

Vol. LXIII. FEBRUARY 4th, 1907. **No. 249.**
PART 1.

THE
QUARTERLY JOURNAL
OF THE
GEOLOGICAL SOCIETY.

EDITED BY
THE ASSISTANT-SECRETARY.

[With Five Plates, illustrating Papers by Mr. A. M. Davies,
Mr. R. W. Hooley, and Mr. W. R. Baldwin-Wiseman.]

LONDON:

LONGMANS, GREEN, AND CO.

PARIS:—CHARLES KLINCKSIECK, 11 RUE DE LILLE.

SOLD ALSO AT THE APARTMENTS OF THE SOCIETY.

Price Five Shillings.

LIST OF THE OFFICERS AND COUNCIL OF THE GEOLOGICAL SOCIETY OF LONDON.

Elected February 16th, 1906.

President.

Sir Archibald Geikie, Sc.D., D.C.L., LL.D., Sec.R.S.

Vice-Presidents.

Robert Stansfield Herries, M.A.
John Edward Marr, Sc.D., F.R.S.

Aubrey Strahan, Sc.D., F.R.S.
J. J. Harris Teall, M.A., D.Sc., F.R.S.

Secretaries.

Prof. William Whitehead Watts, M.A., M.Sc., F.R.S. | Prof. Edmund Johnstone Garwood, M.A.

Foreign Secretary.

Sir John Evans, K.C.B., D.C.L., LL.D., F.R.S., F.L.S.

Treasurer.

Horace Woollaston Monckton, Treas.L.S.

COUNCIL.

Henry Howe Arnold-Bemrose, J.P., M.A.
Prof. Thomas George Bonney, Sc.D., LL.D., F.R.S., F.S.A.
Sir John Evans, K.C.B., D.C.L., LL.D., F.R.S.
Prof. Edmund Johnstone Garwood, M.A.
Sir Archibald Geikie, Sc.D., D.C.L., LL.D., Sec.R.S.
Robert Stansfield Herries, M.A.
Finlay Lorimer Kitchin, M.A., Ph.D.
Philip Lake, M.A.
George William Lamplugh, F.R.S.
Richard Lydekker, B.A., F.R.S.
Bedford McNeill, Assoc. R.S.M.

John Edward Marr, Sc.D., F.R.S.
Horace Woollaston Monckton, Treas.L.S.
Frederick William Rudler, I.S.O.
Leonard James Spencer, M.A.
Aubrey Strahan, Sc.D., F.R.S.
Charles Fox Strangways.
J. J. Harris Teall, M.A., D.Sc., F.R.S.
Richard Hill Tiddeman, M.A.
Prof. William Whitehead Watts, M.A., M.Sc., F.R.S.
The Rev. Henry Hoyte Winwood, M.A.
Arthur Smith Woodward, LL.D., F.R.S.
Horace Bolingbroke Woodward, F.R.S.

Assistant-Secretary, Clerk, Librarian, and Curator.

L. L. Belinfante, M.Sc.

Assistants in Office, Library, and Museum.

W. Rupert Jones. Clyde H. Black.
Alec Field.

STANDING PUBLICATION COMMITTEE.

Sir Archibald Geikie, *President*.

Prof. W. W. Watts. } *Secretaries.*
Prof. E. J. Garwood. }

Prof. T. G. Bonney.
Mr. R. S. Herries.
Dr. F. L. Kitchin.
Mr. P. Lake.
Mr. G. W. Lamplugh.
Mr. R. Lydekker.

Dr. J. E. Marr.
Prof. H. A. Miers.
Mr. H. W. Monckton.
Mr. L. J. Spencer.
Dr. J. J. H. Teall.
Mr. H. Woods.

EVENING MEETINGS OF THE GEOLOGICAL SOCIETY TO BE HELD AT BURLINGTON HOUSE.

SESSION 1906-1907.

1907.

Wednesday, February (Anniversary)
Friday, Feb. 15th) . 6*—27*
" March..... 13*—27
" April 17*
" May 1—15*
" June 5*—19*

[*Business will commence at Eight o'Clock precisely each Evening.*]

The dates marked with an asterisk are those on which the Council will meet.



Vol. LXIII.
PART 2.

MAY 18th, 1907.

No. 250.



THE
QUARTERLY JOURNAL
OF THE
GEOLOGICAL SOCIETY.

EDITED BY
THE ASSISTANT-SECRETARY.

[With Thirteen Plates, illustrating Papers by Dr. A. S. Woodward, Mr. G. W. Lamplugh, and Prof. S. H. Reynolds.]

LONDON:
LONGMANS, GREEN, AND CO.
PARIS:—CHARLES KLINCKSIECK, 11 RUE DE LILLR.
SOLD ALSO AT THE APARTMENTS OF THE SOCIETY.

