









S 898. A

Yorkshire Philosophical Society.

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ANNUAL REPORT

FOR

MDCCCLXXIV.





A N N U A L R E P O R T

OF THE COUNCIL

OF THE

Y O R K S H I R E

PHILOSOPHICAL SOCIETY

FOR

MDCCCLXXIV.

PRESENTED TO THE ANNUAL MEETING,

FEBRUARY 2nd, 1875.



Y O R K :

J. SOTHERAN, BOOKSELLER, CONEYSTREET.

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1875.



PATRONESSES

TO THE

Yorkshire Philosophical Society.

HER MAJESTY THE QUEEN.

H. R. H. THE PRINCESS OF WALES.



PATRONS.

H. R. H. THE PRINCE OF WALES.

THE ARCHBISHOP OF YORK.



# OFFICERS OF THE SOCIETY, 1875.

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## PRESIDENT :

HIS GRACE THE ARCHBISHOP OF YORK.

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## VICE-PRESIDENTS :

THE LORD LONDESBOROUGH.

THE HON. & VERY REV. THE DEAN OF YORK.

W. H. RUDSTON READ, F. L. S.

THE VEN. ARCHDEACON HEY.

THOMAS ALLIS, F. L. S.

THE REV. JOHN KENRICK, M. A., F. S. A.

ROBERT DAVIES, F. S. A.

JOHN FORD.

WILLIAM PROCTER, M. D., F. C. S.

WILLIAM WALKER.

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## TREASURER :

WILLIAM GRAY, F. R. A. S., F. G. S.

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## COUNCIL :

*Elected 1873.* . . EGERTON VERNON HARCOURT, M. A.

REV. JAMES RAINE, M. A.

JOHN KITCHING, M. D.

J. F. WALKER, M. A., F. G. S.

*Elected 1874.* . . WILLIAM WHYTEHEAD.

REV. M. R. BRESHER, M. A.

WILLIAM REED, F. G. S.

JOSEPH MUNBY.

*Elected 1875.* . . JOSHUA OLDFIELD.

JOHN MARCH.

EDWARD ALLEN.

FREDERICK L. MAWDESLEY.

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## HON. SECRETARY :

T. S. NOBLE, F. R. A. S., F. G. S.

## CURATORS :

GEOLGY . . . . .	W. REED, F. G. S.
MINERALOGY . . . . .	WM. PROCTER, M. D., F. C. S.
COMPARATIVE ANATOMY . . . . .	THOMAS ALLIS, F. L. S.
BRITISH ORNITHOLOGY . . . . .	W. H. RUDSTON READ, F. L. S.
INSECTS AND CRUSTACEA . . . . .	VEN. ARCHDEACON HEY, M. A.
ETHNOGRAPHICAL COLLECTION . . . . .	S. W. NORTH, F. G. S.
ANTIQUARIAN DEPARTMENT . . . . .	{ REV. JOHN KENRICK, M. A. REV. W. GREENWELL, M. A. REV. J. RAINE, M. A.
LIBRARY . . . . .	REV. G. VANCE SMITH, PH. D., D. D.
BOTANY . . . . .	WILLIAM MATTERSON, M. D.
CONCHOLOGY . . . . .	S. W. NORTH, F. G. S.
OBSERVATORY & METEOROLOGY . . . . .	{ W. GRAY, F. R. A. S., F. G. S. JOHN FORD. VEN. ARCHDEACON HEY, M. A. T. S. NOBLE, F. R. A. S., F. G. S.
<i>under the care of a Committee</i>	
<i>consisting of . . . . .</i>	

REPORT OF THE COUNCIL  
OF THE  
YORKSHIRE PHILOSOPHICAL SOCIETY,

FEBRUARY 2ND, 1875.

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The Balance Sheet of income and expenditure to be produced by the Treasurer will disclose a satisfactory account of the Society's finances. The income of the Society has amounted during the past year to £1,335 5s. 9d., and the expenditure to £1,281 14s. 5d., leaving a Balance in the hands of the Treasurer of £53 11s. 4d. The Council are glad to report that there appears to be no diminution in the popularity of the Society's Museum. The receipts taken at the gates amount to the sum of £295 7s. 6d., being the largest amount received during any one year since 1866, the year in which the Fine Art Exhibition was holden in York. There are few items of expenditure which call for remark. £43 10s. have been paid for the new cases required for the Yorkshire Geological room; £17 19s. 3d. for the improvement of the cases in which the Society's valuable collection of Shells are displayed; and a further sum of £36 7s. 9d. has been expended in the purchase of specimens of Roman antiquities, a sum small in amount when compared with the value of the objects secured for the Society's Museum.

