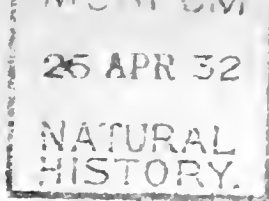


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ANNUAL REPORT
OF THE COUNCIL
OF THE
YORKSHIRE
PHILOSOPHICAL SOCIETY
FOR THE YEAR
1931

PRESENTED TO THE ANNUAL MEETING,
FEBRUARY 8th, 1932.

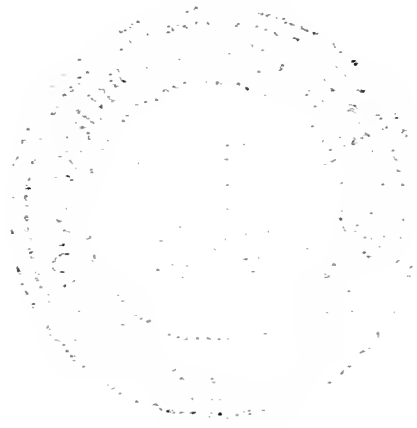
PRINTED BY ORDER OF THE COUNCIL.
1932.

Issued April 25th, 1932.



With the Keeper's Compliments,

THE YORKSHIRE MUSEUM,
YORK.



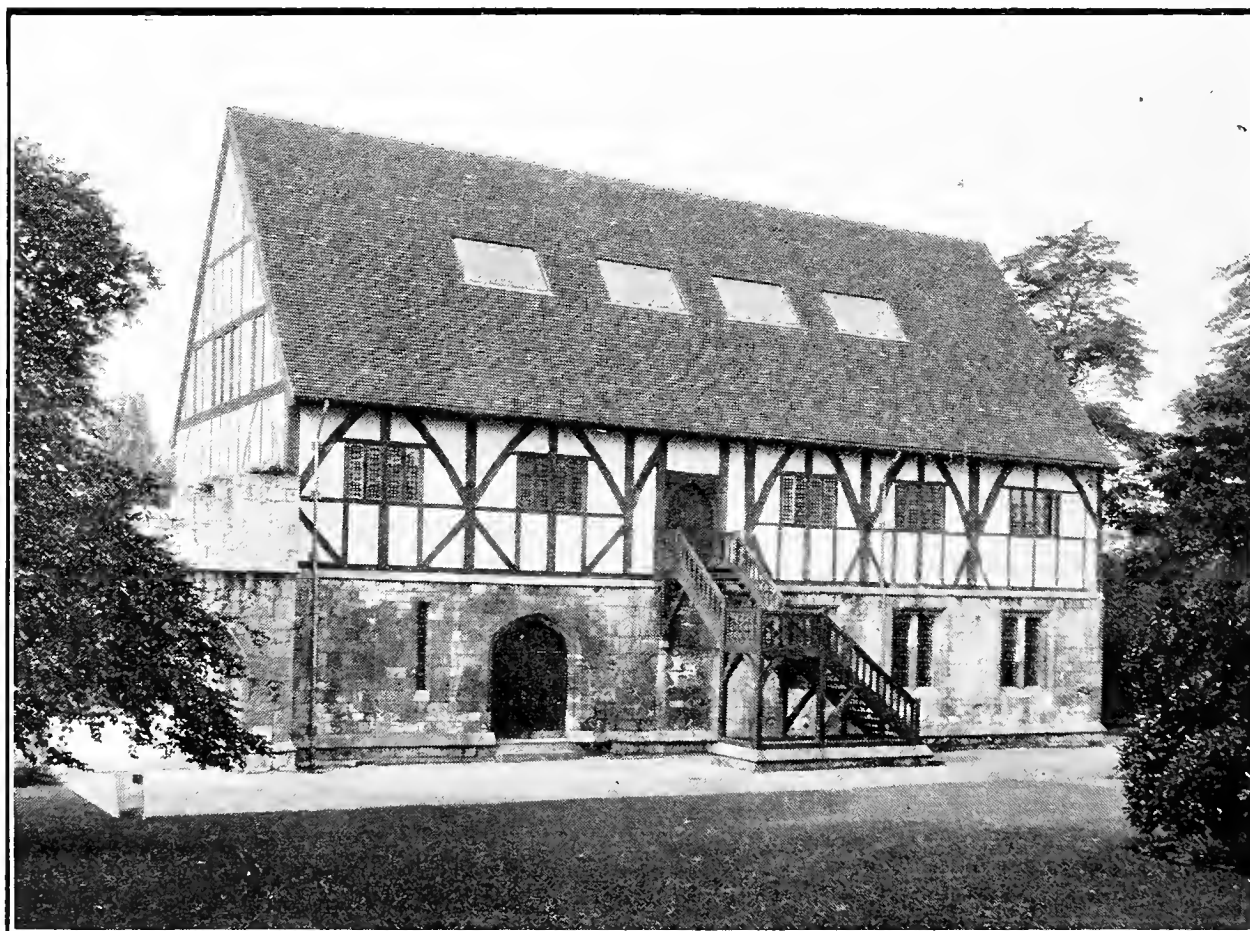
BRITISH
MUSEUM
25 APR 52
NATURAL
HISTORY.



Copyright]

[Walter Scott

THE HOSPITIUM OF ST. MARY'S ABBEY. AS IT APPEARED BEFORE
BEING RESTORED.



Copyright]

[Walter Scott

THE HOSPITIUM AFTER BEING RESTORED.

ANNUAL REPORT
OF THE COUNCIL
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FOR THE YEAR

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FORM
OF A
BEQUEST TO THE SOCIETY.

Every person desirous of bequeathing to the Society any sum of Money, Specimens, Books, Instruments, or other Property, is requested to make use of the following form:—

*I give and bequeath to the Trustees, for the time being, of the Society established at York, called “**The Yorkshire Philosophical Society,**” for the use of the said Society, the sum of _____ to be paid out of such part of my personal estate as I may legally charge therewith. [Or here enumerate the effects or property intended to be bequeathed.] And I direct that the receipt of the Treasurer of the said Society, for the time being, shall be an effectual discharge to my Executors for the said legacy.*

The Yorkshire Philosophical Society.

(Founded 1822.)

Patrons :

HIS MAJESTY THE KING. HER MAJESTY THE QUEEN.

Trustees :

GEORGE A. AUDEN, M.D. CHAS. E. ELMHIRST, J.P.
RT. HON. LORD DERAMORE.

President :

WILLIAM HERBERT ST. QUINTIN, D.L., J.P., F.Z.S.

Vice-Presidents :

H. J. WILKINSON.	COL. W. A. WHITE, J.P.
ARTHUR HURST, A.K.C.	SYDNEY H. SMITH, F.Z.S.
RICHARD THOMPSON.	J. TRIFFITT.
W. A. EVELYN, M.A., M.D.	H. M. PLATNAUER, B.Sc.
CHAS. E. ELMHIRST, J.P.	ALD. W. H. BIRCH, J.P.
W. HARVEY BROOK.	S. WALKER, F.E.S.

Council :

*Elected 1930...*R. H. CHAPMAN.
ERNEST W. FOX (Elected 1931).
FRANK W. TERRY.
GEOFFREY THOMPSON, M.A.

*Elected 1931...*J. L. BROCKBANK, M.A., H.M.I.
JOHN A. COOPER.
SIDNEY MELMORE, B.Sc., F.G.S.
A. W. PING, M.A.

*Elected 1932...*E. BAKER.
J. H. COLLINSON, M.A.
G. W. DANIEL.
REV. A. RAINE, M.A.

Hon. Treasurer :

S. WALKER, F.E.S.

Hon. Secretary :

CHAS. E. ELMHIRST, J.P.

Committees :

General Purposes and Finance Committee :

J. L. BROCKBANK.	SIDNEY MELMORE.
W. HARVEY BROOK.	REV. A. RAINE.
JOHN A. COOPER.	FRANK W. TERRY.
DR. W. A. EVELYN.	J. TRIFFITT.
ARTHUR HURST.	S. WALKER.
CHAS. E. ELMHIRST,	<i>Secretary.</i>

Garden Committee :

E. BAKER.	ARTHUR HURST.
R. H. CHAPMAN.	SIDNEY MELMORE.
J. H. COLLINSON.	A. W. PING.
G. W. DANIEL.	COL. W. A. WHITE.
E. W. FOX.	S. WALKER, <i>Secretary.</i>

Museum Committee :

W. HARVEY BROOK.	J. SCOTT.
DR. W. A. EVELYN.	H. SOWDEN.
ARTHUR HURST.	GEOFFREY THOMPSON.
SIDNEY MELMORE.	S. WALKER.
W. H. ST. QUINTIN.	H. J. WILKINSON.
REV. A. RAINE.	DR. COLLINGE, <i>Secretary.</i>

Abbey Restoration Committee :

ALD. W. H. BIRCH.	FRANK W. TERRY.
JOHN A. COOPER.	J. TRIFFITT.
CHAS. E. ELMHIRST.	S. WALKER.
REV. A. RAINE.	H. J. WILKINSON.
SYDNEY H. SMITH.	DR. COLLINGE, <i>Secretary.</i>

BRITISH
MUSEUM.
25 APR 32
NATURAL
HISTORY.



Copyright] Members of the Council of the Yorkshire Philosophical Society, Lt.-Gen. the Rt. Hon. J. C. Smuts, and Delegates of the British Association.

REPORT OF THE COUNCIL
OF THE
YORKSHIRE PHILOSOPHICAL SOCIETY.

8th FEBRUARY, 1932.

IN our last Report it was mentioned that a commencement had been made upon the repair and reconstruction of the Hospitium. In addition to the urgent repairs recommended by H.M. Office of Works (see Annual Report for 1929) it was later decided to extend the upper room and to alter the pitch of the roof. Further, the Morganite Plate Radiator system of electric heating has been installed in both the upper and lower rooms.

The old cases have been largely reconstructed, and eight new table cases and one upright case have been added.

After many delays the work has now been completed, and gives to Yorkshire one of the finest museums of Roman Antiquities in the country.

