproductive variability; in the length and relative importance of the period of post-maturity; and, finally, in the numerous consequences of his possession of a brain capable of conceptual thought with the consequent increase of flexibility (as opposed to fixity of instinctive actions of the lower animals). These consequences include greater intelligence (adaptability and control), uniqueness in being subject to psychological conflict, proneness to laughter, unification of his mental processes as against the much more rigid compartmentalization of animal mind and behaviour, existence amongst mankind of social units such as tribe, nation, party, church, each with a continuity of its own based on organized tradition and culture, and in such 'by-products' as pure mathematics, musical gifts, artistic appreciation and creation, religion, romantic love and such everyday but still unique activities as conversation, organized games, education, sport, paid work, gardening, the theatre; conscience, vice, penitence." Surveying this account, condensed as above, of man's biological, psychological, social, moral, and æsthetic characters and activities, our authority adds the comment "*The trouble is to find any human activities which are not unique.*" It would seem then quite fair to say that *biological science teaches emphatically that man in relation to the lower creation is unique in every respect that is demanded by the position accorded to man in the Bible—a position of dominance and overlordship. This superiority, science asserts, exists in man, and that uniquely, and once again we see scripture and science to be in accord, and the latter serving vividly to elucidate and clarify the former.*

It would also be tempting, if it were a little more apposite, to turn aside at this point to challenge Huxley's groupings. Christian thought does not, of course, and is not prepared under any circumstances to view religion or conscience as a "by-product." Few philosophers, indeed, would be any more ready to allow this of mathematics, music or artistic appreciation and creation.

Huxley's actual words, viz., "By-products of the change from the pre-human to the human which are unique biologically" indicate that this *faux pas* of his is an immediate result of his philosophical pre-determination to set unquestioned facts, themselves the ripe fruit of admirable and praiseworthy scientific investigation, into a framework of evolutionary theories which they will not fit. The facts remain.

We have already hinted that anthropocentrism is by no means synonymous with geocentrism. Of the latter there is no real trace in Scripture, whatever may have crept in to a false and now disowned medieval theology—just as it was to be found, before Copernicus, in a now rejected mediæval "science." It is of course true that the undeveloped astronomy of Bible times used descriptive terms and expressions of the type common in and appropriate to the early stages of all the sciences. But even our exact nautical and other scientific almanacs still give the times of sun-"rise" and sun-"set," and good elementary text-books written by authorities even now speak of the "track" of the sun in the heavens and the like without any fear of implied ignorance on the part of the writer. While the Holy Scriptures are replete with such descriptive expressions as those connoting movement of the sun across the heavens, there is a complete absence from them of *any* formal or informal induction from a scientific scrutiny of the observed facts; much less is there found the formulation of any such proposition as "The sun moves round the earth as a central body once every day." The writers of the Scriptures quite unsophisticatedly and simply described what they saw. But the Bible is, *per contra*, candidly anthropocentric throughout. The passage itself which brings out tellingly the puny physical measure of man in relation to the great celestial works of God speaks of him literally in the same breath as the central object of the interest and activity of God. "When I consider the heavens . . . what is man that thou art mindful of him . . . thou hast crowned him with glory and honour; thou madest him to have dominion over the works of thine hands" (Psalm viii, 3-6). Man was formed in the image and likeness of God. The whole scheme of redemption is focussed in man. The Redeemer became man. Divine joy is the heavenly resultant of man's recovery to God and divine activities concentrated in effecting this recovery (Luke xv). God by-passed angels and "took hold" of the seed of Abraham (Heb. ii, 5, 6). Recovery to God is effected not only by a man,

but in a man, the last Adam (1 Cor. xv, 45). Man is to rule and subdue all enemies until the eternal state supervenes in which God is all in all. And further, man is not only shown to be an object of the greatest importance and concern to God personally, but the world of nature—the physical world, may we say?—is originally established, subsequently modified and finally adjusted with reference to the changing needs and states of man. The sun, moon and stars are ordained for signs and for seasons, for days and years, and to give light upon the earth—for man. When man falls the ground is cursed, the terrestrial flora modified and thorns and thistles appear. The rainbow is appointed for a sign of God's renewed covenant with man. The shadow returned backward ten degrees in token of the certainty of God's promise to lengthen the life of one man by fifteen years. The sun stood still and "hasted not to go down about a whole day" at the prayer of a man. The same sun was darkened when the Redeemer of man, Himself become man, suffered unrelieved judgment on sin—the sin of man. It shall in common with the moon and the stars be the bearer of signs when man is plunged in a future day into heavy judgment of distress and perplexity. And it is in immediate relation to the final closing up judicially of the sinful history of man at the final ASSIZE, that, at the call of the Judge proclaiming "I make all things new," the present heavens and earth are to be dissolved and reconstituted: *In Scripture the heavens and the earth are viewed as initially constituted, subsequently modified and finally to be reconstituted in relation to man. The universe of the Scriptures is anthropocentric.* Can we produce anything from the world of science to confirm, clarify or elucidate this conception? First, we have already seen that in the whole universe there is no known life except on earth, and no certainly known potential home for life except in the narrow orbital zone in which the earth moves. The planets are all now fairly definitely ruled out with the possible exception of Mars, which *may* support life under stress of great difficulty—of which life, however, there is no clearly admissible evidence.\* The stars themselves are, of course, like our own sun, impossible; and the extreme improbability, according to recent theories of planetary origins,† of the existence of any

\* The "canals" of Mars are not *certainly* more than optical illusions. The name given to the appearances first observed by Schiaparelli is a question-begging one, at any rate.

† For popular accounts see the various works of Jeans.

planetary systems other than our own renders it unlikely that any other star than the sun serves as a central sun to an inhabited earth. *Life, and especially human life, which with all its richness and variety of the higher values is the most exalted phenomenon within the whole range of scientific observation, is only known on earth.* It will probably be argued that this leaves the stars and nebulae largely out of positive account. But it is true, as Eddington well said, that "the contemplation in natural science of a wider domain than the actual leads to a far better understanding of the actual." So the contemplation of the extragalactic nebulae, the galactic system of stars, the sun and the planets supplies a background to our knowledge of the earth as the home of life which leads to a deeper understanding of the meaning of life. It furnishes us with the "wider domain" in which we see spread out and eventuating before our eyes all the actualities and potentialities of material systems. We see unstable systems surrounding our own planetary system which astronomers believe is relatively stable for a lengthy period. We see in the interiors of the sun and its fellow stars and in the nuclei of the giant nebulae the ineffably mighty forces and the unspeakably vast ranges of temperatures and pressures associated with matter in states neither known to exist naturally nor able to be produced artificially on earth—matter in which we know that owing to the extreme intensity of these pressures and temperatures not merely is every molecule in a state of dissociation, but every atom is highly ionized and the majority even stripped of most of their electrons. And yet the earth is maintained steadily and temperately, but without lack of local variety, in conditions suitable for life. We are thus enabled to think concretely of matter in states which to us are abnormal. Not only may such states be predictive, as we have already seen, of mechanisms of "dissolution," but we can in virtue of our knowledge of these states of matter, and in the light of the quantum theory, conceive the reduction of atoms to a limiting condition of "stripping" beyond which although stored with enormous supplies of energy they cannot yield up any of it—a limit recognized by science but incomprehensible to it. And here, surely, is another of nature's "irreducibles" or surds! The material universe would vanish in an instantaneous flash of radiation if this limit were surpassed! This, we repeat, man is able to conceive in the light of his scientifically acquired knowledge of the great universe outside and around his tiny home.



And in all the gargantuan sphere there is no trace of intelligence to comprehend its meaning except on this little earth! *Science in all its universal scope reveals nothing to counter the anthropocentrism taught in Holy Scripture.*

It has often been observed that science reveals the reign of law in every natural sphere. By scientific law we mean the tabulated and formulated regularities observed in the working of nature. It is to be noted, indeed, that the very existence of uniformities in nature is a pre-requisite to scientific work. We have previously remarked that the generalizations or laws of science assume the principle of the uniformity of nature. Thus, for example, underlying the publication of all tables of experimentally determined physical and chemical properties of substances is the expectation that such substances will behave themselves in the future as in the past—an expectation enshrined in the very term “physical constants.” It is obvious that such regularities are requisite if man is to have the necessary control over nature to live. The same observation relates, with less scope, to the lower animals, indeed to all living beings. For the concept of a “being” is itself hardly possible apart from the postulation of uniformities, since a “being” must have a constitution or a mode of existence implying regularities in its relations with its environment. This idea of the need of regularities is not only a philosophical necessity, nor is their existence only a discovery of science, but it is recognized by Holy Scripture—in the broad and plain way in which Scripture speaks of natural conditions—as an essential condition for life, and is spoken of as the ordering of God. At the restoration of the rhythm of the seasons after their derangement by the Deluge and its accompanying convulsions, we have the promise “While the earth remaineth, seed-time and harvest, and cold and heat, and summer and winter and day and night shall not cease” (Gen. viii, 22). And Psalm cxxxvi, with direct reference to the “rule” of the sun, the moon and the stars and other elements of nature, adds its re-iterated refrain “For his mercy endureth for ever.”

