

THE  
QUARTERLY JOURNAL  
OF THE  
GEOLOGICAL SOCIETY OF LONDON.

EDITED BY  
THE ASSISTANT-SECRETARY OF THE GEOLOGICAL SOCIETY.

VOLUME THE THIRTEENTH.

1857.

---

PART THE FIRST.  
PROCEEDINGS OF THE GEOLOGICAL SOCIETY.

---

LONDON:  
LONGMAN, BROWN, GREEN, LONGMANS, AND ROBERTS.  
PARIS:—FRIED. KLINCKSIECK, 11 RUE DE LILLE; BAUDRY, 9 RUE DU COQ,  
PRES LE LOUVRE; LEIPZIG, T. O. WEIGEL.

SOLD ALSO AT THE APARTMENTS OF THE SOCIETY.

MDCCCLVII.

**List**  
OF THE  
**OFFICERS**  
OF THE  
**GEOLOGICAL SOCIETY OF LONDON.**

~~~~~  
Elected February 20, 1857.  
~~~~~

**President.**

Col. Portlock, R.E., F.R.S.

**Vice-Presidents.**

R. A. Godwin-Austen, Esq., B.A., F.R.S.  
William Hopkins, Esq., M.A., F.R.S.  
Leonard Horner, Esq., F.R.S.L. & E.  
Sir R. I. Murchison, G.C.St.S., F.R.S. & L.S.

**Secretaries.**

Robert W. Mylne, Esq.  
Warrington W. Smyth, Esq., M.A.

**Foreign Secretary.**

William John Hamilton, Esq., F.R.S.

**Treasurer.**

Joseph Prestwich, Esq., F.R.S.

**COUNCIL.**

Samuel H. Beckles, Esq.	John C. Moore, Esq., M.A., F.R.S.
Prof. Charles Daubeny, M.D., F.R.S. & L.S.	Sir R. I. Murchison, G.C.St.S., F.R.S. & L.S.
Earl of Ducie, F.R.S.	
Hugh Falconer, M.D., F.R.S.	
Thomas F. Gibson, Esq.	Robert W. Mylne, Esq.
R. A. Godwin-Austen, Esq., B.A., F.R.S.	Prof. R. Owen, M.D., LL.D., F.R.S. & L.S.
William John Hamilton, Esq., F.R.S.	S. R. Pattison, Esq.
William Hopkins, Esq., M.A., F.R.S.	Col. Portlock, R.E., F.R.S.
Leonard Horner, Esq., F.R.S.L. & E.	Joseph Prestwich, Esq., F.R.S.
Col. Henry James, R.E., F.R.S.	Samuel Peace Pratt, Esq., F.R.S. & L.S.
Sir Charles Lyell, F.R.S. & L.S.	Prof. A. C. Ramsay, F.R.S.
Prof. N. S. Maskelyne, M.A.	Warrington W. Smyth, Esq., M.A.
	Alfred Tylor, Esq., F.L.S.

Assistant-Secretary, Curator, and Librarian.