The official opening was performed by Lt.-Gen. the Rt. Hon. J. C. Smuts, P.C., C.H., F.R.S., on September 26th, and it was a happy coincidence that this was the hundredth anniversary of the foundation of the British Association. A number of delegates from the Association accepted the Council's invitation to be present. Amongst these were Dr. F. A. Bather, F.R.S.; Prof. F. O. Bower, Sc.D., F.R.S.; Prof. J. L. Myres, O.B.E., D.Sc., D.Litt.; Prof. F. J. M. Stratton, D.S.O., O.B.E., M.A.; Prof. E. B. Poulton, Sc.D., F.R.S.; Mr. C. H. Bothamley; Prof. W. J. Sollas, Sc.D., F.R.S.; Prof. T. G. Hill; Mr. William Barnard; and Mr. O. J. R. Howarth, O.B.E., M.A.

A large and distinguished company met in the Tempest Anderson Hall, which was filled to its fullest capacity. The President, W. H. St. Quintin, D.L., J.P., welcomed General Smuts, and also voiced the Council's indebtedness and thanks to H.M. Office of Works, Sir Charles R. Peers, Mr. J. F. Milne, Mr. David Black, and the contractors, Messrs. George Walker & Son. General Smuts then briefly addressed the audience, and declared the Hospitium re-opened. The Rt. Hon. Lord Danesfort proposed a vote of thanks to General Smuts.

The following telegram was then despatched to Mr. Richard Thompson :—

“ The President, Council, and Members of the Yorkshire Philosophical Society, together with the delegates of the British Association, assembled on the re-opening of the Hospitium, send their cordial greetings to their senior Vice-President.

St. Quintin.”

The Council and Delegates then assembled in front of the Museum, where their photographs were taken, and later proceeded to the Hospitium. The doorway of the upper room was guarded by a white silk ribbon suspended from white silk roses.



Copyright] THE UPPER ROOM OF THE HOSPITIUM. [Walter Scott

Mrs. St. Quintin handed to General Smuts a pair of silver scissors with which he cut the ribbon, and then asked Mrs. St. Quintin to accept the scissors as a memento of the occasion. The party then inspected the Hospitium and the Collections therein.

During the year your Council have arranged for the release of the restrictive covenants imposed by the Crown in the Original Grant to the Society of 22nd February, 1828, and the Conveyance of the Exhibition Site of 4th September, 1877.

A number of repairs and improvements have been made to the Museum. New lights have been fitted to the Vertebrate Gallery and the British Bird Room, and the roofs generally put into order.

The President, Mr. W. H. Quintin, has very generously defrayed the cost of fitting sun-blinds to the Vertebrate Gallery.

The following is a full list of the Lectures delivered in the Tempest Anderson Hall during the past year :—

Thursday, January 8th.—“Some English Songs and Ballads.” By Reginald Rose. A.R.C.O. Illustrations by Mr. Walter Whiteway (York Minster Choir).

Thursday, January 22nd.—“The Sudan.” By Ralph Darlington, F.R.G.S.

Thursday, February 5th.—“Wild Life of Mountain and Glen.” By H. Mortimer Batten.

Thursday, February 19th.—“My Visit to Majorca.” By Chas. E. Elmhirst.

Thursday, March 5th.—“Marking the Yukon Boundary.” By Capt. H. G. Mansfield, M.C.

Thursday, October 15th.—“A Trip to The Windward Islands.” By The Rev. F. FitzPatrick, M.A.

Thursday, October 29th.—“Costume and History.” By Mrs. Norah Richardson.

Thursday, November 12th.—“The Beauty and Power of Spoken English.” By The Rev. H. T. S. Gedge, M.A., Sub-Chanter and Vicar Choral of York Minster.

Thursday, November 26th.—“Malton and District in Roman Times.” By Philip Corder, M.A.

Thursday, December 10th.—“Mediaeval Ghost Stories.” By Professor A. Hamilton Thompson, M.A., D.Litt., F.S.A.

Your Council much regret that these Lectures are so poorly attended.

The Association of Teachers of Domestic Subjects held their Annual Conference in the Tempest Anderson Hall on June 13th.

The Autumn Course of Lectures of the York University Extension Society was given in the Tempest Anderson Hall.

Your Council note with pleasure that its President, Mr. W. H. St. Quintin, has been elected a Vice-President for the York Meeting of the British Association.

FIELD NATURALISTS' SECTION. This section has had a very satisfactory year, the interesting series of lectures, exhibit nights, and excursions have been well attended, and the continued enthusiastic work of individual members in the field has been maintained.

An outstanding feature of the year was the *Conversazione* held in the De Grey Rooms on October 7th, by the invitation of the President, Mr. H. J. Wilkinson. A splendid collection of Natural History exhibits was arranged by members of the Section. Of special note were the aquarium tanks prepared by Mr. Charles Allen, showing various forms of animal and plant life from local ponds and streams, and an exhibit prepared by Mr. Guy Howard, showing the origin of many articles of food.

Three *Lecturettes*, illustrated by lantern slides, were also given during the evening.

At the close of the year Membership, including Honorary and Corresponding members, stands at 120, a net increase of 3.

The Lectures and Excursions during 1931 have been as follows :—

- January 14th.—Lantern Lecture: "Some Atmospheric Phenomena." A. W. Ping, M.A.
- January 28th.—Entomological Recorder's Report. A. Smith. Discussion: "Parasitism in Caterpillars."
- February 11th.—Lantern Lecture: "A Geologist in the Lake District." G. H. Mitchell, D.Ph., M.Sc., F.G.S.
- February 25th.—Botanical Recorder's Report. J. H. Evers. Paper: "The genus *Viola*." W. J. Wall.
- March 11th.—*Lecturettes*. By several Members.
- March 25th.—Recorders' Reports. Vertebrate Zoology, S. H. Smith, F.Z.S. Ornithology, V. G. F. Zimmermann.
- April 1st.—Annual Meeting.
- May 27th.—A Geological Evening at the Museum.
- June 6th.—An Evening Excursion to Sand Hutton.
- June 10th.—A Visit to Mr. H. Sowden's Garden.
- June 13th.—Excursion to Askham Bogs. (Jointly with the Yorkshire Conchological Society.)
- June 24th.—An Excursion to Pilmoor.
- July 8th.—An Excursion to Gilling Woods.
- July 18th.—An Afternoon at Askham Bogs.
- August 26th.—Excursion to Coxwold and Wass Woods.
- September 19th.—Excursion and Fungus Foray to Nun Appleton; also an evening meeting to inspect the gatherings of Fungi.
- October 7th.—*Conversazione*.
- October 28th.—Lecture: "The Growth of Agriculture." A. S. Cavers.
- November 4th.—Lantern Lecture: "Yorkshire Birds." V. G. F. Zimmermann.
- November 18th.—Geological Recorder's Report. J. A. Dell, M.Sc. Lantern Lecture: "The Yorkshire Coast." C. E. N. Bromhead, B.A., F.G.S.
- December 2nd.—General Exhibit Night.
- December 16th.—Conchological Recorder's Report. Paper: "British Shells." H. Sowden.

NEW MEMBERS, ELECTED IN 1931.

Ainsley, R., 42 Grosvenor Terrace.
 Anthony, H. D., M.A., B.Sc., Ph.D., Elmfield School.
 Atkinson, A. E., 50 Bootham Crescent.
 Beal, J. W., 7 Union Terrace.
 Buckton, Mrs. M. E., "Fairmount House," The Mount.
 Cave, F. M., 6a Low Ousegate.
 Cavers, A. S., 158 The Mount.
 Connell, W. H., F.R.G.S., F.R.A.S., 3 The Avenue, Clifton.
 Elgie, Chapman, 208 Mount Vale.
 Hardacre, J., 150 Burton Stone Lane.
 Harrop, Miss E. K. L., 37 St. Mary's.
 Lamming, W. A., 41 East Mount Road.
 Lewis, N., 1 Longfield Terrace.
 McElheran, J. S., A.R.C.O., A.T.C.L., M.R.S.T., 14 Sycamore Terrace.
 Pearson, A. S., 14 Heworth Green.
 Pook, Mrs. C., 20 Davygate.
 Pounder, A., 17 Ivy Place, New Earswick.
 Robson, Mrs. E., 12 Miuster Yard.
 Scruton, R., 17 Clifton Dale.
 Sheldon, O., Knavesmire Lodge.
 Swift, Mrs. B., "Sunnybank," Clifton.
 Walker, A. E., 14 Belle Vue Street.
 Walker, E. R., 15 Bootham Crescent.

DEATHS.

MEMBERS.

Ainsley, Robt., 42 Grosvenor Terrace.
 Barton, G. E., "Heworth Cottage."
 Beaumont, Mrs. F. L., 27 North Parade.
 Bell, Sir Hugh, Rounton Grange, Northallerton.
 Gutch, Mrs. E., "Holgate Lodge."
 Knowles, J. W., 25 Stonegate.
 Linfoot, A. W., "Craigengillan," Knapton Lane, Acomb.
 Newman, P. L., 4 Bootham Grange.

ASSOCIATE.

Lucas, C. C., 2 The Avenue, Clifton.

RESIGNATIONS.

Members, 32. Lady Subscribers, 2. Associates, 1.

DEATH AND RESIGNATION.

Members	...	...	...	...	40
Lady Subscribers	...	...	...	...	2
Associates	...	...	...	...	2
					—
					44

NEW MEMBERS.

25

TOTAL MEMBERSHIP ON 31st DECEMBER,
1931.

Honorary Members	...	..	30
Members	...	..	372
Lady Subscribers	...	..	44
Associates	...	..	10
			<hr/>
			456
			<hr/>

LIST OF HONORARY MEMBERS.