It is easy to see the necessity and the purpose of such uniformities as those formulated for example under the laws of sound. Regularities in wave propagation through material bodies provide means of communication which in the external world correlate closely with man’s power of conceptual thought and his related need for and powers of speech. On a lower plane the same considerations apply to the calls and songs of the lower animals.

On a culturally higher plane we find man's creative and appreciative activities in music which have also religious application in the worship of his Creator. The possibility of a musical scale depends on the laws of sound which control the determination of pitch and these in turn depend on the fixed nature of matter. The note given out by a string—a violin string, for instance—varies with temperature, tension, density of the material, etc., but it varies according to fixed and discovered laws and therefore in a controllable way. If we could imagine air—to restrict our attention for simplicity's sake to the atmosphere only, which however is not the sole medium serving for the transmission of sound—of totally irregular density and elasticity and having properties of heat-transference varying from point to point and molecules of different dimensions in different parts, we could still possibly imagine the production of "noise" but not of notes of music. The noise would probably be more intolerably raucous than anything yet experienced, and speech, song and any sound signal less primitive than a clap of the hands out of the question. (Perhaps we could allow a *repetition* of claps but they would be dissimilar and would reach the ear at irregular intervals!) Science—in particular, the science of acoustics—reveals that *not only all the bare necessities of oral communication of both man and other creatures but all the ministry and cultural amenities of music depend not only on those regularities in nature expressed by the laws of sound but on the regular and continued maintenance of those properties of matter which give rise to them.* An exactly parallel statement, but one of perhaps even deeper and fuller significance to the life of man and the lower animals, could be formulated of the laws of light. Its wave-like properties resulting—apart from small-scale diffraction phenomena—in its rectilinear propagation present us with the prime means of acquainting ourselves with the external world of nature and various means alternative to speech of effecting communications at a distance. The high velocity of light—186,000 miles per second—which in relation to any other attainable speed is practically instantaneous, confers an immense practical benefit since in virtue of this velocity any visible terrestrial event is seen, practically speaking, at the moment of its occurrence. The constancy of this velocity, without which—at least if the variability were within appreciable limits—our knowledge of spatial relations would be confounded, furnishes in addition a means of measuring vast astronomical distances. The chromatic properties of light, also a result of

its complex wave-like nature and the laws of wave motion, are the natural basis of what must be surely the greater part of our aesthetic enjoyment of both natural and artistic beauty. The co-existence and co-operation of those properties of light and of chlorophyll in green plants (and probably of living proteins as a third active factor) enabling green plants to produce the essential plant foods, the carbohydrates, from the carbon-dioxide of the air, in the presence of water from the soil, with the greatest ease—a process not yet successfully imitated in our laboratories—are an example of correlated natural powers which should make us wonder. But our concern here is more with the reign of law than with the resultant properties in detail. The ordered and regularly graded properties of light, which extend to those of all electromagnetic waves—infra-red and Hertzian (wireless waves) at the one end and ultra-violet and X-rays at the other end of the actually visible spectrum—render orderly, calculable and regularized living both possible and pleasant. *The sustentation of these uniformities is a basic and essential condition of such life, which sustentation, though coming within human observation, is entirely above and beyond human or other natural power to effect.*

And these considerations could be extended in every direction. But it is to be feared that the more extensively the regularities of nature touch the ordinary affairs of our life the more easily do men become oblivious of them. What of gravitation? We do not have to walk on the floors of our houses on Mondays and on the ceilings on Fridays. If gravity were reversed or its constant varied occasionally we should appreciate perhaps more duly the steadiness and “accountability” of nature’s arrangements and the stability which we at present enjoy. It is to be noted that for the moment we are dealing not so much with the laws of science themselves as with their constancy and with the maintenance of the order of nature. In this connection we observe also that there now exist few, if any, “regularities” touching the layman’s life at everyday points, which have never been explicitly formulated into laws. Nevertheless the work of science is not complete, for its aim is ever towards a more comprehensive law and an all-embracing synthesis. If a curtain blows about at an open window we think of the laws of motion and of dynamics; if crops keep character with sowings, we are reminded of the botanical laws of heredity; the resemblances of a son to his father have their scientific expression in the Mendelian laws; and so forth. The laws of science are not all at the same

level, but form a hierarchy. The laws of kinematics describe or state in shorthand form the properties of moving bodies apart from consideration of the forces engaged therein; but at a higher level we have the laws of dynamics. These by virtue of Newton's laws of motion which interpret change of motion as "impressed force," absorb and incorporate those of kinematics. (It is true that Newton's statement is now to be replaced by its equivalent in terms of relativity, but the fact of the difference of level is unaffected.) The tendency is ever upwards—from the observation of simple regularities to the comprehension of these into great generalizations of ever widening embrace. Just as Kepler's wonderful work collected into three brief mathematical formulae the then known phenomena of planetary movements, and these were only to be swallowed up by Newton's more amazing universal law of gravitation, so these same features of movement towards wider scope plus greater "simplifications" (e.g., two "elements," protons and electrons, instead of 92) continue to characterize the science of the present century. A simple regularity known to physicists is expressed in the law discovered and stated by Sir George Gabriel Stokes. As originally stated it asserted that in fluorescence *the refrangibility of light is in general reduced* by the dispersion caused by the fluorescent substance. This remains true, but its more general statement under the wave theory was *that light absorbed at a certain wave length was always re-radiated by the fluorescent substance at a longer wave length.* This also remains a correct statement of the rule. But the quantum theory brings in a yet freshly worded law. It is that *light quanta incident on the surface of any fluorescent body have part of their energy absorbed (in effecting change of electronic orbit) and are therefore re-radiated as smaller quanta: but since the quantum constant (Planck's constant "h") is fixed it must therefore be the frequency ("γ") that has undergone reduction.* Hence, the change in colour towards the red. Comparing these three "explanations" it should be observed that they are statements of an empirical truth in terms of theories which are not merely different and alternative but which are successively wider and more comprehensive. The first hardly invokes a theory but speaks only in terms of experimental observation of the facts of variation in refrangibilities of lights of different colour; the second widens out to the wave theory—capable of "explaining" not only refrangibility but interference, diffraction, etc., etc., and indeed all the optical phenomena of its day. But the third

faces and accounts for all these and in addition subsequently observed phenomena which presented insuperable difficulties to the mere wave theory—for instance, the temperature-distribution of radiant energy in hot bodies, the photo-electric effect, and the varying photo-chemical effects of light of varying frequencies—as well as the phenomena of fluorescence. Science ever thus aims at its ideal of unification—and in the very act of progressing towards this is presented with new dilemmas for solution.\* The regularities remain, however, and their scheduling is a permanent, notable and highly valuable result of science. Christian and Jewish thought has always recognized these, though on the level, not of formal science but of ordinary common-sense observation (out of which, however, science of course grows). The contribution science makes is to hand to the religious thinker a developed picture of these orderings in their intricate detail and dovetailing so that if the Christian was once moved to say, “Give thanks to him who alone doeth great wonders: for his mercy endureth for ever; to him that by wisdom made the heavens: for his mercy endureth for ever,” when he had surveyed the world as an ordinary observer, he can, accepting all the verified findings of modern science, repeat the words with a thousand-fold more fervour and depth of significance. He can, moreover, live in restful, yielding dependence on Him “in whom we live, and move and have our being” knowing him so much more fully in the endless variety and richness of his creatorial work, and, above all, in the faithfulness of his continuing and sustaining mercy.