Price Five Shillings.



LIST OF THE OFFICERS AND COUNCIL OF THE GEOLOGICAL SOCIETY OF LONDON.

Elected February 15th, 1907.

President.

Sir Archibald Geikie, Sc.D., D.C.L., LL.D., Sec.R.S.

Vice-Presidents.

John Edward Marr, Sc.D., F.R.S.
Prof. William Johnson Sollas, Sc.D.,
LL.D., F.R.S.

Aubrey Strahan, Sc.D., F.R.S.
J. J. Harris Teall, M.A., D.Sc., F.R.S.

Secretaries.

Prof. William Whitehead Watts, M.A., M.Sc., F.R.S. | Prof. Edmund Johnstone Garwood, M.A.

Foreign Secretary.

Sir John Evans, K.C.B., D.C.L., LL.D.,
F.R.S., F.L.S.

Treasurer.

Horace Woollaston Monckton, Treas.L.S.

COUNCIL.

Henry Howe Arnold-Bemrose, J.P., M.A.	Horace Woollaston Monckton, Treas.L.S.
Prof. Samuel Herbert Cox, F.C.S., A.R.S.M.	Frederick William Rudler, I.S.O.
Sir John Evans, K.C.B., D.C.L., LL.D., F.R.S., F.L.S.	Prof. William Johnson Sollas, Sc.D., LL.D., F.R.S.
Prof. Edmund Johnstone Garwood, M.A.	Leonard James Spencer, M.A.
Sir Archibald Geikie, Sc.D., D.C.L., LL.D., Sec.R.S.	Aubrey Strahan, Sc.D., F.R.S.
Wilfred H. Hudleston, M.A., F.R.S., F.L.S.	Charles Fox Strangways.
Finlay Lorimer Kitchin, M.A., Ph.D.	J. J. Harris Teall, M.A., D.Sc., F.R.S.
George William Lamplugh, F.R.S.	Richard Hill Tiddeman, M.A.
Prof. Charles Lapworth, M.Sc., LL.D., F.R.S.	Prof. William Whitehead Watts, M.A., M.Sc., F.R.S.
Richard Lydekker, B.A., F.R.S.	Henry Woods, M.A.
John Edward Marr, Sc.D., F.R.S.	Arthur Smith Woodward, LL.D., F.R.S.
	Horace Bolingbroke Woodward, F.R.S.

Assistant-Secretary, Clerk, Librarian, and Curator.

L. L. Belinfante, M.Sc.

Assistants in Office, Library, and Museum.

W. Rupert Jones. | Clyde H. Black.
Alec Field.

STANDING PUBLICATION COMMITTEE.

Sir Archibald Geikie, *President.*

Prof. W. W. Watts. } *Secretaries.*
Prof. E. J. Garwood.

Prof. T. G. Bonney.
Mr. R. S. Herries.
Dr. F. L. Kitchin.
Mr. P. Lake.
Mr. G. W. Lamplugh.
Mr. R. Lydekker.

Dr. J. E. Marr.
Prof. H. A. Miers.
Mr. H. W. Monckton.
Mr. L. J. Spencer.
Dr. J. J. H. Teall.
Mr. H. Woods.

EVENING MEETINGS OF THE GEOLOGICAL SOCIETY TO BE HELD AT BURLINGTON HOUSE.

SESSION 1906-1907.

1907.

Wednesday, June 5*-19*

[*Business will commence at Eight o'Clock precisely each Evening.*]

The dates marked with an asterisk are those on which the Council will meet.

CENTENARY CELEBRATION OF THE GEOLOGICAL SOCIETY.

Thursday, September 26th to Saturday, September 28th, 1907.

ADMISSION AND PRIVILEGES

OF

FELLOWS OF THE GEOLOGICAL SOCIETY OF LONDON.

EVERY Candidate for admission as a Fellow must be proposed by three or more Fellows, who must sign a Certificate in his favour. The Proposer whose name stands first upon the Certificate must have a personal knowledge of the Candidate.

Fellows on election pay an Admission-Fee of Six Guineas. The Annual Contribution paid by Fellows is Two Guineas, due on the 1st of January in every year, and payable in advance; but Fellows elected after the month of February are subject only to a proportionate part of the Contribution for the year in which they are elected, and Fellows elected in November or December pay no Contribution for the current year. The Annual Contribution may, at any time, be compounded for by a payment of Thirty-Five Pounds.

The Fellows are entitled to receive gratuitously all the volumes or parts of volumes of the Quarterly Journal of the Society that may be published after their election, so long as their Annual Contributions are paid; and they may purchase any of the publications of the Society at a reduction of 25 per cent. under the selling-prices.

The Library is open daily to the Fellows between the hours of 10 and 5 (except during the fortnight commencing on the first Monday in September; see also next page), and on Meeting-Days until 3 p.m. Under certain restrictions, Fellows are allowed to borrow books from the Library.

