

THE
GEOLOGICAL MAGAZINE

NEW SERIES.

DECADE VI. VOL. VI.

OR

VOL. LVI OF WHOLE SERIES.

JANUARY — DECEMBER, 1919.

THE
GEOLOGICAL MAGAZINE

OR

Monthly Journal of Geology.

WITH WHICH IS INCORPORATED

THE GEOLOGIST,
GEOLOGY DEPARTMENT.

NOS. DELY TO DCI XVI
BIRKBECK COLLEGE, F.C.A

EDITED BY

HENRY WOODWARD, LL.D., F.R.S., F.G.S., F.R.M.S.

LATE OF THE BRITISH MUSEUM OF NATURAL HISTORY; PRESIDENT OF THE
PALEONTOGRAPHICAL SOCIETY; ETC.

AND

R. H. RASTALL, M.A.

ASSISTED BY

PROFESSOR J. W. GREGORY, D.Sc., F.R.S., F.G.S.

F. H. HATCH, Ph.D., M.Inst.M.M.

PROFESSOR J. E. MARR, Sc.D. (Camb.), F.R.S., F.G.S.

SIR JETHRO TEALL, Sc.D. (Camb.), LL.D., F.R.S., V.P.G.S.

PROFESSOR W. W. WATTS, Sc.D., LL.D., M.Sc., F.R.S., F.G.S.

HENRY WOODS, M.A., F.R.S.

DR. ARTHUR SMITH WOODWARD, LL.D., F.R.S., F.L.S.,
F.G.S.

NEW SERIES. DECADE VI. VOL. VI.

VOL. LVI OF WHOLE SERIES.

JANUARY—DECEMBER, 1919.

LONDON:

DULAU & CO., LTD., 34-36 MARGARET STREET,
CAVENDISH SQUARE, W. 1.

1919.

STEPHEN AUSTIN AND SONS, LTD.
PRINTERS, HERTFORD

LIST OF PLATES.

PLATE	FACING PAGE
I. Dr. Charles Doolittle Walcott	1
II. Palæolithic Flake Implements	49
III. Pores and Channel-Systems in <i>Megacystis</i>	115
IV. Lower Cambrian Hyolithidæ, etc., from Hartshill	157
V. Slabs of Clay Ironstone from the Highest Coal-measures, Claxheugh, Co. Durham	211
VI. Adoral Surfaces of <i>Megacystis</i>	262
VII. Section across the Northern and Southern Oil- and Gas-fields of Pennsylvania	290
VIII. <i>Neolenus serratus</i> (Rominger), Burgess Shale, C. D. Walcott	359
IX. Fossil Myriopod from Rochdale, Lancashire	411
X. John Hopkinson	431
XI. <i>Cryptophyllum Hibernicum</i> , gen. et sp. nov.	441
XII. Shell-Limestone Conglomerate at Blackhall Rocks and Jean Jiveson's Rock	498
XIII. Rock and Spindle Shore Stack East from St. Andrews. Con- centric arrangement of Ash Layers, Rock and Spindle	506
XIV. <i>Bunatia Woodwardi</i> , gen. et sp. nov., J. M. Clarke	532
XV. <i>Archæocryptolaria skeatsi</i> , Chapman, etc.	550

LIST OF PLATES.

PLATE	FACING PAGE
I. Dr. Charles Doolittle Walcott	1
II. Palæolithic Flake Implements	49
III. Pores and Channel-Systems in <i>Megacystis</i>	115
IV. Lower Cambrian Hyolithidæ, etc., from Hartshill	157
V. Slabs of Clay Ironstone from the Highest Coal-measures, Claxheugh, Co. Durham	211
VI. Adoral Surfaces of <i>Megacystis</i>	262
VII. Section across the Northern and Southern Oil- and Gas-fields of Pennsylvania	290
VIII. <i>Neolenus serratus</i> (Rominger), Burgess Shale, C. D. Walcott	359
IX. Fossil Myriopod from Rochdale, Lancashire	411
X. John Hopkinson	431
XI. <i>Cryptophyllum Hibernicum</i> , gen. et sp. nov.	441
XII. Shell-Limestone Conglomerate at Blackhall Rocks and Jean Jiveson's Rock	498
XIII. Rock and Spindle Shore Stack East from St. Andrews. Con- centric arrangement of Ash Layers, Rock and Spindle	506
XIV. <i>Bumia Woodwardi</i> , gen. et sp. nov., J. M. Clarke	532
XV. <i>Archæocryptolaria skeatsi</i> , Chapman, etc.	550

LIST OF ILLUSTRATIONS IN THE TEXT.

	PAGE
Sketch-map of Carboniferous Limestone outcrops near Wellington, Salop	78
Facial suture in Trilobites	104
Diagrammatic section of the atmosphere from the Equator to the Pole	159
Air rising in the centre of a cyclone	160
Diagrammatic section of termination of Coal-measures, S. Durham	169
Section showing position of fossiliferous ironstone bands and thrust plane	204
Section at XY in previous Figure	206
<i>Bellinurus Trechmanni</i> , H. Woodw., sp. nov.	210
Kyanite, Sandringham Sands	214
Zircons, Great Gransden	217
Zoned Crystals of Zircon, Great Gransden	218
Crystals of Rutile, Great Gransden	219
Map of Drake's Island, Plymouth	263
Quartz grains, Parish Sand-pit, Aspley Guise	267
Sphene, Aspley Guise	268
Kyanite Crystals, near Woburn	271
Isoseismal lines and disturbed area, Stafford Earthquake	302, 304
Earthquake cutting a crust-fold	310
Map showing site of Gravel Plain near Corwen	313
Hydropore-sutures in <i>Megacystis</i>	323
Geological sketch-map of parts of Eritrea and Abyssinia	341
Map showing the outcrops in the Harbertonford area	351
Diagram illustrating arrangements of the coarse fragments in the Crag	353
Sections at Crowdy's Quarry, New Quarry, and Copse of Austin's Close	357
<i>Neolenus serratus</i> (Rominger), by C. D. Walcott	360
Sketch-map of distribution of Igneous rocks, Strathbogie and Lower Banffshire	365
Iron-ore and basic steel	389
Sketch-map of part of Southern Sikkim	399
View from Badamtam across the Valley of the Ranjit	401
Map of N. India showing localities connected with Pleistocene glaciation	402

	PAGE
North bank of the Great Rangit Valley	405
Five segments from the cast of <i>Palæosoma giganteum</i>	407
Reconstructed posterior segments of <i>Palæosoma giganteum</i>	408
<i>Palæosoma robustum</i>	409
Development of major septa in a normal Rugose Coral	436
Analysis of interambulacral tuberculation in <i>Pyrina</i> and <i>Conulus</i>	445
Iceland, after Th. Thoroddsen	468
Diagrammatic section across the Bryozoa Reef	486
Curve showing number of invertebrate species, Durham Permian	488
Diagrammatic section across the Permian outcrop	489
Diagram to illustrate structure of Rock and Spindle shore stack	502
Four diagrams to illustrate the occurrence, proportions, and distribution of silica in Chalk	538-44