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OBITUARY.

SIR RODERICK IMPEY MURCHISON, Bart., K.C.B., LL.D.,
D.C.L., M.A., F.R.S., F.G.S.,

Director-General of the Geological Survey of Great Britain and Ireland; late President of the Royal Geographical Society of London; Trustee of the British and Hunterian Museums, and of the British Association for the Advancement of Science; Member of the Imperial Academy of Sciences, the Geographical and Mineralogical Societies of St. Petersburg; Corresponding Member of the Imperial Academy of Vienna, of the Royal Academy of Hungary, of the Institute of France; Honorary Member of the Royal Academies of Berlin, Copenhagen, Stockholm, Brussels, Munich, Holland, Turin, Rome; and of the Scientific Societies of Switzerland, Moscow, Breslau, Frankfort, Boston, New York, Philadelphia, etc., etc., etc.

Born February, 19, 1792; Died October 22, 1871.

(WITH A PORTRAIT.)

THE death of Sir Roderick Murchison, although at the ripe age of 80 years, is a loss which Geologists and Geographers are alike called upon to mourn. In relation to both these sciences, he has for many years justly occupied the most prominent positions. But, apart from his high social and scientific standing, he was a man full of genial and kindly feeling, who could be readily approached; and those who knew him most intimately acknowledge that he was never known to fail his friends in the hour of need, but was ready to aid them with his advice, his influence, and his purse, as many a young scientific man amongst us can testify.

Born at Tarradale, in Ross-shire, he received his early education as a boy at the Grammar School at Durham.

But the associations of his Highland home—his ancient Scottish pedigree, numbering in the long roll many a staunch supporter of the Stuarts, who had freely laid down their lives for their Sovereign—combined with the stirring events which marked the period of his own youth, no doubt powerfully influenced young Murchison in selecting a profession, until in imagination he too, like Roderick Vich Alpine, heard the mountains say—

“To you as to your sires of yore,
Belong the target and claymore!”

Having made up his mind to follow the military profession, he was sent by his father, Mr. Kenneth Murchison, to the Royal Military College, Great Marlow, after which, having pursued his studies for a



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few months at the University of Edinburgh, he obtained a commission in the army in 1807, and joining his regiment the following year, served in the 36th Foot with the army in Spain and Portugal under Lord Wellington, afterwards on the Staff of his uncle, General Sir Alexander Mackenzie, and lastly as Captain in the 6th Dragoons. He took an active part in several of the most important battles in the war, and earned the reputation of being a brave and able officer. He carried the colours of his regiment at the Battle of Vimiera, and afterwards accompanied the army in its advance to Madrid and its junction with the force under Sir John Moore, and shared in the dangers and retreat at Corunna. At the end of the war in 1815, he married Charlotte, only daughter of the late General Francis Hugonin. It was Sir Roderick's own conviction that to his wife's influence was mainly to be attributed the choice he made in following scientific pursuits with her, and giving up, as he did, the ordinary amusements of a retired cavalry officer.¹ She was his friend, companion, and fellow-labourer, in geology aiding him in his observations, and making for him those remarkable geological sketches of landscape that illustrate his works. He is also said to have early become acquainted with Sir Humphry Davy, who suggested to him that he should attend the lectures of the Royal Institution. This advice he followed, and he also studied with Mr. Richard Phillips, F.R.S.

In 1825 he was elected a Fellow of the Geological Society of London, and in the same year he read his first paper on "The Geological Formation of the North-west extremity of Sussex, and the adjoining parts of Hants and Surrey," before that Society.²

In 1826 he recorded the results of his investigations in the Oolitic series of Sutherland, Ross, and the Hebrides, and in the same year he was elected to the Fellowship of the Royal Society; the following year he again visited the Highlands in company with Professor Sedgwick and succeeded in showing that the primary Sandstone of McCulloch was really the true Old Red Sandstone or Devonian.

In 1828 he resolved to extend his researches abroad, and to study the extinct volcanos of Auvergne and the geology of the Tyrol. He was accompanied on this occasion by Mr. (now Sir Charles) Lyell.

Following Dr. Buckland's advice, Murchison next devoted himself to a careful examination of the geology of Hereford, Shropshire, and the Welsh Borders, the ancient country of the *Silures*, and it was upon this investigation that his great Silurian system was afterwards founded.