1. 1927. Bather, F. A., M.A., D.Sc., F.R.S., F.G.S., 46 Marryat Road, London, S.W. 19.
2. 1926. Benson, George, A.R.I.B.A., Thirsk Road, Easingwold.
3. 1897. Berget, Baron A., Sorbonne, Paris.
4. 1888. Bobretzki, Dr., The University, Kiev.
5. 1906. Bower, F. O., M.A., Sc.D., LL.D., F.R.S., The Crescent, Ripon.
6. 1930. Brown, Prof. G. Baldwin, M.A., LL.D., F.S.A., 18 Atholl Crescent, Edinburgh.
7. 1923. Clarke, Wm. Eagle, I.S.O., LL.D., F.R.S.E., The Royal Scottish Museum, Edinburgh.
8. 1924. Collingwood, R. G., M.A., F.S.A., Haverfield Library, Ashmolean Museum, Oxford.
9. 1906. Cornish, Vaughan, D.Sc., Inglewood, Camberley, Surrey.
10. 1898. Crichton-Browne, Sir James, M.D., LL.D., D.Sc., F.R.S., 45 Hans Place, London, S.W. 1.
11. 1926. Fox, Cyril, Ph.D., F.S.A., Director of the National Museum of Wales, Cardiff.
12. 1920. Grabham, Oxley, M.A., Heron Cottage, Thornton Dale, Yorks.
13. 1923. Harmer, Sir Sidney F., K.B.E., Sc.D., F.R.S., The Old Manor House, Melbourn, near Royston, Herts.
14. 1924. Kendall, Prof. Percy F., D.Sc., F.R.S., F.G.S., 1 Devas Road, London, S.W. 20.
15. 1926. Keith, Sir Arthur, M.D., LL.D., F.R.C.S., F.R.S., Conservator of Museum and Hunterian Professor, Royal College of Surgeons of England, London, W.C.
16. — Lightfoot, Thomas, Masham, Yorks.
17. 1929. Maclagan, Eric, C.B.E., M.A., F.S.A., Director and Secretary of the Victoria and Albert Museum, London, S.W. 1.
18. 1901. Macnamara, W. H., Railway Commission, Courts of Justice, London.
19. 1925. Marriott, Sir John A. R., M.A., 17 Belgrave Square, London.
20. 1906. Müller, Sophus, Prindsens Palais, Copenhagen.
21. 1926. Peers, Sir C. R., C.B.E., M.A., F.B.A., F.S.A., Chief Inspector of Ancient Monuments, H.M. Office of Works, London.
22. 1927. Regan, C. Tate, M.A., D.Sc., F.R.S., F.L.S., Director of the British Museum (Nat. Hist.), London, S.W.
23. — Sadler, Sir Michael Ernest, K.C.S.I., C.B., D.Litt., LL.D., Master of University College, Oxford.
24. 1906. Shetelig, Dr. Haakon, Bergens Museum, Bergen, Norway
25. 1924. Smith, Arthur H., M.A., F.S.A., 2 Balfour Road, Weybridge, Surrey.
26. 1929. Thompson, Professor A. Hamilton, M.A., D.Litt., F.S.A., The University, Leeds.
27. 1930. Wheeler, R. Mortimer, M.C., D.Litt., M.A., F.S.A., London Museum, Lancaster House, London, S.W.
28. 1926. Woods, Henry, M.A., F.R.S., Sedgwick Museum, Cambridge.
29. 1923. Woodward, Sir A. Smith, LL.D., F.R.S., F.G.S., Hill Place, Hayward's Heath, Sussex.
30. 1922. Yeld, George, M.A., Orleton, Gerrard's Cross, Bucks.

THE TREASURER'S ACCOUNT IN CONNECTION WITH THE FUND FOUNDED BY
THE LATE WM. REED, ESQ., FOR SPECIFIC PURPOSES, 1931.

Dr.	INCOME.	EXPENDITURE.	Cr.
	£ s. d.		£ s. d.
To Balance brought forward	20 1 6	By New Books	25 0 6
„ Interest on York Corporation 3% Redeemable Stock, less tax	13 19 0	Excess of Income over Expenditure	13 19 0
„ Interest on £50 placed on Deposit with Midland Bank, Ltd.	1 5 0		
„ Income Tax recovered, 1931	3 12 0		
„ Bank Interest	0 2 0		
	<u>£38 19 6</u>		<u>£38 19 6</u>

BALANCE SHEET.

£ s. d.	£ s. d.
663 19 0	Amount invested in York Corporation 3% Redeemable Stock
	600 0 0
	Amount placed on Deposit with the Midland Bank, Ltd.
	50 0 0
	Balance at Midland Bank, Ltd.
	13 19 0
<u>£663 19 0</u>	<u>£663 19 0</u>

SAMUEL WALKER,
Hon. Treasurer.

5th February, 1932. Audited and found correct.
ARTHUR D. GLADWIN.

Dr.

ST. MARY'S ABBEY RESTORATION FUND, 1931.

Cr.

INCOME.	£	s.	d.	EXPENDITURE.	£	s.	d.
To Balance brought forward	157	7	9	By G. Walker & Son (Repair of Hospitium)	2500	0	0
„ Subscriptions for 1931	33	17	0	„ York Corporation (Electric Heating)	265	18	0
„ £247 3s. 2d. 5% War Stock	253	4	4	„ Supervisor's Fees	11	0	0
„ Y.P.S. General A/c. (Bootham Property)	1469	12	0	„ Bank Interest and Commission	29	8	0
„ Amount transferred from Fabric Fund	251	5	3				
„ Excess of Expenditure over Income, 1931	640	19	8				
	<u>£2806</u>	<u>6</u>	<u>0</u>		<u>£2806</u>	<u>6</u>	<u>0</u>

STATEMENT OF FUND.

	£	s.	d.		£	s.	d.
To Subscriptions received to 31st Dec., 1931	407	16	0	By G. Walker & Son (Repair of Hospitium)	4550	0	0
„ Champney Bequest	2141	15	7	„ York Corporation (Electric Heating)	265	18	0
„ Y.P.S. General A/c.	1469	12	0	„ Supervisor's Fees	33	10	0
„ Fabric Fund	251	5	3	„ General Expenses	48	14	10
„ War Stock Interest	12	7	0	„ Bank Commission, less Interest	28	17	0
„ Profit on Sale of War Stock	3	4	4				
„ Balance due to Midland Bank, Ltd.	640	19	8				
	<u>£4926</u>	<u>19</u>	<u>10</u>		<u>£4926</u>	<u>19</u>	<u>10</u>

SAMUEL WALKER,

Hon. Treasurer.

Audited and found correct.

ARTHUR D. GLADWIN.

5th February, 1932.

MILLION SHILLING FUND, 1931.		Cr.	
Dr.	INCOME.	EXPENDITURE.	£ s. d.
	To Balance brought forward ...	By New Cases (Hospitium) ...	248 5 6
	„ Subscriptions for 1931 ...	„ Bank Commission, less Interest ...	0 2 0
	„ Interest on 5% War Stock ...	„ Balance ...	32 14 8
	„ £227 9s. 5d. 5% War Stock ...		
	£281 2 2		£281 2 2

BALANCE SHEET.

Amount of Fund, 31st December, 1931 ...	£	32	14	8
	£32	14	8	8

STATEMENT OF FUND.

To Subscriptions received to 31st December, 1931 ...	£	951	13	8
„ War Stock Interest ...	109	9	2	
„ Bank Interest, less Commission ...	17	11	0	
„ Profit on Sale of War Stock ...	0	6	4	
	£1079	0	2	2

SAMUEL WALKER,
Hon. Treasurer.

Audited and found correct.
ARTHUR D. GLADWIN,
5th February, 1932.

Dr.

FABRIC FUND, 1931.

Cr.

INCOME.		EXPENDITURE.	
£	s. d.	£	s. d.
To Balance brought forward	... 50 13 4	By St. Mary's Abbey Restoration Fund	... 251 5 3
„ 7th Income Tax recovered, 1931	... 46 12 4	„ Balance	... 1 6 2
„ £147 1s. 11d. 5% War Stock	... 151 5 3		
„ Interest on 5% War Stock	... 3 13 6		
„ Bank Interest, less Commission	... 0 7 0		
	<u>£252 11 5</u>		<u>£252 11 5</u>

BALANCE SHEET.

£	s. d.	£	s. d.
Amount of Fund, 31st December, 1931	... 1 6 2	Balance at Midland Bank, Ltd.	... 1 6 2
	<u>£1 6 2</u>		<u>£1 6 2</u>

STATEMENT OF FUND.

£	s. d.	£	s. d.
To 7th Income Tax recovered	... 237 0 8	By St. Mary's Abbey Restoration Fund	... 251 5 3
„ War Stock Interest	... 11 0 6	„ Balance at Midland Bank, Ltd.	... 1 6 2
„ Bank Interest, less Commission	... 2 5 0		
„ Profit on Sale of War Stock	... 2 5 3		
	<u>£252 11 5</u>		<u>£252 11 5</u>

SAMUEL WALKER,
Hon. Treasurer.

5th February, 1932. Audited and found correct.
ARTHUR D. GLADWIN.

PHILOSOPHICAL SOCIETY FOR THE YEAR ENDING 31ST DEC., 1931.