For some months previous to April last the Council have had under their consideration at various times a scheme for the improvement of the entrance to the Museum opposite Lendal. It was considered that the entrance in Museum-street was not in unison with the great improvements which had taken place in this part of the city during the past few years, and many mem-

bers of the Society having offered to support a scheme for a new lodge by contributions towards the cost, Mr. Fowler Jones was instructed by the Council to prepare plans. The Corporation of York also offered in aid of the undertaking to reduce the annual ground rent hitherto paid by the Society for the Multangular tower and adjacent land, from £50 to £20. The plan, in accordance with which the present lodge now in course of completion has been built, was selected by the Council. The total cost of the contracts amounts to £859 4s. 8d.; but of this sum £609 10s. have already been subscribed, a sufficient evidence that the scheme has met with the approval of the members and of the citizens generally. To Mr. Alderman Walker the Council feel deeply indebted for the valuable aid he has rendered in support of the scheme, and to Thomas Ellis, Esq., of Bootham, the Council desire to tender their best thanks for his munificent donation of 100 guineas for entrance gates. The Council hope that the subscription list will yet be augmented, that the lodge will be completed by voluntary aid, and that it will not be necessary to apply any portion of the Society's income for that purpose.

The Curator of Geology reports that considerable additions have been made to the Society's collection during the past year by our late member, Mr. Blake, F.G.S. These donations consist chiefly of specimens illustrative of the Lias series, and will aid much to complete this part of the geological collection. The Curator is at present engaged in re-arranging and extending the collection in the Yorkshire Room. Several new cases have been provided, and are now placed in the gallery. This has been rendered necessary in consequence of there being no more space available in the cases on the basement floor. The Curator proposes in the course of a short time to make this part of the geological collection as perfect as possible, and when the stratigraphical arrangement of the specimens is complete this room will add much to the scientific interest of our Museum.

The Curators of Antiquities have to report a steady and most satisfactory increase of the department under their charge during

the past year. Several donations have been made, among which must be mentioned a large number of Stycas found many years ago in York, which, added to those already in the possession of the Society, makes the collection of these rare coins preserved at York, the largest perhaps that exists. For this gift the Society is indebted to its old and long-valued friend and office-bearer, Mr. Davies. Mr. Edward Swaine has presented several interesting specimens of ancient pottery, among which must be mentioned the rim of a mortar in Samian ware with figures in high relief. The chief additions to the Museum during the past year, as also during its predecessors, have been derived from the long continued excavations for the new extra-mural Station which have been made by the North-Eastern Railway Company. The workmen, in the course of the last twelve months, have been employed in close proximity to the walls of the City, and a great change has been made in the appearance of the ground between the river and the present entrance into the City through the walls. The house lately occupied by Mr. Close has been levelled, together with the hill on which it stood, and the adjacent moat has been filled up. The depth of this moat was carefully measured before it was obliterated, and from a close examination of the mound on which the City wall is erected, it is evident that it has been raised at three or four different periods; whilst making the new archway through the walls opposite to the old Railway Station fragments of walls were discovered, connected, no doubt, with the Baths which were close at hand, and among the foundations of a mediæval wall antecedent to that which at present exists, several interesting sculptured stones were discovered. Among them was an altar, bearing only a sacrificial axe and a garland; and near it was the greater part of a very curious figure, on which traces of paint were plainly to be discerned. Below the feet of the figure is the greater part of an inscription, on which the name of Arimanius can be clearly read, but whether that is the god who bore that title or not is another question. Another interesting discovery in connection with these excavations is that of a Roman road running from the City towards the north west. It may have led from Eburacum to the Cemetery. It was detected some

twenty or thirty yards above the Cholera Burial-ground. By the side of this road, as might be expected, were a considerable number of interments, amongst which was found the greater part of a small sepulchral tablet, the second inscribed stone which has been secured for the Museum in the course of the year. At a short distance a stone coffin was discovered, which contained a good impression in lime of the body of a girl, in which several of her personal ornaments were imbedded. In the space cleared for the new Station Hotel, five or six large stone coffins were found and opened, which were more interesting than such repositories of the dead generally are. Two of them have been brought to the grounds of the Society and are now laid side by side, as they were found, and may be seen to the south of the Hospitium beneath the elder bushes. That to the right contained the skeleton of a female, the other a mother and her infant child. Alongside the first-mentioned coffin, with its head close to the end, was laid a skeleton, under the back of which were detected the remains of a box containing several curious ornaments and vessels of glass, which were unhappily broken. It would seem probable that this was a servant laid close to her mistress, and charged even in death with the custody of some of her treasures which she might possibly require. This is not the only case in which a similar box has been found. Another stone coffin, which has been recently brought to the Museum, is finely sculptured on the exterior, in a manner somewhat resembling the pair which were handed over to the Museum several years ago by the Dean and Chapter of York. Large additions have been made during the year to the Society's already most choice collection of Roman pottery. Among these may be mentioned the whole of the vessels discovered in several graves, which will be kept apart to illustrate the method of Roman sepulture. Among the smaller pieces is a part of the mould in which a Samian vessel has been cast, the only instance as yet noted in England, and important, as it shows that such articles for domestic use were manufactured in Eburacum. The collection of objects illustrative of Roman life preserved in the Museum, is now much larger than that from any one place in the kingdom. It is much to be desired that individual collec-

tors, who have been able to acquire some objects of great interest in which we are still deficient, should give them over to the Museum, for the gratification and instruction of the public.

