

THE  
GEOLOGICAL MAGAZINE.

VOL. LVII OF WHOLE SERIES.

JANUARY--DECEMBER, 1920.

THE  
GEOLOGICAL MAGAZINE

OR  
Monthly Journal of Geology.

WITH WHICH IS INCORPORATED  
THE GEOLOGIST.  
GEOLOGY DEPARTMENT,  
BIRKBECK COLLEGE, E.C.4

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  
PALÆONTOGRAPHICAL SOCIETY; ETC.

AND  
R. H. RASTALL, M.A., M.INST.M.M., F.G.S.,  
UNIVERSITY LECTURER IN ECONOMIC GEOLOGY, CAMBRIDGE.

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., F.R.S., F.G.S.  
SIR JETHRO J. H. TEALL, Sc.D., 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.  
ARTHUR SMITH WOODWARD, LL.D., F.R.S., F.L.S., F.G.S.

VOL. LVII OF WHOLE SERIES.  
JANUARY—DECEMBER, 1920.

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

1920.

STEPHEN AUSTIN AND SONS, LTD.  
PRINTERS, HERTFORD

## LIST OF PLATES.

PLATE	FACING PAGE
I. Quartzite Pebbles, Oldhaven Beds. . . . .	70
II. Carboniferous Fossils, Siam . . . . .	178
III. Fig. 1 : Lateritized Norite, Wilberforce, Sierra Leone. Fig. 2 : Residual Laterite derived from Granite, Baoma, Sierra Leone	220
IV. New Lower Devonian <i>Homalotiti</i> . . . . .	303
V. Jurassic Ammonites from East Africa . . . . .	311
VI. Memorial Tablet to Professor James Nicol, Aberdeen . . . . .	387
VII. Ambulacra of <i>Apatopygus</i> , Oligopodia, and young <i>Echinolampas</i>	393
VIII. Diamond Pipes in Brazil . . . . .	447
IX. Forsterite Marble, Sleaford Bay . . . . .	449
X. James Hall, Albany Museum, New York, U.S.A. . . . .	483
XI. Diopside and Microcline Rock, Sleaford Bay . . . . .	492
XII. Cretaceous Echinoidea from Persia . . . . .	500
XIII. <i>Spharocoryphe thomsoni</i> Reed . . . . .	534
XIV. Four species of <i>Etheridgina</i> . . . . .	538
XV. New Ammonite genus, <i>Dayiceras</i> . . . . .	543
Separate Folding Map : Geology of Ningi Hills, Nigeria ( <i>not</i> <i>numbered</i> ) . . . . .	440

## LIST OF ILLUSTRATIONS IN THE TEXT.

	PAGE
Sketch-map showing positions of sections of strata near Leighton Buzzard	8
Diagram showing part of beds in the working face of Harris's Pit . . .	10
Diagram of section of <i>Asteroceras obtusum</i> . . . . .	27
Diagram showing discontinuous siphuncular tube in a Hildoceratid Ammonite . . . . .	29
Diagram of section in western face of a sand-pit north side of Mile Tree Farm . . . . .	57
Transverse section of Branksome Chine . . . . .	72
Longitudinal section of Branksome Chine . . . . .	73
Longitudinal section of Alum Chine . . . . .	73
Longitudinal section showing relation of the old and new valleys to the changing shore-line . . . . .	74
Diagrammatic section showing quartzose conglomerate at Caldon Low . . . . .	78
Synoptic view of the two interpretations of the section in Harris's Pit . . . . .	112
<i>Posidonomya Becheri</i> Bronn, var. nov. <i>siamensis</i> . . . . .	118
Fruit of fossil Charophyte from Locle, Switzerland . . . . .	127
Sketch-map of North Arran, showing faults and the granite . . . . .	149
Section from Catacol Bay, through Meall nan Damh, etc. ; section across Glen Rosa . . . . .	153
Sections across the valley of the Garbh Allt, west of Glen Rosa . . . . .	158
Sections across the valley of the Gleann Easbuig . . . . .	159
Sketch-map of the Snowdon district . . . . .	161
Section from Snowdon to Mynydd Mawr . . . . .	162
Hypothetical sketch of Snowdon at end of pre-Glacial times . . . . .	163
<i>Arvicola melitensis</i> sp. nov. Crown view of first and second right lower molars . . . . .	210
<i>Homalonotus bifurcatus</i> sp. nov. . . . .	305
Sketch-map of Castle-an-Dinas . . . . .	348
Section of workings, Castle-an-Dinas Mine . . . . .	349
Elutriation curves of sediments to show meaning of "Equivalent Grade" . . . . .	366
Types of elutriation curves of arenaceous sediments . . . . .	413
Diagram showing thickness of Thanet Beds . . . . .	414
Provisional classification of the finer arenaceous sediments . . . . .	415
Elutriation curves of Thanet Beds . . . . .	416
Graph showing relation between equivalent grades of Thanet Beds . . . . .	417
Section along shore at Sleaford Bay . . . . .	451
Diagrammatic sketch of flat surface of dolomite . . . . .	461
Logarithms in miles from Charlton . . . . .	467