These researches he afterwards followed up by others in Pembroke-shire, to the west of Milford Haven; and his conclusions as to the stratigraphical relation between the Devonian and the under-

¹ See notice of Lady Murchison, *GEOL. MAG.*, 1869, Vol. VI., p. 227, by Prof. Geikie, F.R.S., President Edinburgh Geological Society.

² This paper is of great historical interest, being accompanied by a letter from the illustrious Baron Cuvier, in which he gives a detailed description of the Reptilian remains forwarded to him by Mr. Murchison for examination. The specimens which are figured and described in this paper are now preserved in the British Museum.

lying Silurian systems was made public at the meeting of the British Association for the Advancement of Science in 1831, but his great work did not appear until 1839.

Further geographical investigations in Devon and Cornwall followed, in which Professor Sedgwick took part, and in 1835 and 1839, two journeys were performed by Sedgwick and Murchison to the Rhenish Provinces; on the latter occasion M. de Verneuil also accompanied them. The result of these researches, and comparison of the English Devonians with those of Rhenish Prussia, was published in 1839, and a final classification adopted.

In 1840, accompanied by De Verneuil, Murchison visited Russia, at that period but very little known geologically.

They examined the banks of the rivers Volkoff and Siass, and the shores of Lake Onega, thence to Archangel and the borders of the White Sea, and followed the river Dwina in the government of Vologda. They traversed the Volga and returned by Moscow to St. Petersburg, examining the Valdai Hills, Lake Ilmen, and the banks of the rivers which they passed. They then returned to England, but having been invited by the late Emperor Nicholas to superintend a Geological Survey of Russia, the two geologists returned to St. Petersburg in the spring of 1841, and being joined by Count Keyserling and Lieutenant Kokscharow, they proceeded to explore the Ural Mountains, the Southern Provinces of the Empire and the Coal Districts between the Dneiper and the Don. In 1842 Murchison travelled alone through several parts of Germany, Poland, and the Carpathian Mountains, the better to understand the relations of the great formations to each other over wide areas. In 1844 he explored the Palæozoic rocks of Sweden and Norway. In 1845-6 he completed his great joint work on "The Geology of Russia and the Ural Mountains," in two quarto volumes of 700 and 600 pages, copiously illustrated with maps, sections, and plates of fossils. Not long after the publication of this work, Mr. Murchison was knighted by Her Majesty, the Emperor having previously conferred several Russian orders on him, including that of St. Stanislaus. In 1849 he received the Copley medal from the Royal Society, in recognition of his having established the Silurian system in geology.

His researches (extending over six visits) in the Alps, Apennines, and Carpathian mountains, established the fact of a graduated transition from Secondary to Tertiary rocks, and clearly separates the great Nummulitic formation from the Cretaceous formations with which it was confounded.

Ranking next in importance to his definition of the Silurian System was his differentiation of the Permians. Having satisfied himself that the Lower New Red Sandstone, and the Magnesian Limestone and Marl Slates constituted one natural group only, which, from their organic contents, must be entirely separated from the overlying formations, he proposed, in 1841, that the group should receive the name of the "Permian" system, from Perm, a Russian Government, where these strata are more extensively developed than elsewhere, occupying an area twice the size of France, and con-

taining an abundant and varied suite of fossils. The name Permian is now generally adopted.

In 1854 Sir Roderick published the first edition of his best-known work, "Siluria," which had, in 1867, reached its fourth edition, and contains 566 pages 8vo. of closely printed matter, 41 plates and explanations.

In 1855 he produced a memoir in conjunction with Prof. Morris on the German Palæozoic rocks, and shows that there is no break between the Permian system and the Triassic series.

By the death of Sir H. T. de la Beche, Sir Roderick, in 1855, succeeded to the post of Director General of the Geological Survey and the Museum of Practical Geology in Jermyn Street, which have owed their efficiency for the past fifteen years very largely to his energy and constant attention.

Sir Roderick Murchison will long be remembered both in the world of science and of commerce in connexion with the discovery of gold in Australia. Long years before the actual discovery of gold in Australia was made known, he inferred the presence of auriferous deposits in the Australian mountain-ranges from the analogy which existed between their rock-formations and those of the Ural mountains, with the physical characters of which he had made himself familiar. He endeavoured most earnestly at the time to awaken the attention of the Home Government to the great importance of the subject to our colonies in the Southern hemisphere, but with little success.