Publications to be had of the Geological Society, Burlington House.

TRANSACTIONS.	Reduced Price to the Fellows.	TRANSACTIONS.	Reduced Price to the Fellows.
	£ s. d.		£ s. d.
Ser. I, Vol. I	1 10 0	Ser. II, Vol. V, Part I	0 10 0
Ser. II, Vol. I, Part 2	1 10 0	" Part 2	0 10 0
" " Part 2	0 10 0	" " Part 3	1 10 0
" " Part 3	0 10 0	" " Part 3 (Supplement)	0 10 0
" " Part 3 (Supplement)	0 10 0	" " Part 1	1 10 0
" " Part 1	0 10 0	" " Part 2	1 10 0
" " Part 2	0 10 0	" " Part 2	1 10 0
" " Part 3	0 10 0	" " Part 4	0 10 0
" " Part 3	0 10 0		

QUARTERLY JOURNAL. (Vols. III to LXII, inclusive.)

Price to Fellows, 13s. 6d. each (Vols. XV, XXIII, XXX, and XXXIV to LXII, 16s. 6d.), in cloth.

CLASSIFIED INDEX TO THE TRANSACTIONS, JOURNAL, &c., by G. W. ORMEROD. New Edition, to the end of 1868, with First, Second, and Third Supplements to the end of 1889. Price 8s. 6d. To Fellows, 5s. 6d. [Postage 5d.]—The First, Second, and Third Supplements may be purchased separately.

GENERAL INDEX TO THE FIRST FIFTY VOLUMES OF THE QUARTERLY JOURNAL (1845-1894). Part I (A-La). Part II (La-Z). Price 5s. each. To Fellows 3s. 9d. each. [Postage 3d.]

CATALOGUE OF THE LIBRARY, 1880. (620 pages 8vo.) Price 8s. To Fellows 5s. [Postage 6d.]

GEOLOGICAL LITERATURE added to the Geological Society's Library during the years ended December 31st, 1894-1905. Price 2s. each. To Fellows 1s. 6d. each. [Postage 2½d.]

LIST OF THE TYPE- AND FIGURED SPECIMENS RECOGNIZED BY C. D. SHERBORN IN THE COLLECTION OF THE GEOLOGICAL SOCIETY, verified and arranged, with additions, by the Rev. J. F. BLAKE. 1902. Price 3s. 6d. (bound in cloth); 3s. 0d. (in paper wrappers). To Fellows, 2s. 6d. and 2s. 0d. [Postage 3d.]

HUTTON'S 'THEORY OF THE EARTH,' Vol. III., edited by Sir ARCHIBALD GEIKIE, D.C.L., F.R.S. Price 3s. 6d. To Fellows 2s. [Postage 4d.]

THE GEOLOGY OF NEW ZEALAND. Translated by Dr. C. F. FISCHER, from the works of MM. HUCHSTETTER & PETERMANN. With an Atlas of Six Maps.

Fellows may purchase One Copy of this book at 2s.; Additional Copies will be charged 4s. [Postage 5d.]

CONTENTS.

Proceedings of the Geological Society, Session 1906-1907.....	Pages i-iv
---	---------------

PAPERS READ.

	Page
1. Mr. E. A. N. Arber on the Upper Carboniferous Rocks of West Devon and North Cornwall.....	1
2. Mr. A. M. Davies on the Kimeridge Clay and Corallian Rocks of the Neighbourhood of Brill. (Plate I).....	29
3. Mr. R. W. Hooley on <i>Goniopholis crassidens</i> . (Plates II-IV).....	50
4. Mr. O. H. Evans on the Raised Beaches of Taltal.....	64
5. Dr. H. S. Washington on the Titaniferous Basalts of the Western Mediterranean.....	69
6. Mr. W. R. Baldwin-Wiseman on the Influence of Pressure and Porosity on the Motion of Sub-Surface Water. (Plate V).....	80

[No. 250 of the Quarterly Journal will be published next May.]

[The Editor of the Quarterly Journal is directed to make it known to the Public that the Authors alone are responsible for the facts and opinions contained in their respective Papers.]

* * The Council request that all communications intended for publication by the Society shall be clearly and legibly written on one side of the paper only, with proper references, and in all respects in fit condition for being at once placed in the Printer's hands. Unless this is done, it will be in the discretion of the Officers to return the communication to the Author for revision.

The Library and Museum at the Apartments of the Society are open every Weekday from Ten o'clock until Five, except during the fortnight commencing on the first Monday in September, when the Library is closed for the purpose of cleaning; the Library is also closed on Saturdays at One P.M. during the months of August and September. It is open until Eight P.M. on the Days of Meeting for the loan of books, and from Eight P.M. until the close of each Meeting for conversational purposes only.