Let us consider another law of nature. Perhaps one of the most noteworthy is the biological Law of Biogenesis, *Omne vivum ex vivo*, or, as all biologists of repute hold, life flows from previously existing life and arises in no other way. This principle became firmly established through the work of Louis Pasteur in 1860. Before his time many believed and taught that living creatures may arise spontaneously—maggots from meat, worms from mud, microbes from soupy vegetable infusions. But by

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\* The quantum theory, itself invented to solve difficulties, raised others. It had a tough nut to crack, for instance, in accounting for the energy of a quantum after emission. Does it spread out continuously, as does the “classical” wave-front and thus become continuously weaker? Or does it “keep together,” corpuscle-like? In the former case it would lose the concentration of energy necessary in the work of smashing atoms; in the latter we should have to revert to the classical theory and lose the simplicity, continuity and harmony of quantum optics. The dilemma is cleared—but not very satisfactorily to the plain man—by appeal to relativity theory.

experiment after experiment Pasteur demonstrated that if living creatures are strictly excluded from the experimental chamber no living creatures ever appear in it, however favourably supplied it be with meat, mud or infusions. It is now universally accepted that so far as human knowledge reaches living organisms are generated only by previously existing living organisms. This principle is an empirical law, that is, one founded on observation and experiment. It could be upset only by a competently observed and reliably attested instance of spontaneous generation or the production of life otherwise than from previously existing life. It is at least implicitly a tenet of Christian thought as much as an article of scientific doctrine. "It is," we are told, "one of the foundation stones of the modern doctrine of evolution,"\* for, of course, if life can be spontaneously generated or new species arise apart from the mediation of existing species, the ground is cut from under any such developmental theory. And yet there comes a point at which both Christian thought and atheistic philosophy depart from the principle. "This is the finger of God," say the magicians of Pharaoh's court at the generation before their eyes of swarms of lice: and Christian commentators agreeing with them cite the occasion as one of a signal action of God. And evolutionary biologists who write "We can say now with an entirely reasonable confidence that all life which exists to-day has sprung direct from pre-existing life," follow this up immediately with, "But, of course, this apparent impossibility of spontaneous generation applies only to the world as we know it to-day. At some time in the remote past, when the earth was hotter and its air and crust differed, physically and chemically, from their present state, it seems reasonable to believe that life must have originated in a simple form from lifeless matter."† We have here a contrast of modes of thought which is most illuminating. Life admittedly arises from pre-existing life. How then are we to account for the first life of all? "Invoke a Power of a *different order altogether*, a Creator," says Christian belief; "Invoke the well-known *natural processes*," says atheism, "but *endow them a little more richly: give them efficacy such as our research has long sought but convincingly failed to detect.*" This is not an unfair characterization. Biology is acquainted with the whole range of conditions of temperature, pressure, chemical atmosphere and potential environment known

\* E. S. Goodrich, Ency. Brit., Art "Evolution."

† "Science of Life," Wells, Huxley and Wells, p. 496.

to physics and astronomy. It has ceaselessly experimented for more than three hundred years,\* but has never known or caused dead matter by natural or laboratory processes to spring into life. These speculators therefore appeal to times *remote* from the present, to conditions *remote* from actuality and imagine a generation of life from dead matter *remote* from all experience or knowledge. This is not science: it is bias wearing a "scientific" mask. True science respects its own hard-won laws too highly to jettison them at the whim of *any* philosophical system. It does not blow hot and cold over the same doctrine, admitting life to be biogenetic as revealed by "interrogative observation"† of nature and making it abiogenetic to satisfy a wish to provide a naturalistic account of its origin. The very shiftiness and illogicality thus displayed is a testimony to man's need of a revelation on this point. And this we have in the words "And God created . . ."

We have maintained that scientific laws are the tabulated and formulated regularities observed in the working of nature. Heat expands gases, iron sinks in water, sound is reflected by cliffs and walls: these are examples of very ordinary recurrences and these statements although in crude form are scientific laws. Science, of course, even its elementary stages seeks to give them precision and mathematical form. For instance the first is elaborated into the Law of Charles which says that under constant pressure the volume of a gas is proportional to its absolute temperature. This is only the same regularity more elaborately observed and more precisely stated. Now science proceeds by observing, hypothesizing, experimentally testing its hypotheses and verifying (or disproving) them. A hypothesis that has survived such a probation becomes a standing part of the stock-in-trade of the particular science to which it belongs and if of wide range may be dignified as a Law or a Principle (spelt with a capital!). Such are the Law of Gravitation, the Principle of Equivalence or First Law of Thermodynamics, the Second Law of Thermodynamics—*alias* the Entropy Law—the Law of Biogenesis, the Laws of Mendelism, the Laws of Chemical combination, etc. What needs to be emphasized is that *all* scientific laws are merely more or less elaborated, more or less refined and more or less mathematically

\* Harvey described the circulation of the blood in 1628; Wöhler artificially prepared urea in 1828; bio-chemistry was in the heyday of vigour by 1928.

† The phrase is approved in "Science of Life," Huxley and Wells, N.B.!

stated assertions concerning discovered and verified regularities in the working of nature. Muddled thinking has already shown itself as a result of failure to apprehend this plain truth. The muddle particularly arises from play of thought around the idea of *kinds* of scientific law. It has repercussions on religious thought which amount to a blunting of the testimony borne by the sciences to religious truth. For instance, Eddington asserts that violation of the so-called "field laws" is *unthinkable*: not merely "improbable" or even "impossible" but unthinkable. Now the field laws include gravitation, and the inconceivability of their violation implies the impossibility of their infraction even by God Himself. Thus a miracle such as that whereby according to Scripture the axe-head was made to "swim" (2 Kings vi, 5-7) is lightly brushed aside as not to be thought of. The Scriptures are thus discredited by "science." But are they? Let us see where the confusion really lies. In dealing with scientific laws Eddington first recognizes the fact that "certain regularities and recurrences are noticeable in every sensory experience." He calls these "laws of Nature," and says of them that "physics would never have originated if it were not that . . . regularities . . . are noticeable."\* Instead, however, of allowing to this truly remarkable phenomenon of regularity in nature the recognition it merits as a great *fact* of science, he treats it as if it were merely a condition making science possible.† He goes on to give a classification of laws of Nature, viz., Identical, Statistical and Transcendental Laws. The identical laws he says are truisms and "include the great field laws which are commonly quoted as typical instances of natural law—the law of gravitation, the law of conservation of mass and energy, the laws of electric and magnetic force, and the conservation of electric charge."‡ The statistical laws including the laws of gases and thermodynamics are the laws obeyed by crowds independently of the characteristics of the individuals composing the crowds. The transcendental laws are those of atomic structure and the quantum laws "which so far as we know may be true laws of governance."§ Now this classification grows out of and is

\* *New Pathways in Science*, p. 8.

† Would it not strike a visitant from any *other Nature*, if there were such, with extreme wonder?

‡ *Domain of Physical Science*, p. 215, in "Science, Religion and Reality."

§ Eddington's opinion in 1925. He subsequently changed his view and regarded the laws of quantum phenomena as statistical laws. (*Relativity Theory of Protons and Electrons*, p. 329.)



bound up with Eddington's view of the aim of science which is to "construct a world which shall be symbolic of the world of commonplace experience."\* This, of course, if granted, is science at a high level and very far removed from the familiar world from which, however, as he admits, "the whole scientific inquiry starts" and to which in the end science "must return." Now in the course of this construction of a symbolic world the constructor postulates certain elements—*relata*—as few as possible, and certain *relations*—as few as possible; assigns to these the required properties—again by postulation and again as few as possible; and from this minimum of ideal bricks and cement builds his "world." From the definitions of the postulated *relata* and *relations* he *deduces* his field laws. Now a statement which follows immediately from the definition of a term is admittedly a truism. Let us notice however the important fact that the definitions from which Eddington's "field laws" spring as truisms are ideal definitions and so far have *no relation* to the world of sensory experience. The identification of energy, momentum and stress with the ten principal "curvatures" of this ideal world, this mental construct, is *assumed*, and yet only if this identification is correct is it true that the laws of conservation of energy and momentum can be viewed as mathematical identities or truisms. *If it appears that the physical laws are deduced from a pure mathematical basis, such appearance is illusive.*† It becomes clear, further, that at least in the term "identical laws" Eddington is using the word "law" in a new sense—a deductive sense; and not in the inductive sense of an observed and formulated regularity in the working of nature. *These great laws remain as valid inductions*, however they may subsequently be shown to be deducible from a scheme based on a minimum of ideal "world-building" elements. The Christian thinker may continue to regard them justly as *laws of governance*.‡ In this light their classification as (i) laws of provision (ii) laws of regulation (iii) laws of limitation offers a suggestive study—devotional of course, rather than strictly scientific, although

\* "Nature of the Physical World," Ch. XV; but we prefer the more realistic aim of Niels Bohr: "The task of science is both to extend the range of our experience and to reduce it to order" ("Atomic Theory and the Description of Nature," p. 1).