During his scientific career he has been identified most intimately with the Geological Society. He acted as Secretary for five years, was elected President in 1831-2, and again in 1842-3.

He aided Sir David Brewster, in 1830, to establish the British Association, of which for several years he acted as General Secretary. He was President at the Meeting for 1846, at Southampton.

In 1844 he was elected President of the Royal Geographical Society, and again in 1845, in 1852, and in 1856; indeed, he has held the Presidential chair of that Society almost down to the present time; having been succeeded only a few months ago by Sir Henry Rawlinson.

His energetic efforts in advocating the search after Sir John Franklin; his success in raising a monument to Lieutenant Bellot, of the French Navy; his advocacy of the explorers of Central Africa, Burton, Speke, Grant, Baker, and especially his friend Livingstone, are among the proofs of his earnest self-devotion to the cause of Geographical research.

Amongst the many workers in the fields of science how few there are whose actual published labours extend over half a century; yet almost the last Blue Book which has appeared, namely, "the Report of the Commissioners appointed to inquire into the several matters relating to Coal in the United Kingdom," (Vol. I. General Report and Twenty-two Sub-reports, folio, 1871), bears Sir Roderick's name second on the Commission.

The Council of the Geological Society awarded him the Wollaston

Gold Medal, in 1864, in recognition of his contributions to geology as an inductive science. The Universities of Oxford, Cambridge, and Dublin have also bestowed on him their Honorary Degree.

He held for many years the post of a Trustee to the British Museum, with great advantage to the Natural History Departments in that Institution, which he specially promoted.

Sir Roderick was created, in 1863, a Knight Commandant of the Order of the Bath (civil division), and in the following year he received the prize named after Baron Cuvier from the French Institute. In 1859 the Royal Society of Scotland presented him with their first Brisbane gold medal, for his scientific classification of the Highland rocks, and for the establishment of the remarkable fact that the Gneiss of the north-west coasts is the oldest rock in the British Islands. He was created a baronet in January, 1866.

One of his latest acts consisted in offering the munificent sum of £6,000 to found a Chair of Geology and Mineralogy in the University of Edinburgh, on condition that the Government would supplement the proceeds by an annual grant of £200. This was duly acceded to, and the chair so endowed, is now held by Professor Geikie, F.R.S., etc.

The death of Lady Murchison in 1869 was most keenly felt by Sir Roderick, indeed it may be said to have given him a shock from which he never wholly recovered. He was first attacked by paralysis in December, 1870, but gradually rallied until two months since, when he had a second stroke, but the symptoms had lately abated. A slight attack of bronchitis, caused by a cold caught in riding out on the 19th ulto., ended his valuable and well-spent life on Sunday evening, Oct. 22, at 8.30 p.m.

His scientific career, now brought to a close, represents the period of the dawn and development of Geology as a science in this country. He commenced work at the moment when William Smith issued the first Geologically-coloured map of England, and he has lived on to see half the world surveyed geologically, and has himself mapped a vast extent of territory in Europe for his Silurian kingdom.

In conclusion (to quote the words of the *Daily News*), "the honours he won are a great testimony to the scientific enlightenment of the age. We have crowned Science Queen, and all her servants form her court, and wear the titles she bestows. And, truly, a scientific man earns his honours more nobly, and wears them more honourably, than those who win them in political intrigue or on the field of battle. Sir Roderick Murchison, dying at eighty, covered with titles of literary and scientific honour, and satisfied with social position and renown, is a prophet of the coming time. He may not be looked back on as a great scientific genius; but he is one of the pioneers of that new order of renown which is won by fruitful service rather than by destructive deeds."

(We are indebted to the *Times* of October 23rd, for a part of the foregoing sketch.—EDIT. GEOL. MAG.)