In the Department of the Library several additions of importance have been made during the year. Among these are the following valuable works: Littré's Dictionnaire de la Langue Française, 4 vols., 4to., presented by Mr. E. W. Smithson; Stukeley's Medallie History of Marcus Aurelius Carausius; and Vaillant's Numismata Imperatorum Romanorum præstantiora a Julio Cæsare ad Postumum et Tyrannos; presented by Mr. J. F. Walker, F. G. S.; Camden's Britannia; Speed's History of Great Britain; Heath's Wars of England, Scotland, and Ireland; and Grimstone's History of the World, presented by Captain T. R. Smith; Lyell's Antiquity of Man, 4th edition, and Geikie's Great Ice Age, purchased.

The Curator of the Ornithological Department has to report the addition of the Shear-water Petrel (*Procellaria puffinus*) to the Rudston collection; this bird, though common in the Hebrides, is only an occasional visitant here; it was picked up dead in a field near Shipton, having probably flown against the telegraph wires, and was kindly presented by the Hon. Payan Dawnay. He has also to call the attention of Ornithologists to the small quantity of Swallows during the past year; the weather was extremely cold about the general time of their arrival, but he has yet to learn the cause of their scarcity. In his Report, 1872, he mentioned that the black Swans on Welham Lake, near Malton, had bred in that year in the month of November. He has now to state that since their acclimatisation in the past year they bred in April, and hatched six birds from six eggs on the 6th of that month, two of which Mr. Bower was kind enough to present to the Corporation of York. Mr. Bower remarks they are jealous on his lake of the white ones, and though they are the smaller birds, yet they drive the former away when they come in their direction. This does not seem to be the case on the Ouse, where they seem to harmonise together. They utter a shrill cry when suddenly alarmed.

The Meteorological Report for 1873, presented a review of the temperature of York, as observed by Messrs. Gray, Phillips, and others, from the early years of the present century; referring to that for general information, the Report for 1874 will chiefly confine itself to the peculiarities of the year just elapsed. By a natural law (on the authority of Professor Phillips) January 20th is the coldest day of the year. Referring to Whitaker's Almanac, it appears that the lowest temperature, on a registry of 50 years, occurs between January 4th and 16th, at 36° for each day. In 1838, (by what probably was but a lucky guess), Murphy predicted January 20th as the coldest day. The Thermometer on that day at York indicated 2° Fah. The Almanac passed through 48 editions. The early part of May was very cold; the temperature at York, Greenwich, and Kew respectively, was 6°, 7°, and 6° below a mean of 50 years. There were several days of high temperature in July—the 3rd, 10th, 11th and 20th registered 80°, 81° and 84° at York. Much damage was done by lightning in various parts of the country. November was entirely anomalous in regard to temperature.

The mean of that month for 40 years . . . . . 41°.65

The mean for 1874 . . . . . 40°.90

The 1st decade of the month . . . . . 48°.10

or nearly 8° above a mean.

The 2nd decade . . . . . 41°.4

nearly the exact mean of 40 years, and exactly counterbalancing the excess of the first decade. The whole minima of the third decade were at or below the freezing point.

December was exceptionally cold. The mean of that month for forty years was 38°.7; for 1874 only 30°.5. The minimum temperature for 27 days was at or below 32°. The lowest registered was 5° on the 30th, the highest of that day was 26°, making the mean 15°.5, or 23° below the mean of 40 years.

The winter of 1860-61 was the nearest parallel of late years.

January, April, July, and August were above a mean, the remaining months at or below; December was 9° below a mean of 40 years. The result on the whole year was 1° below that mean.

RAIN FALL, 1874.

	Museum.	Malton.	Langton.	Flaxton.	Cherry Hill.	Sheffield.
Jan.	1.07	1.60	1.495	0.83	1.00	1.51
Feb.	1.08	1.36	1.205	1.26	1.17	1.57
Mar.	1.19	1.50	1.135	0.93	1.35	1.74
April	1.43	1.26	1.250	1.08	1.37	1.52
May	1.88	2.06	1.725	1.53	1.90	0.87
June	.90	.93	1.105	0.54	1.29	0.71
July	1.53	1.29	1.585	1.41	1.20	0.72
Aug.	1.76	2.34	2.140	2.14	1.81	2.64
Sept.	2.49	2.40	2.095	2.26	3.05	1.72
Oct.	2.22	2.00	1.585	1.84	2.29	3.16
Nov.	2.86	3.27	2.805	2.81	2.87	3.27
Dec.	2.63	3.18	2.740	3.05	2.74	2.81
	21.04	23.19	20.865	19.68	22.04	22.24

METEOROLOGICAL REGISTER, YORK, 1874.