† Chapters X, VI, and VII of Eddington (*ibid.*) carefully read and critically weighed will bear out the truth of this assertion which is here necessarily based on an extremely condensed argument.

‡ Eddington does not deny this of them, "when approached in the way in which the mind looks out on the world" ("Nature of Physical World," Ch. XI).

based on the findings of science. The Second Law of Thermodynamics, for instance, sets a limit to the amount of energy that can be converted by man to the purposes of his will and service from the all but boundless stores of heat energy by which he is surrounded in the atmosphere, soil, etc. The laws of Mendelism are equally of the "limiting" type. Those of gravitation and motion, and the sound laws are of the type of "regulating"—in virtue of which the outside world is maintained as a smoothly working "accountable" mechanism available for the service of mankind. The laws of plant metabolism are a sample of laws of "provision," whereby food is provided for the animal world in an assimilable form. Christians rejoice in Him who, as such stable laws demonstrate, is "not far from every one of us" "in whom we live, and move and have our being"; they further rejoice that the maintenance of his age-long mercies should receive at the hands of the sciences the elucidation afforded by ever increasingly detailed knowledge.

The standing of psychology as a recognized science is doubtful since its very data are questioned, whereas every true science "is concerned with data on which normal people are agreed."\* Nevertheless, there are some generally accepted results from both academic and the newer psychology which contribute weightily to Christian thought. Psychology is now showing greater willingness to treat mind as being *sui generis* and to admit that the physical evidence has been wrongly allowed to outweigh the purely psychical. Mind as mind is now much more consistently taken for granted as an unquestioned reality. Few people nowadays really prefer to think of themselves as nothing more than a swarm of whirling electric charges. Most of us feel that we have identity and personality and agree that mind cannot be described in physical terms. Thought may possibly always result in physical activity of some kind; nevertheless, thought itself is independent of physical considerations, *i.e.*, it is psychic. One pertinent observation of the older psychology tended to support these views and to exhibit mind as a unique thing. It was the fact of the insularity of consciousness. While body may have direct contact with body, mind does not in general have direct communication with mind, but only through speech, gesture, etc., which are indirect, and, actually, physical

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\* See a brief critical survey by Prof. H. Dingle in "The New Learning," p. 236.

channels.\* Thus A's sensation of "blue" can never be known directly to B or even known to be the same as B's in spite of the use of the same label for it. These results of psychology seem to testify to the trustworthiness of the Holy Scriptures which consistently view personality as a precious thing and mind or spirit as a secret thing having in turn its own secrets. "For what man knoweth the things of a man save the spirit of a man that is in him," and "He that is spiritual discerneth all things, yet he himself is discerned of no man" (1 Cor. ii, 11, 15).

Of those results of the newer psychology which have bearings on religious thought only brief mention can be made. Detail must be sacrificed. The nature of the contribution is that of proof that methods of dealing with temptation, sin, "self"—methods of inducing peace and poise of mind long ago urged upon Christians by the inspired writers, have received the approval of modern mental science and successful mental therapy. But a strong disclaimer must first be put in against any suggestion that the aims of Christianity and psychoanalysis coincide or that psychic evil is a synonym for sin. Holy Scripture defines sin to be *anomia* or lawlessness, *i.e.*, creature independence—not only transgression (see 1 John iii, 4, Gk.). Sin is essentially a disturbance of creature relations with God. Psychic evil may be a result of this, but in itself is a disturbance within the mind and may originate from causes having no bearing on religion. The aim of Christianity, at least as far as the individual is concerned, is recovery to God. The peace and mental wholeness are inevitable consequences of such restoration,† and of such quality that the most successful psycho-therapy can never even imitate.

Some parallels between Christianity and the new psychology are here given. Ambivalence, or the simultaneous activity of two mutually antagonistic impulses neither of which is able to assume complete uncontested control—a condition clearly recognized by modern psychology,‡ is perfectly paralleled in the attitude towards the law of God of the distracted man of Romans vii, 15-23. "For the good that I would I do not: but the evil that I would not that I do" (v. 19). And psychology's way of escape, *viz.*, the strengthening of the activity of the

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\* We leave out of account ill-understood and often questionable telepathic phenomena.

† It is only a certain defective type of evangelistic Christianity that regards the results to the individual as the *primary* aim of the Gospel.

‡ See Freud, "Totem and Taboo," for a clear description of its origin.

“ego ideal”—the “charging up of the ideas” centred in the higher impulse—until the old ideal dies through lack of expression and its hormic “drive” and associated emotions become transferred to the new—this is also the way of Scripture. The whole of Romans viii illustrates the application of this method. It enlarges on the ideal of being “in Christ” and its incomparable results. And in chapter vi, the apostle had already urged “Reckon yourselves to be dead indeed unto sin and alive unto God in Christ Jesus our Lord” (Gk.). Again the “disintegrated” man\* of Romans vii found complete “re-integration” in the constraining influence of the love of Christ—which was the “master sentiment” under which alone, as MacDougall teaches,† perfect integration can be accomplished if the sentiments be organized in an ordered system dominated by it. Such a dominating “master sentiment” is perfect love as seen in Christ, the ideal of character. (See 2 Cor. v, 14-17, remembering that in this chapter as in Romans vii, Paul wrote of himself.) “Sublimation” as an ennobling and controlling process, again, is not new. Psychology may have investigated the theory and invented the term, but the process is quite biblical. The practical sanctification of the marriage bond is a perfect case of sublimation. From mere sexual gratification the Christian teaching concerning that mystic and indivisible union of Christ and the Church, of which marriage is a divinely given figure, has lifted it to a bond of unselfish love and mutual devotion—to a “bond,” indeed “of perfectness,” illustrated in thousands of joint Christian lives and homes (Ephes. v, 25-33; Col. iii, 14).

And so with comparison after comparison. “Abreaction” has scope in Christian confession of sin to God and of faults to one another as a cure for breaches of Christian mental wholeness. Confession is the New Testament counterpart of Freud’s method of treating the “repressed complex,” viz., “making the unconscious conscious”—and the parallel is capable of lengthy development. In the healing grace of Christianity we see its immense superiority to the Law of Moses which offered nothing better than “repression” leading to the “conflict” we have already considered.

Sufficient suggestive examples have been given to show that it is possible to develop and sustain the thesis that the methods

\* This was only partial disintegration—not, of course, amounting to “dissociation.”

† See “Outline of Abnormal Psychology.”

and principles applied by psychotherapists in assisting men into harmony with themselves were long ago used by the Spirit of God to lead men back into harmony with God first and so into internal harmony. And once more modern science adds the weight of its testimony to the efficacy of Christian teaching and to the truth of Christianity.

To sum up, we have seen that in the search for origins the sciences are compelled to admit that sooner or later their quest must be given up in despair. Science, therefore, bears witness to the need for a revelation. Such revelation is forthcoming in the Scriptures, which proclaim God as Creator and man as a dependent Creature. Science, in its turn, shows the reality of this dependence in its physical aspects, by revealing the narrowness of the limits within which life is possible in the universe, and the co-ordinated complexity—and so, incidentally, the designed character—of the proportions and adjustments in the physical world on which, in their totality, life depends. The relative minuteness of the earth, emphasised by modern astronomy, supports the Scriptural teaching that man should take a lowly place before the Creator of the vast systems viewed in the heavens. Physics brings to light intra-atomic forces of surpassing magnitude and extreme ranges of temperature, pressure, dissociation and “atom-stripping” found in giant stars and remote nebulae but unknown on earth which serve to bring the predictions of Scriptural eschatology within reach of our powers of conception; while biology witnesses to the superiority of man in relation to his fellow creatures and thus corroborates the unique place given to man in the Scriptures. Further mutual ratification between science and Christian thought is seen in that while in Scripture man is declared to be the centre of all God’s plans and purposes in Creation, he is, in full accordance with this, revealed by the whole sweep of scientific observation to be the only known intelligence in the universe able to take account of either its vast physical magnitudes or the lofty ideals and values of the life which it holds. Both the existence and the cultural amenities of life are dependent on the maintenance of uniformities which are recognized in science as the laws of nature and in Scripture as the enduring mercies of God. Attempts to represent these laws as deductive and their breach as unthinkable are illusory and are caused by confusion as to the logical status of law and ignoring the existence of certain formidable assumptions. The laws are in origin and actuality simply

inductions soundly based on the results of wide and long-continued observation and are invalid therefore as objections to competently observed and attested miracle. On their general maintenance all life and the continuance of the material universe depends. The law of biogenesis, which has known no exceptions since its formulation, requires us to accept the Scriptural belief in a transcendent Source of life. All the laws of Nature, and not some of them only, may justly be viewed as laws of governance. This is admitted by science and claimed by Scripture, which declares that "The living God which made heaven and earth and the Sea and all things that are therein . . . left not himself without witness in that he did good and gave us rain from heaven and fruitful seasons, filling our hearts with food and gladness" (Acts xiv, 15, 17). Turning to psychology we find that it stresses the uniqueness of mind and thought, and thus endorses the Christian view of the dignity and importance of the human spirit. The recognition of the insularity of consciousness, as such, is science's testimony to Christian belief in the significance of human individuality. Many processes and states recognized and named by modern psychology, such as ambivalence, repression and disintegration are described in the Scriptures, while methods and factors of mental healing such as abreaction, the domination of a master sentiment and sublimation, commonly regarded as triumphs of modern psychological discovery, were long ago known and taught by Scriptural writers as efficacious means of spiritual therapy.