T. Rupert Jones, Esq.

## TABLE OF CONTENTS.

---

### PART I.—ORIGINAL COMMUNICATIONS.

	Page
ANSTED, Professor D. T. On some remarkable Mineral Veins .....	240
BOLLAERT, W., Esq. On the Occurrence of Bones of Mastodon in Chile. [Abridged.] .....	291
BUIST, Dr. G. On the Occurrence of Crystallization in a Stucco-Casting.....	11
CAMPBELL, R., Esq. On the Occurrence of an Earthquake at Rhodes	176
CLARKE, Rev. W. B. Additional Notice of the Occurrence of Volcanic Bombs in Australia. [Abstract.] .....	188
CLEGHORN, JOHN, Esq. On the Rock-Basins of Dartmoor .....	231
COAN, Rev. TITUS. On the Volcanic Eruptions in Hawaii.....	170
EGERTON, Sir PHILIP DE MALPAS GREY, Bart., M.P. Palichthyologic Notes (No. 9). On some Fish-remains from the neighbourhood of Ludlow. (With 2 Plates.) .....	282
FALCONER, Dr. H. Description of Two species of the Fossil Mammalian Genus <i>Plagiaulax</i> from Purbeck .....	261
— On the species of Mastodon and Elephant occurring in the fossil state in Great Britain. Part I.—Mastodon. (With 2 Plates.)	307
GODWIN-AUSTEN, R., Esq. On the Newer Tertiary Deposits of the Sussex Coast .....	40
GOULD, CHARLES, Esq. Description of a new Fossil Crustacean ( <i>Tropifer laevis</i> , C. Gould) from the Lias Bone-bed .....	360
HUXLEY, Professor T. H. Description of a new Crustacean ( <i>Pygocephalus Cooperi</i> , Huxley) from the Coal-Measures. (With a Plate.) .....	363
KIRKBY, J. W., Esq. On some Permian Fossils from Durham. (With a Plate.) .....	213
MILLER, W., Esq. Further Notice of the Eruption of Mauna Loa	176
MORRIS, Professor J. On the Occurrence of Allophane at Charlton, Kent .....	13
MOYLE, H. J., Esq., and C. B. HILLIER, Esq. Notice of the Occurrence of Metalliferous Ores, and of Coal, in Siam. [Abstract.]..	188
MURCHISON, Sir RODERICK. Note on the Relative Position of the Strata, near Ludlow, containing the Ichthyolites described by Sir P. Egerton .....	290

	Page
NICOL, Professor JAMES. On the Red Sandstone and Conglomerate, and the Superposed Quartz-Rocks, Limestones, and Gneiss of the North-west Coast of Scotland .....	17
ONGLEY, H. S., Esq. Notice of the late Earthquake at Crete .....	240
OWEN, Professor R. Description of the Lower Jaw and Teeth of an Anoplotherioid quadruped ( <i>Dichobune ovina</i> , Owen) of the size of the <i>Xiphodon gracile</i> , Cuv., from the Upper Eocene Marl, Isle of Wight. (With a Plate.) .....	254
— On the Affinities of the <i>Stereognathus ooliticus</i> (Charlesworth), a Mammal from the Oolitic Slate of Stonesfield. (With a Plate.)	1
— On the <i>Dichodon cuspidatus</i> (Owen). (With a Plate.) .....	190
— On the Fossil Vertebræ of a Serpent ( <i>Laophis crotaloides</i> , Owen), discovered by Captain Spratt, R.N., in a Tertiary Formation at Salonica. (With a Plate.) .....	196
PRESTWICH, J., Esq. On some Fossiliferous Ironstone occurring on the North Downs. [Abstract.] .....	212
— On the Correlation of the Eocene Tertiaries of England, France, and Belgium. Part II. ....	89
RICHARDSON, Dr. T., and E. J. J. BROWELL, Esq. On the Analysis of Waters from the Turko-Persian Frontier; with an Appendix by Dr. PERCY.....	184
RUBIDGE, Dr. R. N. On the Copper-mines of Namaqualand .....	233
SALTER, J. W., Esq. On Annelide-burrows and Surface-markings from the Cambrian Rocks of the Longmynd. (With a Plate.)...	199
— On the Cretaceous Fossils of Aberdeenshire; with a Note on the Position of the Chalk-flints and Greensand; by W. FERGUSON, Esq. (With a Plate.) .....	83
— On two Silurian species of <i>Acidaspis</i> from Shropshire .....	210
SPRATT, Captain T. A. B., R.N. Additional Observations on the Geology of Bulgaria .....	176
— On the Freshwater Deposits of Eubœa, the Coast of Greece, and Salonika .....	177
— On the Geology of Varna and the Neighbourhood of Bulgaria	72
THOMSON, Dr. WYVILLE. On some species of <i>Acidaspis</i> from the Lower Silurian Beds of the South of Scotland. (With a Plate.)	206
WELD, F. A., Esq. On the Volcanic Eruption of Mauna Loa at Hawaii in 1855-56 .....	163
WOLLEY, JOHN, Esq. Notice of an Ice-carried Boulder at Borg-holm .....	189

---

Annual Report .....	i
Anniversary Address.....	xxvi
List of Foreign Members.....	cxlvii
List of the Wollaston Medallists.....	cxlviii
Donations to the Library and Bibliography .....	pages 135, 219, 294, 371

LIST OF THE FOSSILS FIGURED AND DESCRIBED  
IN THIS VOLUME.

[In this list, those fossils the names of which are printed in Roman type have been previously described.]