	BAROMETER.			RAIN.			THERMOMETER.			
	Highest	Lowest.	Mean.	Inches.	Days.	Rain Mean of 40 Years.	Mean Temp.	Ditto 40 Years.	Highest.	Lowest.
Jan.	30.51	29.34	29.91	1.07	13	1.700	38.6	36.3	54	25
Feb.	30.61	29.01	29.96	1.08	10	1.470	35.3	37.8	52	21
Mar.	30.78	29.58	30.11	1.19	20	1.593	41.2	40.3	60	21
April	30.42	28.93	29.83	1.43	10	1.504	48.8	45.7	75	32
May	30.40	29.58	30.01	1.88	16	1.689	48.8	52.2	66	31
June	30.62	29.68	30.13	.90	9	2.342	56.9	58.1	74	36
July	30.29	29.67	29.97	1.53	12	2.429	62.0	58.6	84	45
Aug.	30.56	29.28	29.91	1.76	15	2.713	57.8	59.3	80	40
Sept.	30.35	29.42	29.87	2.49	12	2.212	54.5	54.6	73	41
Oct.	30.45	29.10	29.82	2.22	17	2.424	49.0	48.1	64	33
Nov.	30.57	28.64	29.95	2.86	18	2.073	39.8	41.6	58	22
Dec.	30.31	28.84	29.75	2.63	17	1.836	29.8	38.7	48	5
	30.78	28.64	29.93	21.04	169	23.985	46.6	47.6	84	5

The range of temperature was  $79^{\circ}$ ; from  $84^{\circ}$  on July 20th to  $5^{\circ}$  on December 30th.

The Rain-fall was nearly 3 inches below a mean. The range of the barometer was 2.14 inches, from 30.78 in March to 28.64 in November.

S. and S. W. winds have prevailed.

The Society has lost by death and resignation during the past year thirteen Members, five Lady Subscribers, and three Associates; whilst fourteen new Members, eight Lady Subscribers, and four Associates have been elected. Pre-eminent among the names which will no longer remain on the Society's list of Vice-Presidents is that of Professor Phillips, who died from the effects of an accident at All Soul's College, Oxford, on the 23rd of April, 1874, at the age of 73. The late Professor Phillips first became known to this Society in 1824, when he accompanied his uncle, Mr. William Smith, the father of English Geology, to York, who was then engaged in investigating the strata of Yorkshire for the purpose of correcting his celebrated Geological Map, and had been retained by the Society during the first year of its existence to deliver a course of Lectures on Geology at York. In the following year Mr. Phillips was engaged to arrange the fossils in the Society's Museum, and in 1826 he was elected to the office of Keeper of this Museum. On November 7th in that year Professor Phillips read his first paper before the Society "On the probable direction of diluvial currents over parts of Yorkshire and neighbouring Counties." This paper, which was printed in the following year in the *Philosophical Magazine*, appears to have been his first contribution to Geological Literature. How Yorkshire henceforth became thoroughly the field of his labours, and with what industry and skill he explored almost every hill and dale of this vast county to elucidate its geological and mineralogical history, and to determine its physical character, is best shown in his first published work, "The illustrations of the Geology of Yorkshire," and subsequently in his "Rivers, Mountains, and Sea Coast of Yorkshire." For several years subsequent to this period Mr. Phillips appears to have delivered

at various periods many courses of Lectures to its Members. In 1831 a Meeting was held in this Theatre of great importance to the scientific world. In the previous year Dr. Brewster had entered into communication with Mr. Phillips, as the Secretary of this Society, urging upon his notice the advantages which would arise from an Annual Meeting of persons desirous to promote scientific research; aided by the Council and the valuable support of that great benefactor to the Society, the late Rev. W. Vernon Harcourt, Mr. Phillips placed himself in communication with some of the most eminent scientific men of the day, and with the officers of the various scientific Societies of the country. The result was that on the 27th September, 1831, under the presidency of the late Earl Fitzwilliam, then Viscount Milton—to quote the words of the Annual Report of our Society for 1833:—“This Society had the satisfaction of seeing collected within its walls an assemblage of many eminent members of learned and scientific bodies from different parts of the United Kingdom, before whom it became the duty of the Council to propose a plan for the conduct of it, and for the establishment of a general system on which similar meetings might continue to be conducted hereafter.” At this date and in this place was established “The British Association for the Promotion of Science,” and Mr. Phillips was appointed its first Secretary, under the direction of the Rev. W. Vernon Harcourt, an office which he continued to hold until 1863. Mr. Phillips was elected a Fellow of the Royal Society in 1834, and during the same year was appointed to the Chair of Geology in King’s College, London, and in the following year the second volume of his “Geology of Yorkshire” was published. In addition to his other duties, about the year 1839 Professor Phillips was appointed by the Treasury to investigate and to report on the Geology of various parts of England, and in 1841 he published “Figures and Descriptions of Palæozoic Fossils of Cornwall, Devon, and Somerset;” and in 1842 was published the valuable memoir on “The Malvern Hills compared with the Palæozoic districts of Apperley, Wolhope, May Hill, and Usk.” After having continued to discharge the duties of Secretary and Keeper of this