Last Year		EXPENDITURE.					£ s. d.			£ s. d.			
		<i>Rent, Rates and Taxes :</i>											
		Crown Rent	...	...	...	...	1	0	0			
		Corporation Rent (less tax)	...	...	...	...	16	12	6			
		Property Tax and City Rates	...	...	...	...	73	8	3			
		Waterworks Company's Rates	...	...	...	...	7	3	10			
		Gardeners' Licence	...	...	...	...	3	0	0			
103							<hr/>			101	4	7	
		<i>Insurance :</i>											
		Fire Premiums	...	...	...	...	19	11	10			
		Boiler Insurance	...	...	...	...	8	3	0			
		Employers' Liability Premium	...	...	...	...	6	4	0			
		Fidelity Guarantee Premium	...	...	...	...	1	10	0			
		National Health and Unemployment Insurance	...	...	...	...	29	16	9			
63							<hr/>			65	5	7	
14		Telephone Rent and Calls	...	...	...	...				13	10	2
		<i>Salaries and Wages :</i>											
		Museums	...	...	...	...	1819	12	10			
		Lodge and Gardens	...	...	...	...	666	3	3			
		Staff Pensions	...	...	...	...	184	15	0			
2654							<hr/>			2670	11	1	
		<i>General Additions, Repairs, etc. :</i>											
		MUSEUMS—											
		Additions...	...	...	...	19	1	4				
		Repairs	...	...	...	24	3	4				
		General Expenses	...	...	...	100	2	7				
173							<hr/>			143	7	3	
		GARDENS—											
		General Expenses	...	...	...	85	8	6				
		Bowling Green	...	...	...	5	0	7				
103							<hr/>			90	9	1	
		ESTATE—											
		Museum Roofs	...	...	...	111	5	7				
		General Repairs, etc.	...	...	...	80	13	4				
264							<hr/>			191	18	11	
540							<hr/>			425	15	3	
		<i>Gas, Coal, Coke and Electricity :</i>											
121		Coal and Coke	...	...	...	...	101	5	9			
13		Gas	...	...	...	...	11	5	5			
41		Electricity	...	...	...	...	44	4	2			
175							<hr/>			156	15	4	
48		Library—Books and Binding	...	...	...	...	...	...	...	48	7	3
61		Lectures	...	...	...	...	...	...	...	45	3	0
		<i>Printing and Stationery :</i>											
55		Annual Reports and Proceedings	...	...	...	...	46	7	6			
22		General Printing and Stationery	...	...	...	...	20	10	5			
77							<hr/>			66	17	11	
		Abbey Restoration Fund	...	...	...	...	...	...	...	1469	12	0
		Messrs. Brown & Elmhirst—Expenses	...	...	...	...	...	...	...	30	8	0
		Fabric Fund	...	...	...	...	...	...	...	46	12	4
24		Picture Postcards	...	...	...	...	...	...	...	18	11	9
12		Postages and Receipts	...	...	...	...	...	...	...	16	0	0
		Cheque Book	...	...	...	...	...	...	...	1	12	0
								<hr/>			£5176	6	3
		Excess of Income over Expenditure					96	10	1
								<hr/>			£5272	16	4
								<hr/>					
		Balance due to Treasurer, 31st December, 1931					...	2	16	1			
								<hr/>			£2	16	1
								<hr/>					

S. WALKER,
Hon. Treasurer.

THE LATE DR. ANDERSON'S BEQUEST.

	£	s.	d.
Interest on £8,000 New Zealand 4% Inscribed Stock	320	0	0
„ on £5,700 London & North Eastern Railway 4% First Preference Stock	176	14	0
„ on £2,500 London & North Eastern Railway 4% Second Guaranteed Stock	77	10	0
„ on £8,000 Canada 4% Registered Stock... ..	248	0	0
„ on £3,219 3s. 5d. Bank of England Stock	294	11	1
„ on £5,777 2s. 6d. South Indian Railway 4% Registered Debenture Stock	179	1	8
„ on £4,314 13s. 2d. 5% War Loan Stock	215	14	6
„ on £2,000 4½% Conversion Loan	90	0	0
„ on £45 Deposit at Midland Bank	1	1	6
Rents of Shops and Dwelling-houses, Nos. 32 & 34, Bootham	65	0	0
Income Tax recovered (1 year)	321	3	4
	£1988 16 1		

Memo. :—The above items are shown less tax, if deducted.

The Yorkshire Museum,
YORK.

Report
of the
Museum Committee
FOR THE YEAR 1931.

PRINTED BY ORDER OF THE COUNCIL.

1932.

THE YORKSHIRE MUSEUM, YORK.

Keeper :

WALTER E. COLLINGE, D.Sc., M.Sc., F.S.A., F.L.S.,
M.B.O.U., Hon. F.R.H.S.

Honorary Curators :

ARCHÆOLOGY	- - -	(W. HARVEY BROOK. W. A. EVELYN, M.A., M.D. (Cantab.)
GEOLOGY	- - - -	SIDNEY MELMORE, B.Sc., F.G.S.
ROMAN ANTIQUITIES	-	REV. A. RAINE, M.A.
BOTANY	- - - - -	H. J. WILKINSON.
ZOOLOGY	- - - -	W. H. ST. QUINTIN, F.Z.S.
ENTOMOLOGY	- - -	S. WALKER, F.E.S.
CONCHOLOGY	- - -	H. SOWDEN.
ASTRONOMY	- - -	J. SCOTT.
NUMISMATICS	- - -	GEOFFREY THOMPSON, M.A.
CERAMICS	- - - -	ARTHUR HURST, A.K.C.

Sub-Curator : W. WATSON.

Assistants : (MISS E. HOLMES.
FRANCIS T. G. WHITE.
(MISS W. BRITTON.

Chief Clerk : ARTHUR COLLEY.

Museum Attendants :
WILLIAM RAFTON and MISS G. FISHER.

BRITISH
MUSEUM
25 APR 52
NATURAL
HISTORY.

THE YORKSHIRE MUSEUM.

REPORT FOR THE YEAR 1931.

THE re-arrangement and classification of the specimens in the Museum of Roman Antiquities, and similar work in connection with the Geological Collections, have occupied most of the time of the past year. There is still an enormous amount of work to be done in relabelling and cataloguing these collections.

In connection with the re-organization of the Hospitium and the classification of the collections, the Council received invaluable assistance from the Rev. A. Raine and others, and would like to place on record their appreciation of the work carried out by the Keeper and the Members of the Staff.

Manuscript Catalogues have been completed, or nearly so, of the Ceramics, the Hurst Loan Collections, and the North-umbrian Stycas, and a commencement has been made with the Pleistocene remains in the Geological Department and the Roman Antiquities.

The Anglo-Saxon and Danish Sculptures have been removed from the Hospitium, cleaned, and exhibited in a small room adjoining the east end of the Museum of Mediaeval Architecture. This has been much appreciated by visitors.

A new departure has been made in the commencement of a Collection of York Silver Plate. The Council are indebted to the generosity of Mr. Arthur Hurst, who has started the Collection with a Sugar Bowl by Cattle & Barber, 1812, and a Fork by Hampton & Prince, 1801. These are exhibited in the Central Hall.

EDUCATIONAL WORK. The City Educational Authorities and the Schools in the City continue to make use of the Museum Collections. During the year 790 children attended the Museum for study and instruction, and 195 students from the City School of Arts and Crafts.

A small collection of mediaeval tiles and monastic pottery was loaned to the Yorkshire Handcraft Exhibition at Leeds in connection with the Summer School, and was much appreciated.

SPECIAL EXHIBITS. Special exhibits have been made of the various collections of bronze, stone, bone, and flint implements found in York, and have excited much interest; the fourteenth century enamelled Prick Candlesticks from St. Mary's, Bishophill Senior, York, have also been on exhibition, and the Collection of Engraved Copper Plates of York Churches, Bars, etc., presented to the Museum some years ago by Mr. George Benson.

Amongst the various organizations that have visited the Museums during the past year were :—

March 5th.—Sheffield Central Technical School.

March 28th.—Hull University Extension Society

April 24th.—Sheffield Central Secondary School.

April 25th.—Hull Municipal Training College.

May 15th.—Driffield Council Girls' School.

May 16th.—Sheffield Pupil Teachers' Centre.

May 16th.—Middlesbrough Girls' High School.

May 22nd.—ShIPLEY Salt Boys' High School.

June 6th.—Scottish Ecclesiological Society.

June 6th.—HOLLINGSWORTH Council School.

June 12th.—Rutherford College Girls' School.

June 13th.—N.U.T. Kiveton Park Branch.

June 20th.—L.M.S. Staff (Manchester).

June 21st.—Comrades Federation. Port Sunlight.

June 25rd.—Gee Cross Trinity School, Hyde.

June 24th.—Hull, Clifton Street Council School.

June 26th.—South Dalton Church of England School.

June 26th.—ShIPLEY Girls' High School.

June 27th.—British Federation of University Women (Hull Branch).

June 27th.—Messrs. Reckitt's Debating Society. Hull.

June 29th.—Church of England School. Riddlesden.

July 3rd.—Barnsley Grave Street Secondary Boys' School.

July 9th.—York Branch Toe II.

July 10th.—British Commercial Travellers' Association.

July 25th.—Norton-on-Tees. Frederick Natrass Junior Mixed School.

Sept. 5th.—Teachers from the Yorkshire Handcraft Summer School,
Leeds.

Sept. 19th.—Oxford Street School, Bridlington.

Oct. 24th.—Tadcaster Grammar School Historical and Geographical
Society.

Dec. 18th.—Students from the Leeds Technical College.

The Collections or specimens have been studied by Prof. Henry Woods, F.R.S., the Sedgwick Museum, Cambridge; Prof. W. J. Sollas, The University, Oxford; Peter Paulsen-Westre of Stockholm; Arthur E. Robinson, St. Albans; Dr. Percy R. Lowe, The British Museum (Nat. Hist.), London; John Charlton, Gateshead; T. D. Kendrick, The British Museum, London; and Prof. S. H. Reynolds, The University, Bristol.

Turning to the different departments of the Museum :—

ETHNOLOGY. Many additions have been made to the Collection, but it has not always been possible to exhibit the same. One of the most interesting donations received is a small collection of flint implements found at Fulford in 1906, and an extremely fine mottled flint celt from Skipwith, presented by Dr. George A. Auden. Another donation, of particular interest to those studying handicraft, is the collection of comb manufacturing tools from the last comb-makers of York, the Rougier Comb Works, presented by Alderman J. B. Morrell. This Gallery still continues to attract large numbers of visitors.