The following is a list of the Books, Papers, and Memoirs, written by Sir Roderick Murchison:—

1. Geological Sketch of the North-western Extremity of Sussex, and the adjoining parts of Hants and Surrey.—*Trans. Geol. Soc. ser. 2, ii. p. 97*; *Phil. Mag. lxxvii. p. 70*; *Féruss. Bull. 1826, viii. p. 24*; 1827, x. p. 211.
2. Supplementary Remarks on the Strata of the Oolitic Series, and the rocks associated with them in the Counties of Sutherland and Ross, and in the Hebrides.—*Trans. Geol. Soc. ser. 2, ii. p. 353*; *Proc. Geol. Soc. i. p. 33*; *Phil. Mag. ser. 2, ii. p. 454*; *Féruss. Bull. 1829, xvi. pp. 50, 183*; xvii. p. 25.
3. On the Coal-field of Brora in Sutherlandshire, and some other stratified deposits of the North of Scotland.—*Trans. Geol. Soc. ser. 2, ii. p. 293*; *Proc. Geol. Soc. i. p. 13*; *Phil. Mag. ser. 2, i. p. 229*; *Féruss. Bull. 1828, xv. p. 25*; 1829, xvi. p. 47.; *Ann. Phil. 1827, pp. 229, 445*; *Edin. Phil. Journ. 1827, p. 188*.
4. On the Tertiary and Secondary Rocks forming the Southern Flank of the Tyrolean Alps, near Bassano.—*Proc. Geol. Soc. i. p. 137*; *Phil. Mag. ser. 2, v. p. 401*; vi. p. 55.
5. On the Bituminous Schist and Fossil Fish of Seefeld in the Tyrol.—*Proc. Geol. Soc. i. p. 139*; *Phil. Mag. ser. 2, vi. p. 57*; *Ann. Sc. Nat. xviii. p. 132*.
6. On a Fossil Fox found at Eningen near Constance, with an account of the deposit in which it was imbedded.—*Trans. Geol. Soc. ser. 2, iii. p. 277*; *Proc. Geol. Soc. i. p. 167*; *Phil. Mag. ser. 2, vii. p. 207*.
7. Supplementary Observations on the Structure of the Austrian and Bavarian Alps.—*Proc. Geol. Soc. i. p. 250*; *Phil. Mag. ser. 2, ix. p. 213*; *Bull. Soc. Géol. Fr. i. p. 144*; *Leonard und Bronn N. Jahrb. 1833, p. 440*.
8. On the Secondary Formations of Germany, as compared with those of England; *Proc. Geol. Soc. i. p. 325*; *Phil. Mag. ser. 2, x. p. 45*.
9. Address to the Geological Society, 1832.—*Proc. Geol. Soc. i. p. 362*; *Phil. Mag. ser. 2, xi. p. 363*.
10. Observations on Clay, Gravel, Marl, and Sand in Lancashire, containing existing species of Sea Shells.—*Report Brit. Assoc. i. p. 82*.
11. On the Structure of the Cotteswold Hills and country round Cheltenham; and on the occurrence of Stems of Fossil Plants in vertical positions in the Sandstone of the Inferior Oolite of the Cleveland Hills.—*Proc. Geol. Soc. i. p. 388*; *Phil. Mag. ser. 3, i. p. 221*.
12. Address to the Geological Society, 1833.—*Proc. Geol. Soc. i. p. 440*; *Phil. Mag. ser. 3, ii. p. 467*; iii. p. 42.
13. On the Secondary Deposits which occupy the western parts of Shropshire and Herefordshire, and are prolonged from north-east to south-west, through Radnor, Brecknock, and Caermarthenshires, with descriptions of the accompanying rocks of intrusive or igneous characters.—*Proc. Geol. Soc. i. pp. 470, 474*; *Phil. Mag. ser. 3, iii. p. 224*.
14. On Freshwater Limestone between the Seams of Coal in the neighbourhood of Shrewsbury.—*Phil. Mag. ser. 3, iv. p. 158*.
15. On the Old Red Sandstone in the Counties of Hereford, Brecknock, and Caermarthen, with Collateral Observations on the Dislocations which affect the north-west margin of the South Welsh Coal-basin.—*Proc. Geol. Soc. ii. p. 11*; *Phil. Mag. ser. 3, iv. p. 228*; *L. u. Br. N. Jahrb. 1836, p. 404*.
16. On the Structure and Classification of the Transition Rocks of Shropshire, Herefordshire, and part of Wales, and on the Lines of Disturbance which have affected that series of Deposits, including the Valley of Elevation of Woolhope.—*Proc. Geol. Soc. ii. p. 13*; *Phil. Mag. ser. 3, iv. p. 370*; *L. u. Br. N. Jahrb. 1836, p. 70*.
17. On the Gravel and Alluvial Deposits of those parts of the Counties of Hereford, Salop, and Worcester, which consist of Old Red Sandstone; with an Account of the Ruffstone, or Travertin of Spouthouse, and of the Southstone Rock near Tenbury.—*Proc. Geol. Soc. ii. p. 77*; *Phil. Mag. ser. 3, v. p. 217*.
18. On certain Trap Rocks in the Counties of Salop, Montgomery, Radnor, Brecon, Caermarthen, Hereford, and Worcester; and the effects produced by them upon the stratified deposits.—*Proc. Geol. Soc. ii. p. 85*; *Phil. Mag. ser. 3, v. pp. 225, 292*.
19. On an outlying Basin of Lias on the borders of Salop and Cheshire, with a