Vol. LXIII.
PART 3.

AUGUST 14th, 1907.

No. 251.

THE
QUARTERLY JOURNAL
OF THE
GEOLOGICAL SOCIETY.

EDITED BY
THE ASSISTANT-SECRETARY.

[With Nine Plates, illustrating Papers by Mr. H. H. Arnold-Bemrose, Prof. J. B. Harrison, Mr. S. S. Buckman, Dr. C. Davison, and Miss M. C. Stopes.]

LONDON :

LONGMANS, GREEN, AND CO.

PARIS:—CHARLES KLINCKSIECK, 11 RUE DE LILLE.

SOLD ALSO AT THE APARTMENTS OF THE SOCIETY.

Price Five Shillings.

LIST OF THE OFFICERS AND COUNCIL OF THE GEOLOGICAL SOCIETY OF LONDON.

Elected February 15th, 1907.

President.

Sir Archibald Geikie, K.C.B., Sc.D., D.C.L., LL.D., Sec.R.S.

Vice-Presidents.

John Edward Marr, Sc.D., F.R.S.
Prof. William Johnson Sollas, Sc.D.,
LL.D., F.R.S.

Aubrey Strahan, Sc.D., F.R.S.
J. J. Harris Teall, M.A., D.Sc., F.R.S.

Secretaries.

Prof. William Whitehead Watts, M.A., M.Sc., F.R.S. | Prof. Edmund Johnstone Garwood, M.A.

Foreign Secretary.

Sir John Evans, K.C.B., D.C.L., LL.D.,
F.R.S., F.L.S.

Treasurer.

Horace Woollaston Monckton, Treas.L.S.

COUNCIL.

Henry Howe Arnold-Bemrose, J.P., M.A.	Horace Woollaston Monckton, Treas.L.S.
Prof. Samuel Herbert Cox, F.C.S., A.R.S.M.	Frederick William Rudler, I.S.O.
Sir John Evans, K.C.B., D.C.L., LL.D., F.R.S., F.L.S.	Prof. William Johnson Sollas, Sc.D., LL.D., F.R.S.
Prof. Edmund Johnstone Garwood, M.A.	Leonard James Spencer, M.A.
Sir Archibald Geikie, K.C.B., Sc.D., D.C.L., LL.D., Sec.R.S.	Aubrey Strahan, Sc.D., F.R.S.
Wilfrid H. Hudleston, M.A., F.R.S., F.L.S.	Charles Fox Strangways.
Finlay Lorimer Kitchin, M.A., Ph.D.	J. J. Harris Teall, M.A., D.Sc., F.R.S.
George William Lamplugh, F.R.S.	Richard Hill Tiddeman, M.A.
Prof. Charles Lapworth, M.Sc., LL.D., F.R.S.	Prof. William Whitehead Watts, M.A., M.Sc., F.R.S.
Richard Lydekker, B.A., F.R.S.	Henry Woods, M.A.
John Edward Marr, Sc.D., F.R.S.	Arthur Smith Woodward, LL.D., F.R.S.
	Horace Bolingbroke Woodward, F.R.S.

Assistant-Secretary, Clerk, Librarian, and Curator.

L. L. Belinfante, M.Sc.

Assistants in Office, Library, and Museum.

W. Rupert Jones. Clyde H. Black.
Alec Field.

STANDING PUBLICATION COMMITTEE.

Sir Archibald Geikie, *President.*

Prof. W. W. Watts. } *Secretaries.*
Prof. E. J. Garwood. }

Prof. S. H. Cox.
Dr. F. L. Kitchin.
Mr. G. W. Lamplugh.
Mr. R. Lydekker.
Dr. J. E. Marr.
Mr. H. W. Monckton.

Prof. W. J. Sollas.
Mr. L. J. Spencer.
Dr. A. Strahan.
Dr. J. J. H. Teall.
Mr. H. Woods.
Dr. A. Smith Woodward.

CENTENARY CELEBRATION OF THE GEOLOGICAL SOCIETY.

Thursday, September 26th to Saturday, September 28th, 1907.

EVENING MEETINGS OF THE GEOLOGICAL SOCIETY TO BE HELD AT BURLINGTON HOUSE.

SESSION 1907-1908.

1907.	
Wednesday, November	6*—20*
„ December	4*—18
1908.	
Wednesday, January	8*—22*
„ February (Anniversary	
„ Friday, Feb. 21st) ...	5*—19*
„ March	4*—18
„ April	1*—15
„ May	6*—20
„ June	3*—17*

[*Business will commence at Eight o'Clock precisely each Evening.*]

The dates marked with an asterisk are those on which the Council will meet.

ADMISSION AND PRIVILEGES

OF

FELLOWS OF THE GEOLOGICAL SOCIETY OF LONDON.