ROMAN ANTIQUITIES. Our collection of inscribed stones has been enriched this past year by a find of unusual interest. In 1867 the right half of a Roman inscribed stone was removed from the south wall of All Saints' Church, North Street, and given to the Museum. This stone was found about 250 years ago. Dr. Martin Lister, of York, in 1682 sent a description of the stone to the Royal Society which was published in the Transactions. He says that "the lettering was exceedingly fairly cut beyond anything of that kind he had ever seen in England." He and other antiquaries tried to puzzle out the inscription, but they found this to be impossible as half the

stone was wanting. Drake in his *Eboracum* gives a picture of the stone as he saw it, showing that the inscribed portion was flanked by a panel bearing a winged figure. Unfortunately



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[Walter Scott

the stone was built into the south wall of All Saints' Church, and was exposed to the weather, with the result that when in 1867 the Rector, Mr. Guest, handed it over to the Museum it was in a sadly defaced and mutilated condition. In August, this last year, part of the north wall of All Saints' had to be taken down and rebuilt, and in the foundations the missing half of the stone was discovered. The Rev. P. J. Shaw, Rector of All Saints', gave the newly found portion to the Museum. The newly found portion is in a splendid state of preservation, and the lettering of the inscription, as Dr. Lister said, is "exceedingly fairly cut." The two halves having been put together, the inscription, which so long has puzzled antiquaries, can now be read. It is as follows :—

D. M.
EGLECTAE . AN.
XXX H S SEC
CRESCENTEM
F AN III ANTON
STEPHAN CONIVGI
F. C.

That is : “ To the Divine Manes of Eglecta who lived 30 years and is buried here—also to Secundus Crescens her son who lived 3 years. Antonius Stèphanus caused this monument to be erected to his wife.”

The letters are deeply cut, and the words are separated by a “ leaf ” stop. The bad grammar of the inscription is curious.

A further addition to our Collections is a small uninscribed Roman Altar which was found lying on the road-side in Dringhouses, near to some newly built houses. It may be remembered that Mr. Robert H. Scaife found, on a stone heap in Nunthorpe, one of the inscribed stones in our Museum.

GEOLGY. The transference of the Collection of Yorkshire Fossils has been begun and at the end of the year is complete from the Pleistocene down to the Millepore Oolite. These are now placed in the well-lit room formerly filled with the Tertiary fossils in the Reed Collection. The Pleistocene vertebrate fossils in the Reed Collection have been cleaned and re-arranged in the room which already contained the remains from Kirkdale Cave, Bielsbeck and Sewerby. It is hoped this highly valuable, and in many ways unique, collection of Pleistocene Vertebrata will now be found more conveniently placed for study than hitherto.

CONCHOLOGY. There have been no additions made to the Conchological collections during the year 1931. A start has been made to classify and arrange the type collection of Land and Fresh water Shells, which it is hoped to continue and finish in the near future. When completed it is hoped that this type collection will prove useful and helpful to those conchologists who are studying this section.

BOTANY. The specimens of British Flowering Plants and Ferns in the Herbarium are in fair condition. The foreign specimens require attention and more room.

ASTRONOMY. All the instruments are in good order, and a number of observations have been taken during the year. The year has not been favourable from a weather point of view, but there have been more members visiting the Observatory, showing that greater interest is being taken in Astronomy.

NUMISMATICS. The preliminary labelling of the coins has continued during the past year and is now almost completed, with the exception of the Medals, the Greek, the Oriental, and the Roman coins after 193 A.D. Work on the last-named is

postponed owing to delay in publication of the final parts of Mattingly and Sydenham's standard reference work on Roman Imperial Coinage. When these appear, it is hoped that it may be possible to approach a general re-arrangement of the trays, which will facilitate reference.

The Anglo-Saxon Stycas have now been completely sorted out, arranged, classified, and labelled under Kings and Moneyers, and a detailed loose-leaf catalogue has been compiled to distinguish between the very numerous small variations in types, etc.

Gifts of coins have been gratefully received throughout the year, but no important local finds of coins have been reported.

CERAMICS. The Ceramic Collections have been maintained in good condition during the past year. The cases containing the Mediaeval Pottery on the south side of the Central Hall have been cleaned, and their contents cleaned and re-arranged. Additions have been made to all the Collections during the past year.

LIBRARY. During the year 51 volumes have been added by purchase, and 29 by presentation, in addition to the usual unbound memoirs. The number of volumes borrowed was 270.

METEOROLOGY. Statistics of Station : Longitude, $1^{\circ} 5'$ W. ; Latitude, $55^{\circ} 57'$ N. ; height above mean sea level, 56 feet.

The rainfall for 1931 was above normal, being 29.22 inches, 4.22 inches above the average for over 50 years. The wettest months of the year were April, June, July, August, September, and November, when the totals for the months were : 3.16, 3.72, 3.49, 3.39, 3.24, and 3.73 inches respectively. March, October, and December were the driest months with 0.51, 1.10 and 0.79 inches respectively.

Temperature ranged from 76° F. on July 22nd, to 22° F. on January 4th ; the range of temperature for 1931 being thus : 54.0° F. as against 55.1° F. for 1930. A mean pressure of 1014.3 millibars (1,000 millibar = 29.531 inches of mercury) at M.S.L. (corrected for diurnal variations), has been recorded, as against 1012.1 millibars for 1930. July gave the lowest mean for the year, 1007.7 millibars, November next with 1008.1 millibars. December was highest, 1023.7 millibars, and September next with 1022.0 millibars. The extreme range was

1.86 inches as compared with 2.01 inches in 1930. The highest reading of the barometer was taken December 22nd, at 9 a.m., viz. : 30.75 inches, and the lowest on November 10th, at 9 p.m., viz. : 28.67 inches.

Snow or Rain fell to the amount of 29.22 inches or 742.2 mm., as against 29.24 inches or 742.7 mm., for 1930, a decrease of .02 inches or .5 mm., for the year. The heaviest fall of the year occurred on September 4th, when 47.5 mm. (1.87 inches) fell. The cumulative totals for the years since 1820 are, for the heaviest monthly falls, August 6000.35 mms., October 5753.48 mms., and July 5432.30 mms.

Observations of Winds show that during 1931 we had "strong" winds on 8 days (force 4 to 7 on scale 0-12), 1 day more than 1930, and "calm" on 8 days as compared with 9 in 1930. The chief winds have been observed as S. (96), W. (60), N. (84), S.E. (26), S.W. (26), and N.W. (28).

Thunder was heard on 12 days, snow or sleet fell on 32 days, as against 13 days in 1930; and there were hailstorms on 3 days, as against 2 days the previous year.

Bright Sunshine was recorded 1324.8 hours as against 1214.1 hours in 1930, an increase of 110.7 hours for the year.

The daily mean was 3.61 hours, and the percentage of possible sunshine 30 as against 27 in 1930.

After the cold February, spring growths were rather late, and vegetation did not make much progress. The hay crops were fairly good, also Cereals in this district were on the whole very good, but the wet weather in June, July, August, and September spoiled the harvest. A great quantity of both hay and corn was ruined with the floods in September.

Potatoes were a fair crop, and were gathered well.

It is urgently requested that any discovery of Archæological interest in the neighbourhood may be brought to the notice of the Keeper of the Museum, or the Honorary Curators, as early as possible.

The Keeper of the Museum will be pleased to give any information in his power, and may be seen daily, Museum engagements permitting.

CLIMATOLOGICAL SUMMARY—THE YORKSHIRE MUSEUM, YORK, 1931.

Heights above Ground :—Thermometers 4 ft. Rain-gauge 1 ft.

1931.	Air Temperature in Degrees Fahrenheit.										Earth Temperature			Rainfall.				Weather.						Bright Sunshine.		
	Means of		Means of		Absolute Extremes.						At 4 ft.		Total.	Maximum Fall.		Day.	Number of Days of						Total.	Daily Mean.	Per cent.	
	Max.	Min.	Max.	Min.	H. Max.	L. Min.	Day.	Day.	H. Min.	Day.	in.	mm.		in.	mm.		Precipitation 0.2 mm. or more.	Precipitation 1 mm. or more.	Snow.	Snow Lying.	Hail.	Thunder storm.				
	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	hr.	hr.	%		
Jan.	43.0	33.0	52	16,19	22	4	36	3,31	45	16	36.5	41.6	1.76	.30	7.6	31	19	12	8	0	1	0	622.9	2.03	26	
Feb.	43.3	34.1	54	25	29	28	35	6	44	9,25	37.5	40.5	2.05	.29	7.4	9	23	16	12	3	0	0	45.8	1.63	17	
March.	46.3	32.0	65	20	23	7,9,10	33	7,9	46	21	38.0	40.2	0.51	.13	3.3	9	8	6	7	0	0	0	146.7	4.73	40	
April	52.5	39.8	64	11	32	1,4,5	42	2,3	48	11	44.5	43.4	3.16	.78	19.8	2	20	17	2	0	2	3	126.9	4.23	30	
May	60.6	44.5	72	26,27	34	21	54	3,19,20	53	31	51.1	47.7	2.28	.45	11.4	30	15	10	0	0	0	0	173.3	5.59	35	
June	64.7	50.5	73	26	40	25	51	6	58	22,28	57.2	52.6	3.72	.71	18.0	5	16	10	0	0	0	2	141.6	4.72	28	
July	67.3	54.4	76	22	46	21	60	20,28	59	4,12	60.6	56.4	3.49	.51	13.0	12	22	19	0	0	0	4	136.8	4.41	27	
August	64.5	50.1	73	4	39	24	55	8	58	4	59.1	57.3	3.39	.78	19.8	14	14	11	0	0	0	3	182.5	5.89	40	
Sept.	60.3	47.7	72	15	38	13	55	5,22	57	16	56.1	56.2	3.24	1.87	47.5	4	13	7	0	0	0	0	94.5	3.15	25	
October	55.2	40.1	66	4	24	23	45	25,30	59	5	50.5	53.7	1.10	.57	14.5	29	12	5	0	0	0	0	133.1	4.29	41	
Nov.	50.4	40.8	61	4	32	17,22	41	22	50	3	45.5	48.6	3.73	.73	18.5	18	17	11	0	0	0	0	36.5	1.22	14	
Dec.	46.1	36.3	57	4	23	31	36	1,22,30	46	4,27	41.9	45.7	0.79	.21	5.3	2	12	5	3	0	0	0	44.2	1.43	19	
Totals	654.2	503.3	578.7	—	—	—	—	—	—	—	578.5	583.9	29.22	742.2	—	191	129	32	9	3	12	1324.8	433.2	30		
Means of Extremes	54.5	41.9	48.2	—	—	—	—	—	—	—	48.2	48.7	—	—	—	—	—	—	—	—	—	—	3.63	3.61	—	

CLIMATOLOGICAL SUMMARY—THE YORKSHIRE MUSEUM, YORK, 1931.