We submit that it has been demonstrated that revelation fills up the deficiencies of science, that science reinforces and illuminates Christian doctrine and that the two spheres of knowledge while differing in data and distinguished in method, not only supplement and reinforce each other but both furnish their characteristic and complementary contributions to Truth.

#### DISCUSSION.

The CHAIRMAN (Dr. F. T. FARMER) said: The interrelation of science and religion is a vital subject at the present time. For it is a fact, whether we like it or not, that thousands, indeed millions, of people have lost their faith in the Christian religion because they believe that science has undermined its very foundations. A recent census among thoughtful, intelligent people showed that more than half had had their faith destroyed by this cause, and it is impossible

to estimate the effect on the testimony of the Church of this modern conception.

The Victoria Institute has taken a part in trying to unravel the position and get at the truth as regards the link between these two spheres of knowledge. For we believe that only by facing the situation honestly and objectively will it be resolved. If Christianity is true, the more we enquire into it the more we shall find our faith substantiated, and the more we shall bring it into harmony with the particular knowledge of science. Nothing could be more disastrous to the progress of the Gospel than the type of stalemate that was reached in Darwin's time, when it seemed that an insoluble conflict had arisen between Christianity and science, and each party agreed not to encroach on the other's field of thought. Fortunately, we have got past that stage, and we can see now that much of the conflict was illusory. Yet there remains much to be done to straighten out the position, and for this reason I welcome very heartily Mr. Betts' thesis this evening.

I think the time is particularly ripe for such intensive efforts. The plain, bald materialism of the last century, with its closed universe and mechanistic nature, has gone. And people are groping in all directions for something to fill the void which is left; they are inventing new philosophies of life, new "isms" of countless different forms. And it is our opportunity to show the place of the Christian Gospel in such a world of bewilderment and misunderstanding. I should like to thank Mr. Betts on your behalf for the contribution he has made in this direction this evening.

Dr. ERNEST WHITE said: One of the great difficulties in the attempts made to reconcile Scientific and Religious thought lies in the fact that these two spheres belong largely to different categories. Mr. Betts suggests this when he says that "Few people nowadays really prefer to think of themselves as nothing more than a swarm of whirling electric charges." If we consider a work of art such as a picture, although a physicist may measure the size of the canvas on which it is painted, describe the chemical composition of the various pigments, give an account of the length of the light waves reflected by the various colours in the picture, etc., he is thereby selecting certain features from the whole, but is leaving out of account

the beauty of the work and the æsthetic feeling produced in the artistically trained mind of the beholder. As Eric Gill says in a recent book ("The Necessity of Belief"), "You could never know what a human face really looks like if it were only possible to examine it with a microscope."

Science, from its very nature, leaves out of account certain values, and can never attain to certain great synthetic assertions such as that with which the Bible opens—"In the beginning God created the heaven and the earth."

I was sorry to hear the author say that "the standing of psychology as a recognised science is doubtful." Psychology has its data and its hypotheses, and during the last few years an immense amount of experimental work has been done both in the laboratory and in clinical work, leading to the formulation of definite laws of mind. Although it is the youngest of the sciences, since it was definitely separated from metaphysics about the middle of last century, it may surely now claim to occupy a place amongst its elder sisters.

In giving parallels between the new Psychology and Christianity there appears to be a little misunderstanding of Freud's use of certain terms. It is true that different psychologists do not always use terms in the same sense, and there is a real need at the present time for some genius to arise who would synthesise the various schools of thought and standardise the meaning of terms used.

To say that "confession is the New Testament counterpart of Freud's method of treating the repressed conflict," seems to me to be a misunderstanding of the word "repression" as Freud uses it. Repression means that some idea, with its associated emotions, is not present in consciousness, and can only be brought into consciousness by the special technique of psycho-analysis, including dream interpretation. It is therefore a very different process from confession, for the latter can deal only with the conscious thoughts, and leaves the unconscious untouched.

Again, sublimation in the Freudian sense is an unconscious and not a conscious process, and so cannot be achieved by voluntary effort.

A good deal of the misunderstanding arises from a confusion of the word "suppression" with the word "repression." and I am afraid that psychological writers are not always free from this error.



I should like to express my gratitude to Mr. Betts for his very interesting and thought-provoking essay.

Col. SKINNER invited attention to the significant change in recent years in the outlook of science. There was a time when scientists, under urge—quite legitimate—of thinking out their problems in their own way, had broken away from restraints of religion. Man was created a free agent and, notwithstanding warnings and prohibitions, had perfect liberty to choose his own line. Unfortunately the latitude was stretched to extreme, and in absence of any recognition of divine authority, it has led to gross materialism, with ultimate result in the present world chaos which threatens destruction of the human race.

But to-day there are welcome signs of recovery and return; the pendulum is swinging back. Among purely scientific thinkers there are not wanting men who have reached a hilltop from which they see a vast land, unknown and out of reach, but earnestly to be desired; the best of scientists, Jeans, Eddington and the like. They have come to their scientific horizon and there confess that something other than material science is needed for exploration beyond the limit of purely human thought. In this way, it seems to me, science is likely to help religion in future more than in the past.

#### WRITTEN COMMUNICATIONS.

Rev. Principal H. S. CURR wrote: I have read Mr. Betts' essay with great profit and pleasure. In these days when the conflict between science and religion seems to wax hotter and hotter in proportion as it becomes less acrid, it is reassuring and refreshing to receive such a reminder as this paper furnishes that, in the last analysis, science and Scripture must make one music, since both deal with the ways and works of the same God. When Kepler made his great discovery that the path followed by the planets in their unceasing voyages in the sea of space is elliptical and not circular, he is said to have exclaimed that he was thinking God's thoughts after Him. The devout student of Mr. Betts' pages must feel disposed to echo these words as he surveys some of the great conclusions in the field of scientific research so clearly expounded therein.

I must, however, confess that I had hoped that the paper would have had something to say about the bearing of the scientific method on the formulation and elucidation of theological problems. The modern mind is so familiar with it that its presence and power are not adequately recognised. That is to be regretted, since theology, which is so often defined as the science of religion, owes a great deal to the characteristic methods of the scientist.

There is, for example, the collection of data on which a judgment may be made. When the foundations, on which certain beliefs, held more or less widely, are examined, one is driven to the conclusion that the man of science would hesitate to formulate a hypothesis upon a quantity and quality of evidence so slender and dubious. A few passages of Scripture are deemed to be a sufficient basis for theories whose consequences may have very large implications. Thus inferences are drawn by the exponents of modern Biblical criticism from phrases and fragments which hardly seem to be justifiable. The same is true of doctrines and dogmas such as Our Lord's Descent into Hell between His Crucifixion and Resurrection. I use advisedly old-fashioned terminology in this reference.

Again, there is the uniform and universal insistence by modern science on the principle that every effect must have a sufficient cause. Much scientific investigation is nothing more or less than the tracing of causes. Theologians might well borrow a leaf from the scientist's book in this connection. To state the idea in popular parlance, they are tempted to cure an earthquake with a pill.

Yet another direction in which modern science has made a mighty contribution to religious thought may be described as the elimination of the irrational, the absurd, and superstition of every description. That is illustrated even in the interpretation of Holy Scripture. Explanations which are obviously far-fetched and foolish have often been championed with unhappy results. But with the diffusion of the scientific spirit and standpoint that problem has diminished, although much still remains to be done.

Arising out of these observations, mention may be made of the services of science to religion in exposing and exploding quack faiths and teachings. Phineas T. Barnum, the great American showman, used to say that the public likes to be fooled, and to few aspects of human life do these words apply more aptly than to religion.