EVERY Candidate for admission as a Fellow must be proposed by three or more Fellows, who must sign a Certificate in his favour. The Proposer whose name stands first upon the Certificate must have a personal knowledge of the Candidate.

Fellows on election pay an Admission-Fee of Six Guineas. The Annual Contribution paid by Fellows is Two Guineas, due on the 1st of January in every year, and payable in advance; but Fellows elected after the month of February are subject only to a proportionate part of the Contribution for the year in which they are elected, and Fellows elected in November or December pay no Contribution for the current year. The Annual Contribution may, at any time, be compounded for by a payment of Thirty-Five Pounds.

The Fellows are entitled to receive gratuitously all the volumes or parts of volumes of the Quarterly Journal of the Society that may be published after their election, so long as their Annual Contributions are paid; and they may purchase any of the publications of the Society at a reduction of 25 per cent. under the selling-prices.

The Library is open daily to the Fellows between the hours of 10 and 5 (except during the fortnight commencing on the first Monday in September; see also next page), and on Meeting-Days until 8 p.m. Under certain restrictions, Fellows are allowed to borrow books from the Library.

Publications to be had of the Geological Society, Burlington House.

QUARTERLY JOURNAL. (Vols. III to LXII, inclusive.)

Price to Fellows, 13s. 6d. each (Vols. XV, XXIII, XXĀ, and XXXIV to LXII, 16s. 6d.), in cloth.

GENERAL INDEX TO THE FIRST FIFTY VOLUMES OF THE QUARTERLY JOURNAL (1845-1894). Part I (A-La). Part II (La-Z). Price 5s. each. To Fellows 3s. 9d. each. [Postage 3d.]

GEOLOGICAL LITERATURE added to the Geological Society's Library during the years ended December 31st, 1894-1906. Price 2s. each. To Fellows 1s. 6d. each. [Postage 2½d.]

LIST OF THE TYPE- AND FIGURED SPECIMENS RECOGNIZED BY C. D. SHERBORN IN THE COLLECTION OF THE GEOLOGICAL SOCIETY, verified and arranged, with additions, by the Rev. J. F. BLAKE. 1902. Price 3s. 6d. (bound in cloth); 3s. 0d. (in paper wrappers). To Fellows, 2s. 6d. and 2s. 0d. [Postage 3d.]

HUTTON'S 'THEORY OF THE EARTH,' Vol. III., edited by Sir ARCHIBALD GEIKIE, D.C.L., F.R.S. Price 3s. 6d. To Fellows 2s. [Postage 4d.]

THE GEOLOGY OF NEW ZEALAND. Translated by Dr. C. F. FISCHER, from the works of M.M. HOCHSTETTER & PETERMANN. With an Atlas of Six Maps.

Fellows may purchase One Copy of this book at 2s.; Additional Copies will be charged 4s. [Postage 5d.]

CONTENTS.

	Pages
Proceedings of the Geological Society, including those at the Annual General Meeting, Session 1906-1907	v-lxxii

PAPERS READ.


	Page
7. Mr. A. J. Jukes-Browne on the Age and Origin of the Plateaus around Torquay	106
8. Dr. C. W. Andrews on <i>Zeuglodon Wanklymi</i>	124
9. Mr. J. Mawson & Dr. A. S. Woodward on the Cretaceous Formation of Bahia and its Vertebrate Fossils. (Plates VI-VIII)	128
10. Dr. A. S. Woodward on <i>Scleromochlus Tylori</i> . (Plate IX).....	140
11. Mr. J. A. Douglas on Changes of Physical Constants in Minerals and Igneous Rocks, on the Passage from the Crystalline to the Glassy State ...	145
12. Mr. G. W. Lamplugh on the Geology of the Zambezi Basin around the Batoka Gorge. (Plates X-XVII)	162
13. Prof. S. H. Reynolds on a Silurian Inlier in the Eastern Mendips. (Plate XVIII)	217

[No. 251 of the Quarterly Journal will be published next August.]

[The Editor of the Quarterly Journal is directed to make it known to the Public that the Authors alone are responsible for the facts and opinions contained in their respective Papers.]

* * * The Council request that all communications intended for publication by the Society shall be clearly and legibly written on one side of the paper only, with proper references, and in all respects in fit condition for being at once placed in the Printer's hands. Unless this is done, it will be in the discretion of the Officers to return the communication to the Author for revision.

The Library and Museum at the Apartments of the Society are open every Weekday from Ten o'clock until Five, except during the fortnight commencing on the first Monday in September, when the Library is closed for the purpose of cleaning; the Library is also closed on Saturdays at One P.M. during the months of August and September. It is open until Eight P.M. on the Days of Meeting for the loan of books, and from Eight P.M. until the close of each Meeting for conversational purposes only.