Latitude 53° 57' N. Longitude 1° 5' W. Height above Mean Sea Level 56 ft.

1931.	Mean Pressure corrected to 32° F. and lat. 45° and reduced to Mean Sea Level.				Air Temperature		Humidity.				Mean Amount of Cloud, 0-10		Cloud Amount, 9 a.m.				Wind, No. of Observations, 9 a.m.																														
	9 a.m.		9 p.m.		9 a.m.		9 p.m.		9 a.m.		9 p.m.		9 a.m.		9 p.m.		0		1-3		4-6		7-9		10		N		NE		E		SE		S		SW		W		NW						
	mb.	in.	° F.	° F.	mb.	in.	° F.	° F.	mb.	in.	mb.	in.	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%							
	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.	9 a.m.	9 p.m.							
Jan.	1010.7	1011.4	29.85	29.87	36.9	37.2	1.2	1.2	6.6	6.6	6.6	89	89	7.1	6.3	6	1	4	2	18	0	1	29	1	10	1	0	0	0	4	2	10	3	3	2	10	3	3	2	10	3						
Feb.	1009.8	1010.1	29.82	29.83	37.7	37.4	1.4	1.5	6.7	6.4	6.4	87	86	7.7	5.7	3	2	2	4	17	0	0	28	0	6	0	0	0	1	11	3	5	2	11	3	5	2	11	3	2	11	3					
Mar.	1016.1	1016.7	30.01	30.02	37.7	37.1	2.5	1.8	5.9	6.2	6.2	76	83	6.0	3.3	7	3	5	4	12	0	0	31	0	5	4	4	10	1	4	1	10	4	1	10	4	1	10	4	1	10	4					
April	1012.1	1011.7	29.89	29.88	47.1	44.6	3.2	2.0	8.3	8.5	8.5	75	84	6.5	6.5	3	5	2	12	8	0	0	30	0	9	2	0	3	5	2	5	2	5	2	5	2	5	2	5	2	5	2	5	2			
May	1011.7	1011.5	29.88	29.87	53.2	51.4	3.0	2.5	10.9	10.5	10.5	79	82	7.6	6.3	2	5	2	2	20	0	0	31	0	7	5	1	4	11	1	1	11	1	1	11	1	1	11	1	1	11	1	1	11	1		
June	1015.9	1015.9	30.00	30.00	56.9	56.1	3.4	2.7	12.5	12.7	12.7	79	83	8.6	6.7	1	2	3	2	22	0	1	29	0	2	3	2	2	10	0	2	10	0	2	10	0	2	10	0	2	10	0	2	10	0		
July	1007.7	1008.0	29.76	29.77	60.4	59.2	3.5	2.6	14.0	14.4	14.4	79	85	8.7	6.7	1	0	3	9	18	0	0	31	0	5	1	0	2	9	3	10	2	9	3	10	2	9	3	10	2	9	3	10	2	9	3	
Aug.	1013.2	1013.7	29.92	29.93	58.2	56.3	3.7	2.6	12.7	12.8	12.8	77	84	7.5	5.5	2	3	4	8	14	0	1	30	0	13	2	4	1	5	2	2	5	2	2	5	2	2	5	2	2	5	2	2	5	2		
Sept.	1022.0	1021.7	30.18	30.17	53.8	53.2	2.8	2.1	11.6	11.8	11.8	81	86	6.7	7.6	6	4	1	2	17	0	0	29	1	15	2	1	0	5	1	1	5	1	1	5	1	1	5	1	1	5	1	1	5	1		
Oct.	1020.1	1020.5	30.12	30.14	45.9	46.2	2.1	1.6	8.8	9.2	9.2	83	87	5.0	4.5	14	1	1	4	11	0	1	25	5	8	1	0	0	0	7	5	2	7	5	2	7	5	2	7	5	2	7	5	2	7	5	
Nov.	1008.1	1007.4	29.77	29.75	44.4	44.8	1.1	1.0	8.9	9.4	9.4	91	92	8.1	6.8	4	1	0	7	18	0	2	28	0	0	2	1	3	18	2	4	18	2	4	18	2	4	18	2	4	18	2	4	18	2		
Dec.	1023.7	1023.2	30.23	30.22	40.2	40.9	1.0	1.5	7.6	7.6	7.6	91	87	6.8	6.6	5	3	2	9	12	0	2	28	1	4	1	0	0	7	4	11	7	4	11	7	4	11	7	4	11	7	4	11	7	4	11	7
Totals	121171.1	121171.8	—	—	572.4	564.4	28.9	23.1	114.5	116.1	116.1	987	1028	86.3	72.5	54	30	29	65	187	0	8	349	8	81	24	13	26	96	26	60	96	26	60	96	26	60	96	26	60	96	26	60	96	26		
Means	1014.3	1014.3	29.95	29.95	47.7	47.0	2.4	1.9	9.5	9.7	9.7	82	86	7.2	6.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		

Pressure is expressed in millibars (1,000 millibars = 29.531 mercury inches), also in mercury inches.

RIVER HEIGHT RECORDS REGISTERED BY THE AUTOMATIC RECORDER
AT THE GUILDHALL, YORK, 1931.

Date	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	Time.	Above or below S.L. ft. in.	Time.	Above or below S.L. ft. in.	Time.	Above or below S.L. ft. in.	Time.	Above or below S.L. ft. in.	Time.	Above or below S.L. ft. in.	Time.	Above or below S.L. ft. in.
1	8 a.m.	above 7 4	1 a.m.	above 3 4	1 a.m.	above 2 1	noon	above 0 9	1 a.m.	above 2 1	noon	above 4 6
2	1 a.m.	5 11	2 p.m.	4 2	"	1 8	10 p.m.	0 10	"	1 9	1 a.m.	3 4
3	"	3 6	12 p.m.	4 0	"	1 7	12 p.m.	2 0	6 p.m.	1 5	12 p.m.	7 4
4	"	2 7	1 a.m.	4 0	"	1 6	3 p.m.	2 7	1 a.m.	1 4	4 a.m.	7 8
5	"	2 1	"	3 2	noon	1 5	1 a.m.	2 3	6 p.m.	1 3	1 a.m.	5 4
6	12 p.m.	1 9	"	2 5	1 a.m.	1 5	2 p.m.	1 9	2 a.m.	1 2	12 p.m.	5 6
7	1 a.m.	1 9	"	2 1	6 a.m.	1 4	1 a.m.	1 5	noon	1 0	6 p.m.	8 6
8	"	1 7	12 p.m.	2 9	12 p.m.	1 2	"	1 2	"	0 1	1 a.m.	8 0
9	noon	1 5	"	7 5	1 a.m.	1 2	8 p.m.	1 1	2 a.m.	0 11	1 a.m.	7 9
10	"	1 5	"	8 10	noon	1 2	9 p.m.	1 1	5 p.m.	1 1	"	5 9
11	12 p.m.	1 6	"	9 5	12 p.m.	1 3	6 p.m.	1 1	11 p.m.	1 0	12 p.m.	5 8
12	6 p.m.	3 6	6 p.m.	8 9	"	1 5	"	1 0	4 p.m.	1 5	1 a.m.	5 8
13	1 a.m.	3 4	1 a.m.	8 6	1 a.m.	1 5	1 a.m.	1 0	1 a.m.	1 4	"	3 7
14	"	2 1	"	5 7	12 p.m.	2 2	2 p.m.	0 11	2 p.m.	1 0	12 p.m.	3 3
15	"	1 7	"	3 1	6 p.m.	3 6	12 p.m.	0 9	12 p.m.	1 1	10 p.m.	6 2
16	6 p.m.	2 2	12 p.m.	4 1	1 a.m.	3 4	noon	0 9	6 p.m.	1 4	1 a.m.	6 1
17	"	4 3	1 a.m.	4 0	"	3 2	12 p.m.	0 11	"	1 5	"	3 9
18	1 a.m.	4 0	6 a.m.	3 7	"	2 4	"	3 3	1 a.m.	1 4	6 a.m.	3 10
19	"	1 11	1 a.m.	3 1	12 p.m.	2 0	8 p.m.	5 3	"	1 3	12 p.m.	5 7
20	noon	1 5	"	2 5	"	2 6	1 a.m.	5 1	"	0 10	11 a.m.	8 4
21	1 a.m.	1 5	4 p.m.	6 7	1 a.m.	2 6	"	3 8	"	0 10	1 a.m.	6 9
22	"	1 3	1 a.m.	5 6	"	2 1	"	2 9	12 p.m.	0 11	"	4 0
23	12 p.m.	4 6	12 p.m.	3 0	"	1 9	"	2 1	"	1 5	"	3 3
24	9 p.m.	5 8	1 a.m.	3 0	"	1 6	12 p.m.	2 4	10 p.m.	1 8	"	2 11
25	1 a.m.	5 7	12 p.m.	3 4	"	1 3	"	2 9	3 p.m.	4 10	noon	2 9
26	"	3 10	"	5 1	"	1 1	6 p.m.	4 7	1 a.m.	4 1	"	2 8
27	"	2 7	1 a.m.	5 1	"	1 0	noon	4 6	"	2 2	"	2 6
28	12 p.m.	3 4	"	2 8	noon	0 11	1 a.m.	4 0	"	1 7	"	2 5
29	"	4 8	6 a.m.	0 7	6 a.m.	0 7	"	3 0	12 p.m.	1 6	"	2 3
30	noon	4 8	11 p.m.	0 11	11 p.m.	0 11	"	2 9	"	1 9	"	2 3
31	1 a.m.	4 6	2 p.m.	0 11	2 p.m.	0 11	"	2 9	"	3 4	"	2 3

RIVER HEIGHT RECORDS.—Continued.