Freak religions are always plentiful, and one of the contributions of science has been to lay bare their unspeakable folly and futility. That is but one count in the great debt which true religion and sound theology owe to the rise and growth of modern science.

MR. E. W. BATTERSBY wrote: "Scientific knowledge does not give us absolute certainty. It gives us highly probable belief." One might say that scientific knowledge can give us no *direct* proof of the supernatural, although it may supply us with evidence making certain beliefs highly probable. Once science has pointed out to us what lies beyond the natural world, her descriptive functions must of necessity cease. In this world we cannot experience pure causes, except the Prime Causer, for every cause is really only the effect of a previous cause.

Scientific knowledge has further limitations in the sphere of morality, mind and value, for which, according to Professor C. E. M. Joad, in "Philosophy For Our Times," it cannot account, and in the region of the Absolute, to which it cannot attain, as Kant and other empiricist philosophers have proven.

We might likewise elaborate on the fallibility of the testimony of science to the senses in the realm of the physical, if we chose to go into logical hair-splitting epistemological arguments, such as the fact that we can never find identical things in our experience, but similar things, even though we meet our brother half an hour after he has left the home. But laying stress on such problems will in all probability land us into the unfortunate situation of the Greek Academics who, would neither affirm nor deny a fact for fear of having passed a wrong judgment (*vide* "Discourses of Epictetus," Chap. V, Appendix Note 1, in Everyman's Series).

Parallel arguments, although of dubious practical value, purporting to show the unreliability of the witness of science in the domain of physics, can be produced, such as, for instance:—

(a) The unnoticeable rest-spots in reading;

(b) Fading or "acoleuthic" sensation—*e.g.*, when you can't see the minute hand of a watch moving because it is in several appreciably different places within the short time ("specious present" of Professor Broad) that is required for one sensation

to fade so that you do actually at one moment see it in several places ;

(c) The relation between a word spoken and a word heard. Bertrand Russell, in his "Outline of Philosophy," writes of this : " We usually take for granted the relation between a word spoken and a word heard. ' Can you hear what I say ? ' we ask, and the person addressed says ' Yes. ' This is, of course, a delusion, a part of the naive realism of our unreflective outlook on the world. We never hear what is said ; we hear something having a complicated causal connection with what is said."

#### AUTHOR'S REPLY

Dr. Farmer's remarks about the mutual relation between science and the Christian religion are pertinent and serious. I am obliged to him for them.

I most heartily agree with Rev. Principal H. S. Curr in his strictures on hasty formulations of hypotheses and unjustifiable conclusions based on fragmentary and unrelated scraps of evidence, especially in things theological. Theology is often honeycombed with such procedure. But, regrettably enough, it is not true to say that " the man of science would hesitate to formulate an hypothesis upon a quantity and quality of evidence so slender and dubious," for we have with us to-day, alas ! undoubted men of science who are only too prone to fall into such intellectual sins. The sciences themselves, not excluding mathematical physics, badly need rescuing from unscientific method. Principal Curr has invitingly sketched material for a whole paper on the rational examination of evidence and legitimate working up of data. I regret that my interpretation of the terms of reference led to a failure to deal with this, to me, attractive subject.

I thank Colonel Skinner and Mr. E. W. Battersbey for their completely acceptable and suggestive notes. I also greatly appreciate Dr. White's remarks, particularly the fine illustration he gives of the limitations of science—another subject capable of considerable development. The question whether psychology is of undoubted standing as a science may well become an empty logomachy. My

own doubt arises from the fact that eminent psychologists do not agree about the fundamental data of their subject. Some disregard consciousness. Others give it a central place. But agreed data are an essential to any "science." Of course, no one doubts the value and importance of psychology or the strides it has made this century, and especially the last twenty-five years. A unification of psychology is a great desideratum, it is agreed; but those who sigh for a synthesis should not press in the meantime for an exclusively Freudian use of psychological terms. Sublimation, for instance, is viewed by prominent psychologists as an *interaction* between the unconscious and the conscious. MacDougall says even that "sublimation is civilisation." Again, a reasonably careful reading of my paper would hardly justify the conclusion that I labour under a misunderstanding of the Freudian term "repression." I distinguished carefully between "psychic evil" and sin. My parallel was between N.T. methods of dealing with the latter and psycho-analytic methods of dealing with the former, and did not descend to the details of technique. The process of "making the unconscious conscious" is clearly and repeatedly set forth in Romans vii and viii. The former chapter describes the history of a soul which finds within itself a once unsuspected but now clearly recognised sump of evil—a dynamic source of sin. The immediate result of the discovery was horror and despair. But the grace of God in Christ enabled the apostle—for it was he, of course—to recognise the internal source of evil and, in that it was something already divinely dealt with ("condemned"), freely confess it. Deliverance and peace and poise resulted. If this is not a clear parallel there can be none short of complete identity which I did not claim. Unconscious repression and deliberate suppression differ more in degree than in nature and the latter may be a cause of the former. With regard to sin dwelling within one, "confession," understood comprehensively to include recognition, realisation, abhorrence and acknowledgment, is closely parallel, I maintain, to the process used by the psychotherapist in overcoming a repression, whatever may be the detailed technique of hypnosis, dream analysis and interpretation, recall, or what you will. The real greatness of Christian deliverance from sin—and I refer primarily to indwelling sin—is that the Christian is taught to

recognise fully and with clear consciousness the presence within him of something which he abhors but which has lost its power to hold him in bondage or mental conflict. The once unconscious source of conflict is brought fully and unqualifiedly to the light of consciousness and there judged in the light of the Cross of Christ. And the Christian is as free as a bird.

## 857TH ORDINARY GENERAL MEETING.

HELD AT THE NATIONAL CLUB, 12, QUEEN ANNE'S GATE,  
LONDON, S.W.1, ON MONDAY, MAY 22ND, 1944, AT 5 P.M.

AIR COMMODORE P. J. WISEMAN, C.B.E., IN THE CHAIR, IN THE  
ABSENCE, ON DUTY, OF THE RT. HON. VISCOUNT CALDECOTE,  
P.C., C.B.E., CHIEF JUSTICE OF ENGLAND.

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

The CHAIRMAN then called upon Sir Charles Marston, F.S.A., to deliver his Presidential Address on "Positive Conclusions of Biblical Archæology," offering to Sir Charles on its conclusion the warm thanks of the meeting with a few appropriate words, Mr. Ruoff seconding.

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### PRESIDENTIAL ADDRESS.

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#### *POSITIVE CONCLUSIONS OF BIBLICAL ARCHÆOLOGY.*

By SIR CHARLES MARSTON, F.S.A.

THE new Education Bill creates an opportunity to enquire what is going to be taught the rising generation on essential subjects, under its provisions. Is it to be present-day knowledge, or, is it to be last century's? It ought of course to be the former, but it looks as though academic minds are still entangled in the theories of last century.

That was a time when leaders of knowledge thought they knew about all there was to be known. So, without taking proper account of possible ignorance, some proceeded to criticize Religion, and others its principal authority the Bible. But the idea that human knowledge was fairly complete has now been altogether shattered.

Last year I quoted a statement of Sir Arthur Eddington:—

"We have turned a corner in the path of progress and our ignorance stands revealed before us appalling and insistent."  
(*Vide* "The Nature of the Physical World.")

This year Sir James Jeans' new book entitled "Physics and Philosophy" tells the same story in another way. It constantly emphasizes the inadequacy and limitations of Human Know-

ledge. Sir James concludes by repeating Newton's well-known statement :—

“ We are still like children playing with pebbles on the seashore while the great ocean of Truth rolls unexplored beyond our reach.”

Newton made this declaration 250 years ago. Think of it—today we are *still* in that position regarding Human Knowledge ! *Still*, despite the radio, the aeroplane, electricity, and many other marvels, unknown to Newton.

Extravagant claims for human knowledge had grown to such an extent in our civilization, that it could not have been easy for Sir Arthur Eddington and Sir James Jeans to make these declarations. They are both to be congratulated on the moral courage that prompted them, in the interests of Truth, to say what must have been unpalatable to many. For multitudes in all walks of life believe that man's Reason and Science are supreme, and have superseded Revelation. What are youths and Children in our new Colleges and Schools to be taught about this basic question ?

And again, if Human Knowledge has such limitations, and Sir James Jeans seems to think it unlikely to lead us a great deal further, there is the more reason why the rising generation should study Divine Knowledge as set forth in the Bible. This is so important because the Bible deals with that vital Science of Human Nature—the most neglected, and yet the most essential, of the Sciences. As our civilization is based upon the Bible, it may not be a coincidence that, in an age when the teaching of Holy Scripture began to be neglected, civilization began to fall into its present evil plight.