- short Account of the Lower Lias between Gloucester and Worcester.—Proc. Geol. Soc. ii. p. 114; Phil. Mag. ser. 3, vi. p. 314.
20. On the New Red Sandstone Series of the Counties of Salop, Stafford, Worcester, and Gloucester.—Proc. Geol. Soc. ii. p. 116; Phil. Mag. ser. 3, vi. p. 315; *L. u. Br. N. Jahrb.* 1836, p. 406.
21. On certain Coal-tracts in Salop, Worcestershire, and North Gloucestershire.—Proc. Geol. Soc. ii. p. 119.
22. On certain Lines of Elevation and Dislocation of the New Red Sandstone of North Salop and Staffordshire, with an Account of Trap Dykes in that Formation, at Acton Reynolds near Shrewsbury.—Proc. Geol. Soc. ii. p. 194; Phil. Mag. ser. 3, vii. p. 416.
23. On the Silurian System of Rocks.—Phil. Mag. ser. 3, vii. p. 46.
24. On the recent Discovery of Fossil Fishes (*Paleoniscus catopterus*, Agassiz) in the New Red Sandstone of Tyrone, Ireland.—Proc. Geol. Soc. ii. p. 206; Phil. Mag. ser. 3, viii. p. 72; *L. u. Br. N. Jahrb.* 1836, p. 735.
25. On the Geological Structure of Pembrokehire, more particularly on the Extension of the Silurian System of Rocks into the coast cliffs of that country.—Proc. Geol. Soc. II. p. 226; Phil. Mag. ser. 3, viii. p. 561.
26. On the Gravel and Alluvia of S. Wales, and Siluria as distinguished from a northern Drift covering Lancashire, Cheshire, N. Salop, and parts of Worcester and Gloucester.—Proc. Geol. Soc. ii. p. 230; Phil. Mag. ser. 3, viii. p. 566.
27. On the Silurian and other Rocks of the Dudley and Wolverhampton Coal-field, followed by a Sketch proving the Lickey Quartz Rock to be of the same age as the Caradoc Sandstone.—Proc. Geol. Soc. ii. p. 407; Phil. Mag. ser. 3, ix. p. 489; *L. u. Br. N. Jahrb.* 1838, p. 597.
28. On the Supposed Existence of the Lias Formation in Africa.—Proc. Geol. Soc. ii. p. 415; Phil. Mag. ser. 3, ix. p. 496; *L. u. Br. N. Jahrb.* 1838, p. 197.
29. On a specimen from the Oar's Rock, nine miles south of Little Hampton, Sussex.—Proc. Geol. Soc. ii. p. 686; Phil. Mag. ser. 3, xiii. p. 387.
30. On Fishes of the Ludlow Rocks.—Rep. Brit. Assoc. vi. Sect. p. 91.
31. Address to the British Association for the Advancement of Science (Newcastle).—Rep. Brit. Assoc. p. xxxi.
32. The Silurian System founded on Geological Researches in the counties of Salop, Hereford, Radnor, Montgomery, Caermarthen, Brecon, Pembroke, Monmouth, Gloucester, Worcester, and Stafford. 4to. Lond. 1839.
33. On the Carboniferous and Devonian system of Westphalia.—Rep. Brit. Assoc. 1839, Sect. p. 72.
34. On the Classification of the older Stratified Rocks of Devon and Cornwall.—Phil. Mag. xiv. pp. 241, 317, 354; Ed. New. Phil. Journ. xliii. p. 33.
35. Sur les Roches Dévoniennes du Boulonnais.—Bull. Soc. Géol. Fr. xi. p. 229; *L. u. Br. N. Jahrb.* 1841, p. 772.
36. Fishes of the Old Red Sandstone.—Rep. Brit. Assoc. 1840, Sect. p. 99.
37. On a section with a List of Fossils from the State of New York, by James Hall, Esq.—Proc. Geol. Soc. iii. p. 416; Phil. Mag. ser. 3, xix. p. 530.
38. Address to the Geol. Soc., 1842.—Proc. Geol. Soc. iii. p. 637; Phil. Mag. ser. 3, xx. p. 541; Edinb. New. Phil. Journ. xxxiii. p. 124.
39. On the Salt Steppe south of Orenburg, and on a remarkable Freezing Cavern. Proc. Geol. Soc. iii. p. 695; Phil. Mag. ser. 3, xxi. p. 357; Edinb. New. Phil. Journ. xxxiv. p. 10.
40. On Tchornoi Zem, or Black Earth of Central Russia.—Proc. Geol. Soc. iii. p. 712; Phil. Mag. ser. 3, xxii. p. 71; Journ. Agric. Soc. Engl. iii.
41. On some of the results of his Second Geological Survey of Russia.—Proc. Geol. Soc. iii. p. 717; Edinb. New. Phil. Journ. xxxii. p. 99; Phil. Mag. ser. 3, xix. p. 417; Ann. and Mag. Nat. Hist. ser. 1, viii. p. 289.
42. Inaugural Address at the first General Meeting of the Dudley and Midland Geol. Soc. Jan. 1842, Lond.
43. On the distinction between the Striated Surface of Rocks and Parallel Undulations dependent on Original Structure.—Rep. Brit. Assoc. 1842, Sect. p. 53.
44. Address to the Geological Society, 1843.—Proc. Geol. Soc. iv. p. 65; Phil. Mag. ser. 3, xxii. p. 511; Edinb. New. Phil. Journ. xxxv. p. 115.
45. On the occurrence of Freshwater Beds in the Oolitic Deposits of Brora, Sutherlandshire; and on the British Equivalents of the Neocomian System of Foreign