Date	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	Time.	Above or below S.L. ft. in.	Time.	Above or below S.L. ft. in.	Time.	Above or below S.L. ft. in.	Time.	Above or below S.L. ft. in.	Time.	Above or below S.L. ft. in.	Time.	Above or below S.L. ft. in.
1		No Record.	1 a.m.	above 1 6	noon	above 0 9	6 p.m.	above 0 6	6 a.m.	above 0 5	1 a.m.	above 2 4
2	4 p.m.	above 1 2	11 p.m.	1 3	12 p.m.	1 0	noon	0 5	12 p.m.	0 7	8 p.m.	2 1
3	"	1 3	noon	0 10	"	3 3	8 p.m.	1 1	"	0 8	12 p.m.	3 6
4	3 p.m.	1 2	"	0 10	"	10 1	3 p.m.	0 9	"	8 5	"	5 11
5	"	1 4	10 p.m.	1 0	"	13 5	12 p.m.	0 9	6 a.m.	8 8	4 p.m.	6 5
6	12 p.m.	1 4	12 p.m.	1 0	1 a.m.	13 5	2 p.m.	1 3	1 a.m.	4 11	1 a.m.	5 11
7	9 a.m.	1 11	"	1 0	"	12 2	1 a.m.	1 2	12 p.m.	1 8	"	5 8
8	12 p.m.	1 4	"	1 3	"	10 4	12 p.m.	1 1	"	2 9	"	3 5
9	"	1 9	4 p.m.	2 2	"	6 8	4 a.m.	1 1	"	3 0	3 a.m.	3 1
10	10 a.m.	2 0	1 a.m.	1 10	"	4 3	12 p.m.	1 9	10 p.m.	4 6	9 p.m.	2 5
11	6 p.m.	1 3	6 p.m.	1 8	9 p.m.	3 0	2 a.m.	1 9	1 a.m.	4 3	1 a.m.	2 4
12	12 p.m.	1 3	1 a.m.	1 7	1 a.m.	2 11	1 a.m.	0 11	noon	4 6	"	2 1
13	3 p.m.	2 8	"	1 3	5 p.m.	2 10	12 p.m.	0 9	1 a.m.	4 3	4 p.m.	1 8
14	1 a.m.	2 3	12 p.m.	1 1	12 p.m.	2 6	2 p.m.	1 2	"	2 5	1 a.m.	1 5
15	12 p.m.	3 4	"	4 11	1 a.m.	2 6	1 p.m.	0 10	12 p.m.	1 10	12 p.m.	1 3
16	1 a.m.	3 4	3 a.m.	5 3	2 p.m.	2 2	3 p.m.	0 6	noon	2 3	7 p.m.	1 3
17	"	2 5	12 p.m.	6 8	12 p.m.	2 2	12 p.m.	0 5	1 a.m.	1 11	3 p.m.	1 2
18	12 p.m.	1 6	3 a.m.	7 1	noon	2 2	6 p.m.	0 6	12 p.m.	1 5	8 p.m.	1 1
19	4 p.m.	2 0	1 a.m.	4 10	1 a.m.	2 2	11 p.m.	0 5	"	5 9	9 p.m.	1 0
20	9 p.m.	1 7	12 p.m.	7 11	4 p.m.	2 1	6 p.m.	0 6	1 a.m.	5 8	12 p.m.	0 10
21	1 a.m.	1 7	2 a.m.	8 0	2 p.m.	1 11	5 p.m.	0 4	"	3 4	"	0 10
22	12 p.m.	1 3	1 a.m.	5 2	noon	1 10	8 p.m.	0 4	6 p.m.	2 8	8 p.m.	0 11
23	noon	1 2	"	3 0	"	1 10	11 p.m.	0 4	1 a.m.	2 4	12 p.m.	0 10
24	3 p.m.	2 0	"	1 10	"	1 10	12 p.m.	0 3	10 p.m.	7 4	"	0 9
25	1 a.m.	1 8	2 p.m.	1 4	6 p.m.	1 9	5 p.m.	0 4	1 a.m.	7 1	"	1 8
26	6 p.m.	1 7	6 p.m.	1 6	"	2 0	6 p.m.	0 3	"	3 7	4 a.m.	1 9
27	4 p.m.	1 6	2 p.m.	1 5	"	1 9	"	0 3	12 p.m.	5 11	3 p.m.	1 3
28	1 a.m.	1 1	12 p.m.	1 2	"	1 8	4 p.m.	0 3	3 p.m.	7 8	"	1 0
29	12 p.m.	1 0	3 p.m.	1 1	"	0 6	12 p.m.	0 4	1 a.m.	7 0	4 p.m.	1 5
30	"	1 11	5 p.m.	1 0	"	0 6	"	1 9	"	4 0	1 a.m.	1 3
31	1 a.m.	1 11	3 a.m.	0 11	"	0 6	4 a.m.	1 10	"	0 0	"	0 11

THE YORKSHIRE MUSEUM, 1931.

Month.	Bright Sunshine.		Pressure at Mean Sea Level.								
	Daily M can. 1931.	Per- centage.	Absolute.								
			Highest.	Date.	Time.	Lowest.	Date.	Time.			
		1930.									
		%	mb.			mb.					
Jan.	2.03	14	1034.7	7th	9 am	979.8	23rd	9 pm	979.8	23rd	9 pm
Feb.	1.63	12	1027.4	3rd, 4th	9 pm	988.2	16th	9 am	988.2	16th	9 am
Mar.	4.73	22	1039.2	26th	9 pm	998.4	1st	9 am	998.4	1st	9 am
Apr.	4.23	21	1026.0	10th	9 am	986.1	25th	9 pm	986.1	25th	9 pm
May	5.59	28	1025.3	9th	9 am	997.9	4th	9 am	997.9	4th	9 am
June	4.72	39	1030.2	25th	9 am	997.5	14th	9 pm	997.5	14th	9 pm
July	4.41	31	1019.3	1st	9 am	996.9	25th	9 am	996.9	25th	9 am
Aug.	5.89	41	1031.3	27th	9 am	990.1	20th	9 am	990.1	20th	9 am
Sept.	3.15	28	1037.9	25th, 26th	9 pm	994.6	4th	9 am	994.6	4th	9 am
Oct.	4.29	33	1038.4	15th	9 am	997.7	24th	9 am	997.7	24th	9 am
Nov.	1.22	26	1030.8	16th	9 am	972.8	11th	9 am	972.8	11th	9 am
Dec.	1.43	9	1041.4	22nd	9 am	993.4	28th	9 pm	993.4	28th	9 pm
Year.	43.32 3.61	27	1041.4	Dec. 22nd	9 am	972.8	Nov. 11th	9 am	972.8	Nov. 11th	9 am

RAINFALL IN 1931
AT CHERRY HILL, YORK.

Rain Gauge: Dia. of Funnel, 5 in.;
Height above Ground, 1 ft. 6 in.
" " Sea level, about 50 ft.

Month.	Inches.	Wet Days.	Greatest Fall.	Date.
* Jan.	1.87	19	.29	31
Feb.	1.64	9	.33	26
Mar.	.50	5	.19	3
April	3.43	12	1.10	9
May	2.34	13	.78	23 & 24
June	3.67	13	.70	5
July	3.68	18	.67	18 & 19
Aug.	3.31	14	.83	13
Sept.	3.56	12	2.00	4
Oct.	.96	6	.56	29
Nov.	3.94	18	.73	18
Dec.	.91	8	.23	2 & 29
Totals	29.81	147		

ADDITIONS TO THE MUSEUM

DURING 1931.

- EDWARD ALLEN.—Case of Pied and Albino Blackbirds ; Eel from Linton.
- DR. G. A. AUDEN.—Mottled flint Celt from Skipwith ; 17 worked Flints from Fulford, 1906.
- GEORGE BEEDHAM.—Framed Map showing the Roman Road between Barmby Moor and Stamford Bridge.
- J. BILLINGTON.—Castleford Tea Pot and oval Basket and Stand.
- THE REV. A. B. BROWNE.—Old flint lock Alarm Gun.
- MRS. M. A. CATTON.—Prints of Roman Tessellated Pavements ; Atlas of old Maps.
- MRS. ALISON COMBER.—MSS., Drawings, etc., belonging to the late Mr. Thomas May.
- MISS K. A. COOPER.—2 pairs Snuffers ; 1 Snuffer Stand ; 1 Pinking Iron.
- T. P. COOPER.—Silver Spoon made by Barber, Cattle & North, York, 1820.
- PHILIP CORDER, M.A.—2 Silver Denarii of Antonius Pius, 1 Faustina I, 1 Faustina II, found between Scarborough Bridge and York Station ; two pieces of Roman Pottery and Clay Torso from New Earswick.
- C. E. ELMHIRST, J.P.—Abbey Token ; Beaver Chippings from the Adirondack Mountains.
- WILFRID GUTCH.—Carved Stone.
- J. HARDACRÉ.—Two Tokens.
- ARTHUR HURST, A.K.C.—Silver Sugar Bowl, York, 1812.
- W. W. HURWORTH.—Horsley's Map of Britanniae Antiquae, 1794.
- THOS. IRELAND.—Coin of Constantius II and another Roman Coin found at Norton.
- THE LATE MRS. J. W. KNOWLES.—Silk Screen, mounted in rosewood ; 43-piece Spode Tea Service.
- JOHN LEADLEY.—Six Knives and Forks, early sixth century.
- THE LATE A. W. LINFOOT.—Bone Knife, found close to the wall outside the Roman Building in St. Sampson's Square, York. Last Comb made at the Rougier Comb Works, York ; Pair of brass Candle Snuffers ; 2 late Roman and 1 Greek Coin, 1 C. Fontenis, 1 Henry VII $\frac{1}{2}$ groat, York Mint, 2nd issue.