During the past twenty years the Science of Archæology has gone far to vindicate the authenticity of the Bible, and to throw fresh light upon it. But it is difficult for scholars, educated under last century's influences, to realize that *they were taught in ignorance* of much that has since been discovered. So they treat the fresh outside Evidence as though it had no more value than a new conjecture which does not happen to coincide with their school of thought.

For example—one writer dismisses the Evidence recorded in my books by calling me a “fundamentalist.” Today that implies a person who is old-fashioned and out of date. But its characteristics are reversed as it dawns upon those with discerning



minds that only sound fundamentals can give sound conclusions.

Again, the success of all Sciences have been due to the collection and study of Evidence. Last century's academic authorities, through lack of outside evidence about the Bible, were content to accept conjecture and speculation as substitutes. And so they judged the Bible, and called their work "scientific" criticism, when it was all a travesty of Science. But now real outside evidence about the Bible is forthcoming through the Science of Archæology. And this should be taught in our future schools and colleges instead of conclusions reached through the make-believe methods of last century.

In my last address I quoted some sentences from the works of one of the most celebrated of the higher critical school—the late Dr. Driver. He wrote: "It is a canon of historical criticism that a first class historical authority must be contemporary (or nearly so) with the events which it purports to relate."

From this we are entitled to wonder whether what has been found in Bible Lands since his time, would have completely altered Dr. Driver's outlook on the Old Testament.

For the evidence from Ras Shamra is of first class historical value, contemporary (or nearly so), with Moses. That from Jericho is another, contemporary with Joshua; and that from Sinai and Lachish, contemporary with alphabetical writing in the days of Moses and Jeremiah. Let us remember that the pottery system of dating has established these dates during the past eighteen years; and that the Science of Archæology is far more exact today than it was when Dr. Driver wrote.

One of the new discoveries, based on Archæological Evidence, came through the late Dr. Langdon, Professor of Assyriology at Oxford. His researches convinced him that Monotheism was the original Religion of the civilized world. And in the same year Dr. Schmidt, the leading authority for the Science of Anthropology, affirmed that Monotheism was also the original Religion of the uncivilized world. This conclusion is an excellent example of the far-reaching effects of Fundamentals. For, if it is correct, it vitiates the statements and conclusions of some of the most distinguished writers on world History, and other subjects, at the present day.

The evidence on which Dr. Langdon based his fundamental conclusions about Religion, is set out in my book "The Bible Comes Alive." He pointed out that in the valley of the Euphrates we have an immensely ancient record of the progress of Religion.

And that the Sumerians were probably the first people to emerge from barbarism before 4000 B.C. Some of their great prehistoric cities in lower Mesopotamia were Ur of the Chaldees, seat of the Moon God, Erech seat of the cult of Anu, the god of heaven and father of all the gods, Nippur seat of Enlil the Earth God, Kish near Babylon seat of the Earth mother goddess, and Eridu seat of the Water God.

The cult of Erech, Nippur and Eridu or sky, earth and water, formed their Trinity.

Some of these sites have been excavated down through the ruins of states and empires, down through a period of at least 5,000 years, to virgin soil. In doing this with three hundred workmen at Kish over a period of twelve years, Dr. Langdon came to the conclusion that the Sumerian polytheism was preceded by monotheism.

At Kish 63 ft. below the surface of the time of Alexander the Great, just above virgin soil, pictographic tablets began, the oldest writings from the Human hand, the earliest statements about religion. Now while we know from inscriptions about 3000 B.C. at Erech, that the Sumerian pantheon even then contained 750 deities, yet before we reach 4000 B.C. the pantheon at Kish only consisted of the Sky God, the Earth God, and the Sun God. And in most primitive tablets from Erech, it consisted only of Anu, the Sky God, and Innini the Queen Mother. If there really was a larger pantheon at the dawn of History these numerous tablets, which are all temple records, would have mentioned them. Nor in these primitive records is there any trace of magic or demons. Everything points to a primitive personal god with the name Anu, Heaven or Sky.

The whole intricate polytheism of Sumer and Babylonia originated in a monotheistic concept. The Sumerian word for God, "digir," means both "high" and "to be bright." This is precisely parallel to the Indo-Germanic word for the Sky God from the root div, "to be bright—deus."

The nature myth gods of India, Greece and Italy, and all Indo-Germanic religions, start with a Sky God, Zeus-pater-Dyauspitar, Jupiter "God the Father" all derived from the root div, "to shine," whence the word deus—god.

Dr. Langdon adds that there was a rapid decline from the original Monotheism to Polytheism, and a belief in Evil Spirits. Now that the Flood is recognized to have been an historical event, we are entitled to use it in tracing the course of Religion.

Dr. Langdon writes, "The Babylonians and Assyrians believed that all revealed knowledge, the mysteries of the expiation rituals, and all true rules of conduct, had been preserved for them directly from the hands of the sages, who lived before the Flood." And, indeed, Archæology now supplies enough evidence to enable historians to trace the course of Religion when they give up evolutionary speculations about it. Thus, for example: There existed before the time of Abraham a people called the Habiru, with their God Elohim; now, I believe, generally recognized as the Hebrews.

The first four words of the Bible "In the beginning Elohim," link us with them and their Deity. And it would seem as though the purest strain of Monotheism survived after the Flood in this Race. In the old Testament, Abraham became their representative, although Abraham's family was associated with moon god worship at Ur of the Chaldees. And so from time to time were his descendants. And indeed Mount Sinai, from which the Commandments were promulgated, appears to have been a centre for moon god worship from early times.

To recapitulate—Through the inscribed clay tablets that have been found in the Euphrates Valley written before 3000 B.C., Dr. Langdon has found evidence that Monotheism existed before Polytheism, and that the Sumerian word for God was "digir" meaning to be bright. I have been reading again the late Dr. Breasted's book "The Dawn of Conscience," and the evidence he advances presents a parallel picture of things in Egypt at the same period. The inscriptions quoted by Dr. Breasted come largely from the interior of the five Pyramids of Sakhara, and he dates some of them to 3400 B.C. There the original deity, long before the Osiris myth, was the Sun-God, and the Egyptian Beliefs then presented the same phenomena as the Sumerian—an original Monotheism with a decline to Polytheism. The Akhenaton reversion to Monotheism, soon after Moses, appears to have been a revival of the ancient faith.

The antiquity of Belief in a Future Life has also been rescued by the Sciences of Archæology and Anthropology from the evolutionist octopus of last century. Dr. Langdon found Evidence which enabled him to affirm that, before the days of Abraham, the theological view running through Babylonia was of a Heaven for the Righteous, whom the Gods might choose to receive into Paradise, where is the Bread and Water of Eternal Life.

When we turn to the contemporary great civilization of Egypt, evidence from the sources there, to which reference has already been made, enabled Dr. Breasted to write—

“ While the Pyramid Texts have not been able to shake off the old view of the sojourn at the tomb, they give it little thought, and deal almost entirely with a blessed life in a distant realm. It is of not a little interest that the distant realm is the sky, and that the Pyramid Texts know practically nothing of the gloomy hereafter in the Nether World. The realm of the dead therefore is a celestial one, using the term with none of its frequent theological significance in English. That the conception of a celestial paradise, later universal in the Christian world, had its origin in the same enormously old Egyptian belief can hardly be doubted . . . This idea that life was in the sky is the dominant notion far older than the Osirian faith in the Pyramid Texts.”

I have pointed out in my books how the Moral Law embodied in the Commandments was recognized in Egypt long before Moses. In reading “ The Dawn of Conscience ” repeated reference is made to another Ancient Belief which assimilates with what permeates the Books of Moses, and indeed the whole Bible. I refer to all that was centred round the word “ Maat ” or “ Righteousness,” in Egypt. To begin with “ Maat ” links up with the mysterious Melchizedek, King of Salem, whom Abraham met. The writer of the Epistle to the Hebrews describes him as “ King of Righteousness.” And the Psalmist refers to “ The order of Melchizedek.” Now an order of Righteousness is just what existed in Egypt in this remote age.

Then Moses, educated in all the Wisdom of Egypt, would have had “ Maat ” in mind when he told the Israelites—“ It shall be *our righteousness* if we observe to do all this commandment ” (Deut. vi, 25).

David repeatedly dwells upon the subject of Righteousness in the Psalms. So does Solomon in the Proverbs, many of which prove to be obviously of Egyptian origin. So do Isaiah and the Prophets. Dr. Breasted even contends that the beautiful passage in Malachi—“ Unto you that fear my name shall the Sun of Righteousness arise with healing in His Wings ” is an echo of the Egyptian worship of the Sun God two thousand five hundred years earlier.