Geologists.—Proc. Geol. Soc. iv. p. 174; Phil. Mag. ser. 3, xxiv. p. 72; *L. u. Br. N. Jahrb.* 1844, p. 623.

46. The "Permian System" as applied to Germany, with collateral observations on similar Deposits in other countries; showing that Rothe-todte-liegende, Kupferschiefer, Zechstein, and the lower Limestone constitute the Upper Member of the Palæozoic Rocks.—Rep. Brit. Assoc. 1843, Sect. p. 52.

47. On the important Additions recently made to the Fossil contents of the Tertiary and Alluvial Basin of the Middle Rhine.—Rep. Brit. Assoc. 1843, Sect. p. 55.

48. Anniversary Addresses to the Royal Geographical Society of London.—Journ. Roy. Geogr. Soc. xiv.; xv., 1844.

49. Observations on the Ural Mountains to accompany a new Map of the Southern portion of that Chain.—Journ. Roy. Geogr. Soc. xiii. p. 269.

50. On the Palæozoic Deposits of Scandinavia and the Baltic Provinces of Russia, and their relations to Azoic or more ancient Crystalline Rocks; with an Account of some great features of Dislocation and Metamorphism along their northern frontiers.—Proc. Geol. Soc. iv. p. 601; Journ. Geol. Soc. i. p. 467; Rep. Brit. Assoc. 1844, Sect. p. 53; Verhand. Kais. Min. Gesellsch. Petersb. 1844.

51. Fragments of a Geologist.—Quart. Rev. lxxiii. p. 324.

52. On the Palæozoic Deposits of the Basin of Christiania.—Förhand. Skand. Naturf. Môte, Christiania, 1845.

53. On the Superficial Detritus of Sweden, and on the Probable Causes which have affected the Surface of the Rocks in the Central and Southern portions of that Kingdom.—Journ. Geol. Soc. ii. p. 350.

54. Outline of the Geology of the Neighbourhood of Cheltenham. 8vo. Cheltenham, 1834.—Ed. 2., augmented by *J. Buckman* and *H. E. Strickland*. 8vo. London, 1845.

55. On the Silurian Rocks of Cornwall, with Opinions on the Gold of Australia.—Trans. R. Geol. Soc., Cornwall; Ann. and Mag. Nat. Hist. xix. p. 326.