Vol. LXIII.
PART 4.

NOVEMBER, 1907.

No. 252.

THE
QUARTERLY JOURNAL
OF THE
GEOLOGICAL SOCIETY.

EDITED BY
THE ASSISTANT-SECRETARY.

[With Eight Plates, illustrating Papers by Mr. L. Richardson,
Mr. H. Bolton, and Mr. F. W. Harmer.]


LONDON:

LONGMANS, GREEN, AND CO.


PARIS:—CHARLES KLINCKSIECK, 11 RUE DE LILLE.

SOLD ALSO AT THE APARTMENTS OF THE SOCIETY.

Price Five Shillings.



[Issued on December 21st, 1907.]



LIST OF THE OFFICERS AND COUNCIL OF THE GEOLOGICAL SOCIETY OF LONDON.

Elected February 15th, 1907.

President.

Sir Archibald Geikie, K.C.B., Sc.D., D.C.L., LL.D., Sec.R.S.

Vice-Presidents.

John Edward Marr, Sc.D., F.R.S.
Prof. William Johnson Sollas, Sc.D.,
LL.D., F.R.S.

Aubrey Strahan, Sc.D., F.R.S.
J. J. Harris Teall, M.A., D.Sc., F.R.S.

Secretaries.

Prof. William Whitehead Watts, M.A.,
M.Sc., F.R.S.

Prof. Edmund Johnstone Garwood, M.A.

Foreign Secretary.

Sir John Evans, K.C.B., D.C.L., LL.D.,
F.R.S., F.S.A., F.L.S.

Treasurer.

Horace Woollaston Monckton, Treas.L.S.

COUNCIL.

Henry Howe Arnold-Bemrose, J.P., M.A.
Prof. Samuel Herbert Cox, F.O.S., A.R.S.M.
Sir John Evans, K.C.B., D.C.L., LL.D.,
F.R.S., F.S.A., F.L.S.
Prof. Edmund Johnstone Garwood, M.A.
Sir Archibald Geikie, K.O.B., Sc.D., D.C.L.,
LL.D., Sec.R.S.
Wilfrid H. Hudleston, M.A., F.R.S., F.L.S.
Finlay Lorimer Kitchin, M.A., Ph.D.
George William Lamplugh, F.R.S.
Prof. Charles Lapworth, M.Sc., LL.D.,
F.R.S.
Richard Lydekker, B.A., F.R.S.
John Edward Marr, Sc.D., F.R.S.

Horace Woollaston Monckton, Treas.L.S.
Frederick William Rudler, I.S.O.
Prof. William Johnson Sollas, Sc.D., LL.D.,
F.R.S.
Leonard James Spencer, M.A.
Aubrey Strahan, Sc.D., F.R.S.
Charles Fox Strangways.
J. J. Harris Teall, M.A., D.Sc., F.R.S.
Richard Hill Tiddeman, M.A.
Prof. William Whitehead Watts, M.A.,
M.Sc., F.R.S.
Henry Woods, M.A.
Arthur Smith Woodward, LL.D., F.R.S.
Horace Bolingbroke Woodward, F.R.S.

Assistant-Secretary, Clerk, Librarian, and Curator.

L. L. Belinfante, M.Sc.

Assistants in Office, Library, and Museum.

W. Rupert Jones. Clyde H. Black.
Alec Field.

STANDING PUBLICATION COMMITTEE.

Sir Archibald Geikie, *President*.

Prof. W. W. Watts. } *Secretaries.*
Prof. E. J. Garwood. }

Prof. S. H. Cox.
Dr. F. L. Kitchin.
Mr. G. W. Lamplugh.
Mr. R. Lydekker.
Dr. J. E. Marr.
Mr. H. W. Monckton.

Prof. W. J. Sollas.
Mr. L. J. Spencer.
Dr. A. Strahan.
Dr. J. J. H. Teall.
Mr. H. Woods.
Dr. A. Smith Woodward.

EVENING MEETINGS OF THE GEOLOGICAL SOCIETY TO BE HELD AT BURLINGTON HOUSE.

SESSION 1907-1908.

1908.

Wednesday, January	8*—22*
" February (Anniversary	
Friday, Feb. 21st)...	5*—19*
" March	4*—18
" April	1*—15
" May	6*—20
" June	3*—17*

[Business will commence at Eight o'Clock precisely each Evening.]

The dates marked with an asterisk are those on which the Council will meet.

ADMISSION AND PRIVILEGES

OF

FELLOWS OF THE GEOLOGICAL SOCIETY OF LONDON.

EVERY Candidate for admission as a Fellow must be proposed by three or more Fellows, who must sign a Certificate in his favour. The Proposer whose name stands first upon the Certificate must have a personal knowledge of the Candidate.