Museum for a period of twelve years, Professor Phillips finally retired from these offices in the year 1842, but still retained a connection with the Society as one of its Honorary Curators. He was appointed Professor of Geology in the University of Dublin in 1844; and in 1845 he received from the Geological Society the Wollastan Medal. In 1849, on the joint recommendation of Professor Phillips and Mr. J. T. Lenyon Blackwell, who had been appointed Commissioners for the purpose of investigating the various Collieries of the Country, the Government determined to place these Mines under systematic inspection, and Colliery Inspectors for this purpose were appointed. On the death of Mr. Strickland, in 1853, the office of Deputy Reader of Geology, at Oxford, became vacant, and was offered to, and accepted by, Professor Phillips, and on the death of Dr. Buckland he became his successor in the Chair of Geology in the University of Oxford. In 1859 Professor Phillips was elected President of the Geological Society of London. Professor Phillips continued actively to discharge the duties of the professorial chair at Oxford until his lamented death. It must not, however, be supposed that the Science of Geology alone engaged his attention. His writings on this Science exceed 70 in number, but there is scarcely a branch of physical research which Professor Phillips has not at some time or other elucidated by his labours and illustrated by his writings. During the latter years of his residence at St. Mary's Lodge, within the grounds of the Yorkshire Philosophical Society, the Science of Astronomy largely engaged his attention. An equatorially mounted telescope was fixed in his garden. By this instrument, a  $6\frac{1}{4}$  inch refractor of 11 feet focus, from the factory of Messrs. Cooke, Professor Phillips experimented with considerable success in lunar photography, and he appears to have been the first to have given to the world detailed accounts of experiments in this branch of celestial photography. In 1853 the Professor read an elaborate paper on the subject before the British Association at Hull. By the instrument referred to, he was enabled to produce a negative of  $1\frac{1}{4}$  inch diameter in 30 seconds. He communicated to the Royal Society notes on the drawing of

Copernicus, by Father Secchi (1856), suggestions for the attainment of a systematic representation of the Moon (1862), on the telescopic appearance of the Planet Mars (1863), and on the Belts of Jupiter (1863). Notice of the surface of the Sun (1865), with many others on astronomical subjects. In 1864 he was elected President of the British Association for the year 1865, and delivered the annual address before a large audience at Birmingham. When statements from a subsequent occupant of this chair have recently scattered a feeling of dissatisfaction, if not of dismay, over the minds of many lovers of science, it is well to recall the words of so able a philosopher as Professor Phillips. In 1860 he delivered the Rede Lecture in the University of Cambridge. In the course of that Lecture he said, "no one who has advanced so far in philosophy as to have thought of one thing in relation to another will ever be satisfied with laws which had no author, works which had no maker, co-ordinations which had no designer." This brief and imperfect notice of the life of a great and good man will be closed by the following remarks spoken many years ago in this Theatre by one who knew him well at Oxford: \* "Of the scientific men who have adorned this Institution, the name of John Phillips comes to me as that of an intimate friend. He was for many years Keeper of the Museum, and then Secretary of this Society, and at the same time Secretary to the British Association, another link between the local and general association. I have known many scientific men, but none who seems to me to have more of the metal and temper of the philosopher than Professor Phillips. The patience in research, the acuteness of observation, the eye and hand of an artist for natural scenery, the cheerfulness of temper which naturalists seem often to attain in the peaceful field of their labour, the unaffected goodness and piety, the reasonable caution which is so needful a counterpoise to the pride and over confidence of successful research: all these seemed to me to meet in him, and made him one of the

\* See the Inaugural Address of His Grace the Archbishop of York, the President of the Society, 1866.

most agreeable, as he certainly was one of the clearest, instructors in the secrets in the great Book of God's creation."\*

The Society has lost from among the list of its Honorary Members Sir William Fairbairn, Baronet, who died at his seat, at Farnham, on the 18th of August last, at the ripe age of 82. This eminent Engineer was born at Kelso-on-the-Tweed in 1789. After the completion of his professional education he settled at Manchester as a machine maker and engineer. From experiments he had made on the Clyde in 1830 on the form and traction of boats, his attention was thereby directed to the advantage of iron as a material for shipbuilding, and one of his earliest attempts in iron shipbuilding was a small sea-going vessel, constructed in Manchester and conveyed through the streets to the nearest waterway, and so on to its destination. This, one of the earliest essays in iron shipbuilding, was the foundation of his fame and fortune. The application of iron in the building of ships for the commercial marine and its use as armour for the protection of ships of war have largely developed the maritime power and commercial prosperity of this nation during the past few years. As an acknowledgment of services commercial in their character, but of national import, her Majesty conferred a baronetcy on Sir William Fairbairn, an honour which is now enjoyed by his son and successor. Sir William Fairbairn was a gentleman of the highest scientific attainments, was a Fellow of the Royal Society, and a corresponding Member of the Institute of France, and in the Literary and Philosophical Society of Manchester he succeeded to the chair of Dalton.

The following Lectures have been delivered in the Theatre of the Museum during the past year.

SUBJECT.	NAME OF LECTURER.
On the Palatine Hill in Rome, and Ancient Walls of the City	} Rev. A. SHADWELL, M. A.