56. On the Silurian and associated Rocks in Dalecarlia, and on the succession from Lower to Upper Silurian in Smoland, Oeland, and Gothland, and in Scania.—Journ. Geol. Soc. iii. p. 1.

57. Address to the British Association for the Advancement of Science (Southampton).—Rep. Brit. Assoc., 1846.

58.—Additional Remarks on the Deposit of Ceningen, in Switzerland.—Journ. Geol. Soc. iii. p. 54.

59. On the Meaning originally attached to the term "Cambrian System," and on the evidences since obtained of its being geologically synonymous with the previously established term "Lower Silurian."—Journ. Geol. Soc. iii. p. 165; Edin. N. Phil. Journ. xliiii. p. 147.

60. Introduction to a Second Memoir of *Capt. Vicary* on the Geology of parts of Sinde.—Journ. Geol. Soc. iii. p. 331.

61. On the Distribution of Gold Ore in the Crust and on the Surface of the Earth.—Rep. Brit. Assoc. 1849, Sect. p. 60.

62. On "the Silurian Rocks of Bohemia," with Remarks on the Devonian Rocks of Moravia.—Edinb. New. Phil. Journ. xlv. p. 66.

63. On the Geological Structure of the Alps, Apennines, and Carpathians, more especially to prove a transition from Secondary to Tertiary Rocks, and the development of Eocene Deposits in Southern Europe.—Journ. Geol. Soc. v. p. 157.

64. On the Distribution of the Superficial Detritus of the Alps, as compared with that of Northern Europe.—Journ. Geol. Soc., vi. p. 65; Edinb. New. Phil. Journ., xlviii. p. 256.

65. On the Earlier Volcanic Rocks of the Papal States, and the adjacent parts of Italy.—Journ. Geol. Soc. vi. p. 281.

66. On the Vents of Hot Vapour in Tuscany, and their relation to Ancient Lines of Fracture and Eruption.—Journ. Geol. Soc. vi. p. 361.

67. Geologia della Alpi, degli Apennine e dei Carpazi. Traduzione dall' Inglese, ed Appendice sulla Toscana dei Professori *Paolo Savi* e *G. Meneghini*. Firenze, 1850.

68. The Slaty Rocks of the Sichen, or Northern end of the Chain of the Forez in Central France, shown to be of Carboniferous age.—Journ. Geol. Soc. vii. p. 13.

69. On the Discovery of Palæozoic Fossils in the crystalline Chain of the Forez in France, and on Lines of Dislocation between the Lower and Upper Carboniferous Deposits of France and Germany.—Rep. Brit. Assoc., 1850, Sect. p. 96.

70. Review of the labours of *M. Barrande* in preparing his important work, "The Silurian System of Bohemia."—Rep. Brit. Assoc., 1850, Sect. p. 97.
71. On the Origin of the Mineral Springs of Vichy.—Journ. Geol. Soc. vii. p. 76.
72. On the Silurian Rocks of the south of Scotland.—Journ. Geol. Soc. vii. p. 137.
73. On the Distribution of the Flint-drift of the south-east of England on the Flank of the Weald, and over the Surface of the South and North Downs.—Journ. Geol. Soc. vii. p. 349.
74. On the Anticipation of the Discovery of Gold in Australia; with a general view of the Conditions under which that Metal is discovered.—Journ. Geol. Soc. viii. p. 134.
75. A few Remarks on the Silurian Classification.—*Sill. Am. J.* ser. 2, iii. p. 404.
76. Paläozoisches Gebirge: Silurisches, Devonisches, und Kohlen-System.—*Instit. x.* p. 360; *L. u. Br. N. Jahrb.* 1843, p. 621.
77. On the Distribution of Gold.—Proc. Roy. Inst. March, 1850.
78. Siberia and California. Article on the natural diffusion of Gold.—*Quart. Review*, lxxvii. p. 395.
79. On the former Changes of the Alps.—Proc. Roy. Inst. March, 1851.
80. Anniversary Address to the Royal Geographical Society, 1852.—*Journ. Roy. Geogr. Soc.*
81. Communication of *Dr. A. Flemings'* Memoir on the Salt Range of the Punjab.—*Journ. Geol. Soc.* 1852.
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