Fellows on election pay an Admission-Fee of Six Guineas. The Annual Contribution paid by Fellows is Two Guineas, due on the 1st of January in every year, and payable in advance; but Fellows elected after the month of February are subject only to a proportionate part of the Contribution for the year in which they are elected, and Fellows elected in November or December pay no Contribution for the current year. The Annual Contribution may, at any time, be compounded for by a payment of Thirty-Five Pounds.

The Fellows are entitled to receive gratuitously all the volumes or parts of volumes of the Quarterly Journal of the Society that may be published after their election, so long as their Annual Contributions are paid; and they may purchase any of the publications of the Society at a reduction of 25 per cent. under the selling-prices.

The Library is open daily to the Fellows between the hours of 10 and 5 (except during the fortnight commencing on Monday, August 19th, 1907; see also next page), and on Meeting-Days until 8 p.m. Under certain restrictions, Fellows are allowed to borrow books from the Library.

Publications to be had of the Geological Society, Burlington House.

QUARTERLY JOURNAL. (Vols. III to LXII, inclusive.)

Price to Fellows, 13s. 6d. each (Vols. XV, XXIII, XXX, and XXXIV to LXII, 16s. 6d.), in cloth.

GENERAL INDEX TO THE FIRST FIFTY VOLUMES OF THE QUARTERLY JOURNAL (1845-1894). Part I (A-La). Part II (La-Z). Price 5s. each. To Fellows 3s. 9d. each. [Postage 3d.]

GEOLOGICAL LITERATURE added to the Geological Society's Library during the years ended December 31st, 1894-1906. Price 2s. each. To Fellows, 1s. 6d. each. [Postage 2½d.]

LIST OF THE TYPE- AND FIGURED SPECIMENS RECOGNIZED BY C. D. SHERBORN IN THE COLLECTION OF THE GEOLOGICAL SOCIETY, verified and arranged, with additions, by the Rev. J. F. BLAKE. 1902. Price 3s. 6d. (bound in cloth); 3s. 0d. (in paper wrappers). To Fellows, 2s. 6d. and 2s. 0d. [Postage 3d.]

HUTTON'S 'THEORY OF THE EARTH,' Vol. III., edited by Sir ARCHIBALD GEIKIE, D.C.L., F.R.S. Price 3s. 6d. To Fellows, 2s. [Postage 4d.]

THE GEOLOGY OF NEW ZEALAND. Translated by Dr. O. F. FISCHER, from the works of MM. HOCHSTETTER & PETERMANN. With an Atlas of Six Maps.

Fellows may purchase One Copy of this book at 2s.; Additional Copies will be charged 4s. [Postage 5d.]

THE HISTORY OF THE GEOLOGICAL SOCIETY OF LONDON, by H. B. WOODWARD, F.R.S. Price 7s. 6d. To Fellows, 6s. [Postage 6d.]

CONTENTS.

Proceedings of the Geological Society, Session 1906-1907	Pages lxxiii-lxxviii
--	-------------------------

PAPERS READ.

	Page
14. Mr. Arnold-Bemrose on the Toadstones of Derbyshire. (Plates XIX-XXII).	241
15. Rev. Prof. Henslow on the Xerophytic Characters of Coal-Plants	282
16. Prof. Bonney on the Southern Origin attributed to the Northern Zone in the Savoy and Swiss Alps	294
17. Mr. Parkinson on the Post-Cretaceous Stratigraphy of Southern Nigeria ...	308
18. Mr. Parkinson on the Geology of the Oban Hills	313
19. Mr. Parkinson on the Crystalline Rocks of the Kukuruku Hills	317
20. Prof. Harrison on the Coral-Rocks of Barbados. (Plate XXIII)	318
21. Mr. Buckman on Brachiopod Morphology. (Plate XXIV)	338
22. Mr. Oldham on the Origin of the Oceans	344
23. Dr. Davison on the Swansea Earthquake of June 27th, 1906. (Plate XXV) .	351
24. Dr. Davison on the Ochil Earthquakes of September 1900 to April 1907. (Plate XXVI)	362
25. Miss Stopes on the Flora of the Inferior Oolite of Brora. (Plate XXVII) .	375

[No. 252 of the Quarterly Journal will be published next November.]

[The Editor of the Quarterly Journal is directed to make it known to the Public that the Authors alone are responsible for the facts and opinions contained in their respective Papers.]

* * The Council request that all communications intended for publication by the Society shall be clearly and legibly written on one side of the paper only, with proper references, and in all respects in fit condition for being at once placed in the Printer's hands. Unless this is done, it will be in the discretion of the Officers to return the communication to the Author for revision.

The Library and Museum at the Apartments of the Society are open every Weekday from Ten o'clock until Five, except during the fortnight commencing on Monday, August 19th, and terminating on Monday, September 2nd, when the Library is closed for the purpose of cleaning; the Library is also closed on Saturdays at One p.m. during the month of August. It is open until Eight p.m. on the Days of Meeting for the loan of books, and from Eight p.m. until the close of each Meeting for conversational purposes only.