\* The Council have much pleasure in informing the Members of the Society that a faithful portrait of the late Professor Phillips has been presented to the Society by R. Davies, Esq., F. S. A., one of the Vice-Presidents.

SUBJECT.	NAME OF LECTURER.
An Examination of some of the Systems of Touch Reading..	} A. BUCKLE, Esq., B. A.
Second Lecture on Rome . . . .	
Gems and Precious Stones . . . .	REV. A. SHADWELL, M. A.
Israel's Wars and Worship ..	PROFESSOR TENNANT, F. G. S.
	G. St. CLAIR, Esq., F. G. S.

The Council recommend for election as a Vice-President, Mr. Alderman Walker, and as new Members of Council, Joshua Oldfield, Esq., Mr. Alderman March, Edward Allen, Esq., F. G. S., and F. L. Mawdesley, Esq., in the place of Mr. Alderman Steward, Mr. Alderman Walker, the Rev. Dr. Vance Smith, and Mr. Ball, who retire by rotation.

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## MEMBERS ELECTED IN 1874.

Broom, Thomas, *Church Street*.  
 Copeland, Miss, *Market Street*.  
 Crompton, Miss Henrietta M., *Mieklegate House*.  
 Ferguson, D., *Burton Terrace*.  
 Hill, John Richard, *St. Saviourgate*.  
 Kearsley, C., 6, *Bootham Terrace*.  
 Lane, Rev. E. A., 92, *Bootham*.  
 Mc. Allum, John, 17, *St. Mary's*.  
 Newton, Rev. Horace, *Heworth Vicarage*.  
 Pauling, Robert, *Holgate Road*.  
 Robinson, Com. George, *St. Mary's*.  
 Rodwell, Thomas, *St. Sampson's Square*.  
 Ryley, William, 16, *Bootham Terrace*.  
 Turner, E. R., *The Mount*.

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## LADY SUBSCRIBERS ADMITTED IN 1874.

Boyes, Miss, 2, *St. John's Street*.  
 Costerton, Mrs., 4, *Duncombe Place*.  
 Crabtree, Miss, *Museum Street*.  
 Fletcher, Miss, *East Mount Road*.  
 Hirst, Mrs., *Fulford*.  
 Longridge, Mrs., 32, *St. Mary's*.  
 Marsden, Mrs., 20, *South Parade*.  
 Wolstenholme, Miss, *Lord Mayor's Walk*.

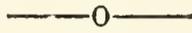
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## ASSOCIATES.

Adams, T., *Clifton*.  
 Jalland, W. H., *Bootham*.  
 Milburn, G. W., 53, *Gillygate*.  
 Wright, Rev. W., B. A., *Clementhorpe Terrace*.

## RESOLUTION

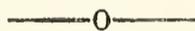
PASSED AT THE MONTHLY MEETING, MAY 5TH, 1874.



“That the Members of the Yorkshire Philosophical Society, assembled for the first time since the death of Professor Phillips, desire to place on record the feelings with which they have been impressed by that melancholy event. While other scientific bodies lament in his death the extinction of one of the great lights of science, the Yorkshire Philosophical Society has a debt of gratitude to pay to the memory of one from whom it has received the most important services. They feel that to him is due much of the prosperity to which the Society has attained; the richness of its Museum and the admirable manner in which its treasures are displayed. They desire to testify their admiration of the talents which, united with industry and devotion to science, raised him to so high a rank among its cultivators. Above all they cherish the memory of the moral and personal qualities by which his character was distinguished, and which secured him the warm attachment of those who knew him intimately, and the general esteem of his fellow-citizens.”

## RESOLUTIONS

PASSED AT THE ANNUAL MEETING, FEBRUARY 2ND, 1875.



1. That the Report of the Council now read be adopted and printed for circulation amongst the Members, Lady Subscribers, and Associates.

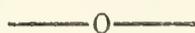
2. That the thanks of the Society be given to the Members of the Council retiring from office, also to the Treasurer, Secretary, and Curators for their valuable services; that authority be given to the Council to hold Horticultural Meetings in the Museum Grounds, and to suspend the privileges of entry possessed by Members during the holding of such meetings, and to give admission to the public to the Museum and Hospitium on Whit-Monday and Tuesday, under the same regulations as last year.

3. That the thanks of the Meeting be given to the Chairman.

## DONATIONS TO THE MUSEUM.

## GEOLOGY AND MINERALOGY.

Blake, Rev. J. F. . . . . Collection of Fossils from the Yorkshire Lias.

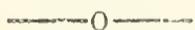


## ZOOLOGY.

Bright, Mr. E. . . . . Filagree Corallite, and Shell Sand from the Caribbean Sea.

Davis, Mr. S. . . . . Skin of the Nilotic Crocodile (*Crocodilus vulgaris*.)

Walker, J. F., Esq. . . . . Specimen of Coral.



## ANTIQUITIES.

Crompton, Miss Henrietta } Specimens of Mediæval Pottery from  
M. . . . . } Treves.

Small Vase from Rome.