Name of Species.	Formation.	Locality.	Page.
<b>ZOOPHYTA. (3.)</b>			
<i>Flustrellaria dentata.</i> Pl. ii. f. 2 .....	Chalk .....	Aberdeenshire ...	86
<i>Hippothoa Voigtiana.</i> Pl. vii. f. 14, 15	Permian .....	Durham .....	217
<i>Semiescharipora mumia.</i> Pl. ii. f. 1...	Chalk .....	Aberdeenshire ...	86
<b>ANNELIDE. (1.)</b>			
<i>Arenicolites sparsus.</i> Pl. v. f. 2-4 ...	Cambrian ...	Longmynd .....	203
<b>ECHINODERMA. (1.)</b>			
<i>Toxaster, sp.</i> Pl. ii. f. 4.....	Up. Greensand	Aberdeenshire...	86
<b>MOLLUSCA. (12.)</b>			
<i>Ammonites, 2 sp.</i> Pl. ii. f. 9 & 10 ...	Up. Greensand	Aberdeenshire ...	87
<i>Avicula simulata.</i> Pl. ii. f. 5 .....	Up. Greensand	Aberdeenshire ...	86
<i>Chemnitzia Roessleri.</i> Pl. vii. f. 8 ...	Permian .....	Durham .....	216
<i>Chiton Howseanus.</i> Pl. vii. f. 9-13...	Permian .....	Durham .....	216
— <i>Loftusianus.</i> Pl. vii. f. 9 .....	Permian .....	Durham .....	216
<i>Cyprina Fergusoni.</i> Pl. ii. f. 7 .....	Up. Greensand	Aberdeenshire ...	87
<i>Dentalium cœlatulum.</i> Pl. ii. f. 8 ...	Up. Greensand	Aberdeenshire ...	87
<i>Lima elegans.</i> Pl. ii. f. 3.....	Chalk .....	Aberdeenshire ...	85
— <i>Permiana</i> .....	Permian .....	Durham .....	217
<i>Limopsis texturata.</i> Pl. ii. f. 6 .....	Up. Greensand	Aberdeenshire ...	86
<i>Pectunculus umbonatus?</i> .....	Up. Greensand	Aberdeenshire ...	86
<b>CRUSTACEA. (9.)</b>			
<i>Acidaspis callipareos.</i> Pl. vi. f. 11, 12	Lower Silurian	Ayrshire.....	208
— <i>Caractaci.</i> Pl. vi. f. 15-17 .....	Caradoc sandstone.	Gretton .....	211
— <i>coronata</i> .....	Lower Ludlow	Ludlow .....	210
— <i>Hystrix.</i> Pl. vi. f. 6-10 .....	Lower Silurian	Ayrshire.....	207
— <i>Lalage.</i> Pl. vi. f. 1-5 .....	Lower Silurian	Ayrshire.....	206
— <i>unica.</i> Pl. vi. f. 13, 14 .....	Lower Silurian	Ayrshire.....	209
<i>Goniodactylus</i> (recent). Pl. xiii. f. 6.	.....	.....	368
<i>Mysis</i> (recent). Pl. xiii. f. 4, 5 .....	.....	.....	368
<i>Prosopeus problematicus.</i> Pl. vii. f. 1-7.	Permian .....	Durham .....	214
<i>Pygocephalus Cooperi.</i> Pl. xiii. f. 1-3	Coal-measures	Manchester .....	363
<i>Tropifer lævis.</i> Woodcuts .....	Lias Bone-bed	Aust-Passage .....	361