ADMISSION AND PRIVILEGES
OF
FELLOWS OF THE GEOLOGICAL SOCIETY OF LONDON.

EVERY Candidate for admission as a Fellow must be proposed by three or more Fellows, who must sign a Certificate in his favour. The Proposer whose name stands first upon the Certificate must have a personal knowledge of the Candidate.

Fellows on election pay an Admission-Fee of Six Guineas. The Annual Contribution paid by Fellows is Two Guineas, due on the 1st of January in every year, and payable in advance; but Fellows elected in November or December pay no Contribution for the current year. The Annual Contribution may, at any time, be compounded for by a payment of Thirty-Five Pounds.

The Fellows are entitled to receive gratuitously all the volumes or parts of volumes of the Quarterly Journal of the Society that may be published after their election, so long as their Annual Contributions are paid; and they may purchase any of the publications of the Society at a reduction of 25 per cent. under the selling-prices.

The Library is open daily to the Fellows between the hours of 10 and 5 (except during the fortnight commencing on the first Monday in September; see also next page), and on Meeting-Days until 8 P.M. Under certain restrictions, Fellows are allowed to borrow books from the Library.

**Publications to be had of the Geological Society,
Burlington House.**

QUARTERLY JOURNAL. (Vols. III to LXIII, inclusive.)

Price to Fellows, 13s. 6d. each (Vols. XV, XXIII, XXX, and XXXIV to LXIII, 16s. 6d.), in cloth.

GENERAL INDEX TO THE FIRST FIFTY VOLUMES OF THE QUARTERLY JOURNAL (1845-1894). Part I (A-La). Part II (La-Z). Price 5s. each. To Fellows 3s. 9d. each. [Postage 3d.]

GEOLOGICAL LITERATURE added to the Geological Society's Library during the years ended December 31st, 1894-1906. Price 2s. each. To Fellows, 1s. 6d. each. [Postage 2½d.]

LIST OF THE TYPE- AND FIGURED SPECIMENS RECOGNIZED BY C. D. SHERBORN IN THE COLLECTION OF THE GEOLOGICAL SOCIETY, verified and arranged, with additions, by the Rev. J. F. BLAKE. 1902. Price 3s. 6d. (bound in cloth); 3s. 0d. (in paper wrappers). To Fellows, 2s. 6d. and 2s. 0d. [Postage 3d.]

HUTTON'S 'THEORY OF THE EARTH,' Vol. III., edited by Sir ARCHIBALD GEIKIE, D.C.L., F.R.S. Price 3s. 6d. To Fellows, 2s. [Postage 4d.]

THE GEOLOGY OF NEW ZEALAND. Translated by Dr. C. F. FISCHER, from the works of MM. HOCHSTETTER & PETERMANN. With an Atlas of Six Maps.

Fellows may purchase One Copy of this book at 2s.; Additional Copies will be charged 4s. [Postage 5d.]

THE HISTORY OF THE GEOLOGICAL SOCIETY OF LONDON, by H. B. WOODWARD, F.R.S. Price 7s. 6d. To Fellows, 6s. [Postage 6d.]

CONTENTS.

PAPERS READ.

	Page
26. Mr. Richardson on the Inferior Oolite, etc. of the Bath-Douling District. (Plates XXVIII & XXIX)	383
27. Mr. Richardson on the Inferior Oolite, etc. of the District between the Rissingtons and Burford	437
28. Mr. Bolton on a Marine Fauna in the Basement-Beds of the Bristol Coal- field. (Plate XXX)	445
29. Mr. Harmer on the Origin of certain Cañon-like Valleys associated with Lake-like Areas of Depression. (Plates XXXI-XXXV)	470

TITLEPAGE, CONTENTS, and INDEX to Vol. LXIII.

[No. 253 of the Quarterly Journal will be published next February.]

[The Editor of the Quarterly Journal is directed to make it known to the Public that the Authors alone are responsible for the facts and opinions contained in their respective Papers.]

* * * The Council request that all communications intended for publication by the Society shall be clearly and legibly written on one side of the paper only, with proper references, and in all respects in fit condition for being at once placed in the Printer's hands. Unless this is done, it will be in the discretion of the Officers to return the communication to the Author for revision.

The Library and Museum at the Apartments of the Society are open every Weekday from Ten o'clock until Five, except during the fortnight commencing on the first Monday in September, when the Library is closed for the purpose of cleaning; the Library is also closed on Saturdays at One P.M. during the months of August and September. It is open until Eight P.M. on the Days of Meeting for the loan of books, and from Eight P.M. until the close of each Meeting for conversational purposes only.