How these most ancient Egyptian Inscriptions point the

finger of scorn against these who teach that Old Testament Books are of late origin because of their ethical subject matter. Or against those who represent that the prophet Amos was the first exponent of Monotheism, and a Righteous God !

Listen to specimens of the Sayings with which the Egyptian people were familiar more than a thousand years before the birth of Moses :—

“ Great is Righteousness ; its dispensation endures, nor has it been overthrown since the time its Maker.”

“ Established is the man whose standard is Righteousness, who walketh according to its way.”

“ Although misfortune may carry away wealth, the power of Righteousness is that it endures.”

“ Speak the Truth, do the Truth, for it is Great, it is Mighty, it is Enduring.”

A distinguished world historian has recently written :—

“ The teachings of Christianity are not entirely new and original but are for the most part rooted in the spiritual life of the Age.”

But, as the sentences I have quoted come from such a remote age, the historian might better have said :—

“ The spiritual life of the ages.”

In these days much emphasis is laid on Christ as a new Teacher for the time in which he lived on earth, so people overlook the Fact that He was and is “ The Power of God ”—a Power that is peculiarly needed in the present world. What are our children to be taught in the new schools on these subjects ?

At a recent Debate at the Church Assembly, one of the Bishops stated that this Generation has largely lost the sense of God consciousness. They have lost it through the impression that the human mind has superseded the human Heart. So we see again the importance of Sir James Jeans' statement with which I opened this Address. It may be suggested that neither Reason nor Science are adequate to replace what has been lost in Religious Instincts during the past half century.

On the other hand, it may be pointed out with all diffidence that the new teachings of Science cry out to be adopted by the hierarchy of the academic profession at the present time. The

evidence of History, and of its handmaid Archæology, is still subordinated to last century's theories based on conjecture and speculation. And efforts are even made to twist the Evidence in favour of the old theories, instead of using it in its natural sense as the basis of fresh conclusions. For example, to revert again to the Evidence from the Euphrates Valley of the vast civilisation that existed there when Abraham was living at Ur of the Chaldees. And for two thousand years before his day when man was already writing on clay tablets. And to the almost equally ancient Religious Beliefs in Egypt. These present cumulative Evidence in favour of the earlier part of the Old Testament. And in the sacred interests of Truth they cannot be disregarded in favour of future theories of the Evolution of Mankind. I have seen, for example, pictures in museums purporting to represent the evolution of man in past ages. They were based on fancy, and they seemed to take no account of this vast civilization of six thousand years ago. Are such pictures to be displayed in our new schools and colleges, in defiance of what the Science of Archæology is telling us?

It is interesting to notice that the depth of the deposits at Kish, below the strata of Alexander the Great, was 63 feet. Those at Lachish, below the strata of Cyrus, are about the same. I remember asking the late Mr. Starkey how long it would take to complete the excavations of Lachish, and he replied "One hundred years." That gives some idea of the vast Archæological work that remains to be done in Bible Lands, and that even now we have only laid bare the fringe of it. But what has been laid bare reveals a background of culture to the Old Testament of a very different character to what was postulated at the end of last century. So far from Archæologists themselves starting with a prejudice in favour of the Old Testament, my experience has been that they rather expected to confirm theories of last century.

When the time comes that the Truth or otherwise of present-day knowledge is made manifest, I often think that the errors which will be revealed will be found to be due to fundamental fallacies, and to ignoring archæological evidence which contradicts them.

Critics claim to be impartial, but in the course of a long life it is difficult to recall anyone who was really unprejudiced in his beliefs, although there are plenty who adopt a style of writing to seem to be so.

In the science of inanimate objects great progress has been made, because as a rule the study of them is without prejudice. But the Science of Man and his Religion is so surrounded with prejudice that it is impossible to escape it. And here I would point out that the infinity of books acts as a sort of jungle to prevent human beings "seeing out of the woods for the trees." There was no printing press in Solomon's time, and yet he complained "Of making many books there is no end, and much study is a weariness of the flesh . . . This is the end of the matter—Fear God and keep His Commandments."

References have been made to summaries of Evidence in this brief address which show that the Science of Archæology has thrown a dazzling light upon the History of Religion during the past twenty years. While it confirms the Bible it suggests that the Divine has been in contact with human beings capable to receive His Revelation, in all ages. And side by side there has been a constant endeavour by the Power described by our Lord as "the Prince of this World" to pervert and thwart the Message. At the present time we regard Hitler as the embodiment of Evil, and we are being led to believe that his overthrow will enable us to inaugurate a new and better material world. But there exists a far wider and older Source of Evil than Hitler and both Prophecy and History warn us against Him. It is not in the direction of material things that we may look for Happiness, but from the Unseen, which the study and teaching of material things did so much to obscure in the past half century. Before the days of Abraham an Egyptian seer wrote:—

"I have made every man like his brother, and I have forbidden that they do evil, but it was their hearts which undid what I have said."

That seems as true at the present time as it was more than four thousand years ago. Let us hope that the Teachers of the new Education may take account of these things.

Offering the warm thanks of the Society to the President for his address, the Chairman, Air Commodore WISEMAN, said: The main theme of this paper is of considerable importance. It should help in no small measure in counteracting the tendency to an unthinking, even parrot-like, repetition of the old phrase about the "assured results of modern criticism" of the Bible. These results, relating

to speculations as to authorship and time of writing, far from being "assured," are becoming increasingly questioned, especially by archæology. Moreover, the type of criticism applied one hundred years ago, before archæology had contributed its wealth of information, can scarcely be called "modern."

Sir Charles Marston has referred in his paper to certain criticisms of views he has published. These appeared in a Thinkers' Library series, whose general outlook is "there is no God." The book in question is by Mr. Howell-Smith and is entitled "In Search of the Real Bible." Let me read his criticisms (page 93): "Sir Charles Marston, author of 'The Bible is True,' and other Fundamentalist works, claims that the discovery of the Ras Shamra tablets, which was begun in 1929, has undermined the whole of the Wellhausen views about the origin and growth of the Pentateuch." Further: "Professor J. Garstang's excavations on the site of ancient Jericho have revealed a succession of cities starting from the early Bronze Age (about 2000 B.C.). One of these cities Garstang believes was destroyed by fire, the walls having been breached by an earthquake just before the incendiarism. These facts show that the impossible tale (a fusion of two variants) in the Book of Joshua (vi) rests on a basis of fact. Garstang's dating throws back the Exodus two centuries earlier than the usual reckoning, which, however, is still favoured by important archæologists like Père Vincert, O.S.D."



*It is regretted that the final page of the printer's proof was accidentally omitted from the 1944 Volume. It is now attached so that members can add it to their Volume LXXVI.*

*These concluding paragraphs should appear following the last paragraph now appearing on page 183.*

(detach here)

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Two things need to be dealt with in this criticism. The archaeological value of (a) the Ras Shamra tablets and (b) the Jericho excavations; and it is possible, at the end of this Presidential Address, to touch very briefly on these points.

I agree with Sir Charles that the evidence of the Ras Shamra tablets is important in relation to Wellhausen's theories as to the origin and growth of the Pentateuch. It is difficult to conceive that had Wellhausen written subsequent to their discovery he would have said what he did sixty years ago. But the author of "The Bible is True" has been called a "Fundamentalist" because in his judgment the general evidence of archæology is of more value than speculative criticism as to authorship and dates of Old Testament books. I will therefore cite a scholar who some would call a "Higher Critic." (The mere use of names like "Fundamentalist" or "Higher Critic" does nothing to settle our problems.) Here is what Professor Jack says on page 6 of his Ras Shamra Tablets:— "Among other things, they contradict one of the principal assumptions of the Reuss-Graf-Wellhausen school, namely, that the Israelites could not have had documents at their disposal written before the epoch of the kings, and this has been emphasised lately by M. de Groote, Professor at Groningen, in a volume on 1 Samuel."

In regard to the second matter, the findings at Jericho, I am frankly puzzled by what Mr. Howell-Smith writes. He boldly pronounces it "an impossible tale," yet at once says that archaeological excavation had revealed that it "rests on a basis of fact." This looks much more like a criticism of the critic's assumption that the Bible account is "an impossible tale" than of Sir Charles Marston's views.

I was at Kish when the pictographic tablets referred to—the oldest writing known to us—were discovered, and well remember Professor Langdon's prophecy that the discovery that day would prove to be of immense importance. We thank Sir Charles Marston very warmly for his outspoken paper.