Name of Species.	Formation.	Locality.	Page.
PISCES. (7.)			
<i>Auchenaspis Salteri</i> . Pl. ix. f. 4, 5 ...	Upper Silurian	Ludlow .....	286
<i>Cephalaspis Murchisoni</i> . Pl. ix. f. 1 .	Upper Silurian	Ludlow .....	284
— <i>ornatus</i> . Pl. ix. f. 2, 3 .....	Upper Silurian	Ludlow .....	285
— <i>Salweyi</i> . Pl. x. f. 1 .....	Old Red Sandstone.	Acton Beauchamp	283
<i>Onchus Murchisoni</i> ? Pl. x. f. 6 .....	Upper Silurian	Ludlow .....	288
—, sp. Pl. x. f. 5 & 7.....	Upper Silurian	Ludlow .....	289
<i>Plectrodus mirabilis</i> ? Pl. x. f. 2-4...	Upper Silurian	Ludlow .....	288
REPTILIA. (2.)			
<i>Coluber histrio</i> (recent). Pl. iv. f. 7.   .....	.....	.....	196
<i>Crotalus durissus</i> (recent). Pl. iv. f. 4   .....	.....	.....	196
<i>Laophis crotaloides</i> . Pl. iv. f. 2, 3 ...   .....	Miocene?.....	Salonika .....	196
<i>Palæophis typhæus</i> . Pl. iv. f. 1 .....	Eocene.....	Bracklesham .....	196
<i>Python tigris</i> (recent). Pl. ix. f. 5, 6   .....	.....	.....	196
MAMMALIA. (9.)			
<i>Dichobune ovina</i> . Pl. viii. ....	Upper Eocene.	Isle of Wight.....	254
<i>Dichodon cuspidatus</i> . Pl. iii.....	Upper Eocene.	Isle of Wight.....	190
<i>Hypsiprymnus Gaimardi</i> (recent).   .....	.....	.....	278
Woodcut.			
<i>Mastodon</i> ( <i>Tetralophodon</i> ) <i>Arvernensis</i> . Pl. xii. ....	Pliocene(Crag)	Suffolk .....	331, 333
<i>Mastodon</i> ( <i>Tetralophodon</i> ) <i>longirostris</i> . Pl. xi. f. 1, 2. ....	Upper Miocene.	Eppelsheim .....	324
<i>Mastodon</i> ( <i>Trilophodon</i> ) <i>angustidens</i> . Pl. xi. f. 3, 4. ....	Upper Miocene.	Subpyrenees .....	323
<i>Microlestes antiquus</i> . Woodcuts ...	Trias.....	Stuttgard .....	281
<i>Plagiaulax Becklesii</i> . Woodcuts ...	Purbeck .....	Purbeck .....	278-80
— <i>minor</i> . Woodcuts .....	Purbeck .....	Purbeck .....	281
<i>Stereognathus ooliticus</i> . Pl. i. ....	Great Oolite...	Stonesfield .....	1
INORGANICA.			
Rain-prints. Pl. v. f. 1 & 10 .....	Cambrian .....	Longmynd .....	202
Ripple-marks. Pl. v. f. 5-8 .....	Cambrian .....	Longmynd .....	201
Sun-cracks. Pl. v. f. 9 & 10 .....	Cambrian .....	Longmynd .....	202

## EXPLANATION OF THE PLATES.

---

**PLATE**

1.—REMAINS OF STEREOGNATHUS OOLITICUS, to illustrate Prof. Owen's paper on the Affinities of that Animal .....	To face p. 11
2.—FOSSIL BRYOZOA, SHELLS, AND ECHINODERMS, to illustrate Mr. Salter's paper on the Cretaceous Fossils of Aberdeenshire .....	89
3.—REMAINS OF DICHODON CUSPIDATUS, to illustrate Prof. Owen's paper on that Animal.....	196
4.—RECENT AND FOSSIL OPHIDIAN VERTEBRÆ, to illustrate Prof. Owen's paper on the Laophis crotaloïdes .....	199
5.—ANNELIDE BURROWS AND SURFACE-MARKINGS, to illustrate Mr. Salter's paper on Cambrian Fossils.....	206
6.—FOSSIL TRILOBITES, to illustrate Dr. W. Thomson's and Mr. Salter's papers on some species of Acidaspis .....	210
7.—FOSSIL CRUSTACEAN, SHELLS, AND BRYOZOA, to illustrate Mr. J. W. Kirkby's paper on some Permian Fossils .....	218
8.—REMAINS OF DICHOBUNE OVINA, to illustrate Prof. Owen's description of that Animal .....	260
9. } FISH-REMAINS, to illustrate Sir Philip de Malpas Grey Egerton's Pal-	
10. } ichthyologic Notes, No. 9 .....	288
11. }	
12. } TEETH OF MASTODONS, to illustrate Dr. Falconer's paper on Mastodon	360
13.—PYGOCEPHALUS COOPERI, to illustrate Prof. Huxley's paper .....	369