Davies, R., Esq. . . . . Collection of Stycas found in York, in Cabinet of York Minster Oak.

Gibson, Dr. . . . . Ancient German Key.

Roman Bone Pin.

Gibson, Mr. Geo. . . . . Circular Flint Knife found at Low Catton.

Harland, H. S., Esq. . . . . A Cast of a British Skull found in the Tumulus at Gristhorpe.

Langton, Wm., Esq. (*Manchester*) . . . . . } Casts of Seals belonging to the Vicars  
Choral, York.

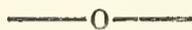
N. E. Railway, Directors of } A Roman Altar.

Part of a Saxon Cross, found under the City Walls.

A Figure of Arimanius, with inscription.

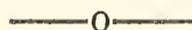
A Garnet Ear-Drop.

N. E. Railway, Directors of	Specimens of Mediæval Encaustic Tiles.
	Fragment of inscription to Bassæus Julius.
	Stone Capital, with Lions.
	Mould for making Samian Ware.
Nelson, T., Esq. . . . .	Two Stone Coffins.
Robinson, Mr. W. . . . .	Fragments of Two Roman Urns, found in Blake-Street.
Swaine, E., Esq. . . . .	Specimens of Samian Ware Pottery.
	Mediæval Water Jug.
Swallow, Mr. J. C. . . . .	Mediæval Water Bottle.
Sykes, Dr., ( <i>Doncaster</i> ) ..	Early French Pipkin.
Walker, Mrs. & J. F., Esq.	Grey Beard and Mediæval Water Jug.



### MISCELLANEOUS.

Davies, R., Esq. . . . .	Portrait of the late Professor Phillips.
Falconer, Mrs., ( <i>London</i> )..	Specimens of Woods collected on the Borders of the Great Western Railway of Canada.
Stephenson, J. F., Esq. ..	Fragments of a Bomb-Shell which fell in Paris on May 2nd, 1871.



### LIBRARY.

Association, British, for the Advancement of Science	} Report for 1873.
Association, Geologists' ..	Proceedings, vol. iii., Nos. 4—8.
Author, The . . . . .	Roman Antiquities, illustrated by Remains recently discovered on the site of the National Safe Deposit Company's Premises, Mansion House, London, by J. E. Price, F. S. A.
Author, The . . . . .	Observations on the Detrital Tin-Ore of Cornwall, by W. Jory Henwood, F. R. S., F. G. S.

- Author, The ..... Memoir of John Burton, M. D.,  
F. S. A., by R. Davies, Esq., F. S. A.  
Memoir of Martin Lister, M. D.,  
F. R. S., by R. Davies, Esq., F. S. A.  
Memoir of Francis Drake, F. S. A.,  
F. R. S., by R. Davies, Esq., F. S. A.  
Monograph of Grimthorpe, by R.  
Davies, F. S. A.
- Club, Tyneside Naturalists' } Natural History Transactions of  
Field ..... } Northumberland and Durham,  
vol. v., pt. 1.
- Davies, R., Esq. .... Catalogue of Coins and Medals in the  
Cabinet of the late J. D. Cuff,  
F. S. A.  
Account of Coins and Treasure found  
in Cuerdale, by E. Hawkins.  
Catalogue of the Kerrich collection of  
Roman Coins.  
Account of Icenian Coins found at  
Weston, Norfolk, by G. Johnson.  
Account of some Anglo-Saxon Stycas,  
discovered at York, by C. Roach  
Smith.
- Harland, H. S. Esq., *Scarbro'* Williamson's Description of the Gris-  
thorpe Tumulus.
- India, Geological Survey of Palæontologia Indica, Series viii.,  
pts. 3—5, Series ix., pt. 1.  
Memoirs, vol. x., pt. 1.  
Records, vol. vi., pts. 1—4.
- Institution, Royal, of Great }  
Britain ..... } Proceedings, Nos. 58—61
- Institution, Smithsonian .. Report for 1872.
- Monkhouse, Mr. W. .... Senefelder's Course of Lithography.
- Publishers, The ..... Nature, (Journal) for 1874.
- Raine, Rev. J. .... Coloured Drawing of the Roman  
Tessellated Pavement, found ad-  
joining the Rampart within Mickle-  
gate Bar in 1814.
- Read, W. H. Rudston, Esq. Journal of the Linnean Society:—  
Zoology, No. 57.  
Botany, Nos. 74—77.

- Read, W. H. Rudston, Esq. Proceedings of the Linnean Society,  
1873-74.
- Smith, Capt. T. R. . . . . Camden's Britannia.  
Speed's (Jno.) Historie of Great  
Britaine.  
Heath's (Jas.) Wars of England,  
Scotland, and Ireland.  
History of the World, translated from  
the French by E. Grimstone.
- Smithson, E. W., Esq. . . . . Dictionnaire de la Langue Française,  
par E. Littré, 4 vols. 4to.
- Society, Chemical . . . . . Journal for 1874.
- Society, Geological . . . . . Journal, Nos. 117—120\*.
- Society, Hull Literary and }  
Philosophical . . . . . } Report for 1873.
- Society, Leeds Philosophi- }  
cal . . . . . } Report for 1873.
- Society, Manchester Lit- }  
erary and Philosophical } Memoirs, vol. iv., 3rd Series.  
} Proceedings, vols. viii., ix., x.
- Society, Meteorological . . . . . Charts of Meteorological Data for  
Square 3, Lat. 0°—10° N., Long.  
20°—30° W., with remarks to  
accompany do., 1 vol. fol. and  
1 vol. 4to.
- Society, Royal, of Edin- }  
burgh . . . . . } Transactions, vol. xxvii., pt. 1.  
} Proceedings, Session 1872-73.
- Society, Zoological . . . . . Transactions, vol. viii., pt. 6.
- Walker, J. F., Esq. . . . . Numismata Imperatorum Romanorum  
præstantiora a Julio Cæsare ad  
Postumum et Tyrannos, per J.  
Vaillant.  
Historia Succinorum, a Nath.  
Sendelio.  
Medallic History of Marcus Aurelius  
Valerius Carausius, by W. Stuke-  
ley, M. D.
- Whytehead, Mr. T. B. . . . . Transactions of the New Zealand  
Institute, 4 vols. 8vo.

## SERIAL WORKS SUBSCRIBED FOR.

Corpus Inscriptionum Latinarum (4 vols. with Atlas of Plates and Supplement published).

Birds of Asia, by John Gould, F. R. S. (26 parts published).

Natural History of the Tineina, by H. T. Stainton, F.R.S. (13 vols. published).

Nautical Almanack.

Proceedings of the Zoological Society, with Illustrations.

Publications of the Palæontographical Society (28 vols. published).

Publications of the Ray Society.

Sowerby's Thesaurus Conchyliorum, col. plates (32 parts published).

The Zoological Record (Annual).

London, Edinburgh, and Dublin Philosophical Magazine.

Annals and Magazine of Natural History.

Geological Magazine.

Journal of the British Archæological Association.

Numismatic Chronicle.

Meteorological Magazine.

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COMMUNICATION  
TO THE  
MONTHLY MEETINGS  
OF THE  
YORKSHIRE PHILOSOPHICAL SOCIETY,  
1874.

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OCTOBER 6TH.—DR. PROCTER read a paper on “Basalt in the North of Ireland, and its formation,” of which the following is an abstract:—

He first described its distribution over that country, especially as it constitutes the Giant's Causeway. Basalt is part of a series which, when well marked, was composed of (1) basalt, (2) pisolitic iron ore, which is now extensively worked in Antrim, (3) bole, which gradually passes into (4) lithomarge. After describing the characters of the prismatic form, he considered the beds of lignite which alternate with the basalt. The volcanic origin of basalt is shown by its general character, the gradations which are observed from pumice to it, as well as its occasional deposit, being as it were in sheets, coupled with the metamorphic action due to heat manifested in its proximity. In rocks of all ages fissures occur from various causes; if into these fissures a quantity of molten basalt is injected, then a basalt dyke is formed, or the liquid matter may overflow the dyke and spread far over the surrounding country, and this is precisely the state of things in Antrim. The true nature of the change is indicated by the condition of the surrounding formations. In that locality it is the chalk which is traversed by the basaltic dykes. Near the basalt the chalk is converted into granular marble, which is greatest at the point of contact; from thence it gradually decreases until its normal

character is resumed. This metamorphic action is due to heat, and in these portions of the cretaceous beds all traces of organic remains are completely effaced. There seems to have been a series of overflows of the trap, indicated by the beds of different thickness to be seen in every section. In some cases the intervals between the overflows were sufficient to allow the surface of the basalt to be disintegrated and made fit for the growth of vegetation before another overflow took place. This is indicated by the bed of decomposed trap that alternates with the solid rock and the beds of lignite or wood-coal which occur between the layers of basalt. These circumstances would serve to show that forests grew on the surface produced by the disintegration of the early rock, and that this mass of vegetation had been destroyed and carbonized by a subsequent flow of molten basalt. After speaking of the causes producing the different levels of the rock in various parts, Dr. Procter proceeded to consider the cause of the prismatic structure assumed by the columnal basalt in different parts of the United Kingdom. The prismatic structure is the result of the contraction on cooling of the molten basalt, just as wet clay or starch assumes a similar structure on drying. These prisms are directed into regular or irregular intervals, the cross fracture being nearly at right angles to the prisms, the surfaces of union are sometimes quite flat or sometimes curved into a convex or concave surface. The explanation of this structure, which is generally accepted, was promulgated by Gregory Watt in 1804. He observed, during the cooling of basalt fused in a furnace, that small globules appeared and increased by the formation of external concentric coats like those of an onion, so that eventually a number of solid balls were formed, each enveloped in several concentric coats to these by pressure, became converted into short hexagons. Each ball, resting directly and centrally on the one below it, forms a column of hexagonal columns with cross joints. Dr. Procter then described other theories which had been proposed to explain the phenomena, and concluded with some remarks on the relative value of the several hypotheses.