- T. MEEK.—Squirrel in flesh, shot at Norton.
- G. A. MERRIMAN.—Victoria Silver 1½d. ; George IV Silver 1d. ; George II Silver 2d.
- DR. A. W. METCALFE.—Celt and 3 flint Arrow Heads from Fimber ; Roman Coins.
- ALD. J. B. MORRELL.—Birmingham Token, 1812 ; Comb Manufacturing Tools.
- J. H. MORTON.—Series of English and Roman Coins, Tokens and Medals, 84 in all.
- JAMES R. OGDEN, J.P., F.S.A.—Old Plan of York and Scarborough ; 3 pieces of Pottery from Ur of the Chaldees, together with stands.
- DR. H. A. PHILLIPS.—George II Sixpence (1745) ; George II Irish Farthing (1760) ; Charles II (1670) Groat gilded ; Edward II Silver Penny ; Silver Penny, Canterbury ; Short Cross Penny of Henry III ; 3 bone Needles and 1 carved bone Pin from High Ousegate ; 3 worked Flints from Clifton Ings ; Piece of Imitation Wedgwood ; Roman bronze Pin.
- OSCAR POWELL.—Five flint Arrow Heads.
- W. RAFTON.—Whalebone Stay Busk.
- THE REV. A. RAINE, M.A.—Fragments of Samian Pottery from the Thursday Market, York.
- J. H. ROUGIER.—Four hand-made Combs, c. 1817 ; two early Victorian ladies' tortoiseshell Combs ; one machine-made Comb ; and two pieces of Tortoiseshell.
- THE REV. FATHER SHAW.—Half of a Roman Memorial Stone from All Saints' Church, North Street.
- MRS. SMITH.—Antique Salt and Spice Box.
- SYDNEY H. SMITH.—Coffee Mill from Blacktoft, E. Yorks. ; Fragment of right radius of *Elephas primigenius*.
- H. SOWDEN.—Land Shells.
- W. H. ST. QUINTIN, D.L., J.P.—Two worked Flints, piece of Stalagmite, 3 teeth of Hyaena, 1 tooth of Hippopotamus, and cave earth with bones from Brixham Cave ; Hen Pheasant which has assumed the plumage of the male ; Sunblinds in Vertebrate Gallery.
- MISS EDITH M. THOMPSON.—Mediaeval Water Pipe.
- THE LATE MRS. M. L. TUXFORD.—Pencil Drawing of St. Mary's Gate and Gate House.
- YORKSHIRE COUNTY COMMITTEE (per H. V. Scott).—Fragments of yellow and green glazed pottery ; Horns of Deer ; Tusk of Boar, etc.

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CAHILL, R. S.—Journal of the Chemical Society, Jan.-Dec., 1931; British Chemical Abstracts, Jan.-Dec., 1931.

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HEMMENS, A.—“ Pompeiana ” (By Sir William Gell), vols. i and ii.

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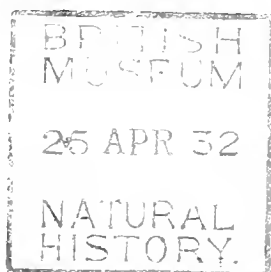
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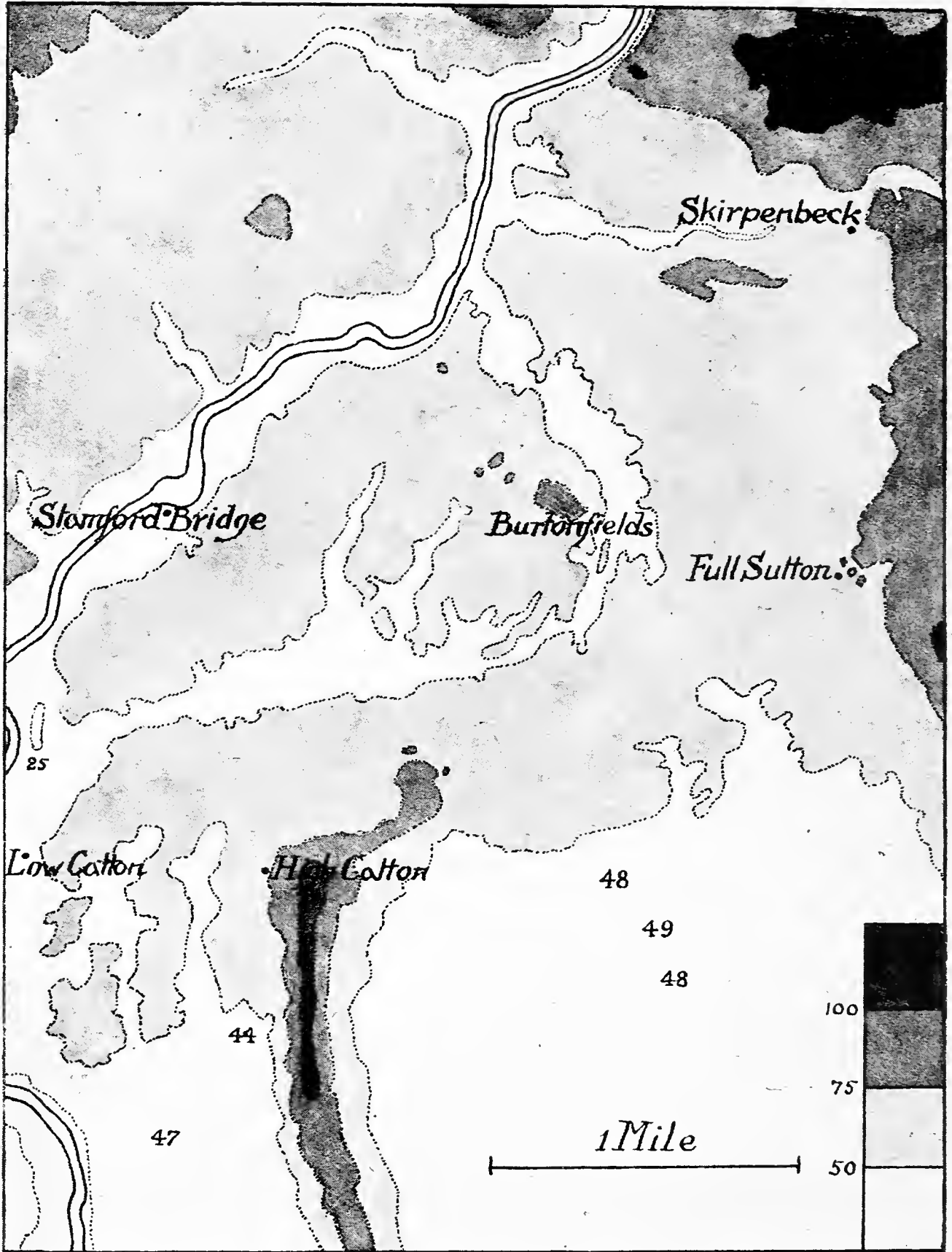
PROCEEDINGS
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1931.

ON SOME POINTS CONNECTED WITH THE GEOLOGY OF
THE OUSE AND DERWENT VALLEYS ; WITH A NOTE ON
A BORING AT STAMFORD BRIDGE.

By SIDNEY MELMORE, B.Sc., F.G.S.

THE AGE OF THE BIELSBECK DEPOSIT.—In his original account* of this mammalian deposit the Rev. Wm. Vernon Harcourt records a fact of considerable significance. Referring to the overlying gravel he states : “ The white flint and chalk gravel of this district not only extends at or near the surface nine miles from hence westward along the foot of the Wolds, as far as Barmby Moor, and is of such a depth as to be worked at several points for gravel, but further to the southward and westward it passes under the great diluvial deposit of the vale of York. At Sutton upon Derwent I find it to lie under sixty-six feet of this deposit ; at that place and at Elvington it contains the supply by which the wells are filled ; and when it is penetrated into, the water rises more than fifty feet, and blows up a great abundance of the angular fragments of white flint. It may be traced along a line drawn from hence to North Cliff, and follows the hills eastward to Hessle on the Humber, where it is seen lying again under the above-mentioned deposit : the beds are perfectly distinct ; the one consisting of chalk and chalk-flints, mingled with *Gryphæa incurva*, where it comes near the lias ; the other, consisting of the sandstones and blue limestone of the west of Yorkshire, mixed with pebbles from the slate rocks, syenite and granite of Cumberland and Westmorland.” The presence of a bed of this description underlying the glacial deposits at York was proved in the boring put down at the Workhouse, Huntington Road, York. I am indebted to Mr. Sydney H. Smith for a copy of some MS. notes

* Rev. Wm. V. Vernon [Harcourt]. On a discovery of Fossil Bones in a Marl-Pit, near North Cliff. Phil. Mag., vol. VI. (1829), p. 225.



MAP OF THE DERWENT VALLEY
IN THE NEIGHBOURHOOD OF STAMFORD BRIDGE.

on this bore-hole left by the late Mr. Luke Bradley. He records that the beds next the rock floor were :--

3. An argillaceous layer with many worn pebbles.
2. A sandy gravelly deposit in which masses of sandstone and limestone predominated.
1. A mass of rounded chalk and angular flint.

The chalk gravel overlying the Bielsbeck deposit is, therefore, older than the York boulder clay, and there is some evidence to show that it is also older than the Basement clay of Holderness. The Bielsbeck deposit is considered to be of pre-glacial age, using the term in the same sense as it is applied to the Sewerby raised beach. The mammalian remains at the two places are similar.

THE GRAVEL PIT AND BORING AT STAMFORD BRIDGE ; THE EQUIVALENT OF THE BASEMENT CLAY.—This pit, recently opened by Messrs. J. H. Walker & Co., Ltd., of York, is situated at Burtonfields, a little over a mile east of Stamford Bridge and stands 75 feet above sea-level.

The section parallel to the valley of the Derwent is shown in fig. 2. At the top there is a red stony loam 4 feet thick. This everywhere contains chalk pebbles, but they are more concentrated in some parts than others.

Below this loam occur curving beds of sand and gravel dipping to the south-west. The pit has been worked parallel to this face for a distance of some thirty yards and the same general arrangement of beds has persisted throughout. The majority of the pebbles composing these gravels are of sandstones, limestones and marls such as could be matched among the outcrops in the Derwent valley, together with flint and chalk. The gravels are calcreted in the neighbourhood of the limestone pebbles.

The transverse section (fig. 1) shows the same stony loam at the top, but becoming thicker at the north-west end of the section owing to the underlying sands and gravels dipping slightly in that direction. In some parts of the section this loam is distinctly bedded for a thickness of an inch or two at its base. There are no signs of its having been pushed forward or of the underlying beds having been disturbed ; but on the contrary there is an orderly though sharp transition from gravel through sand to bedded loam.

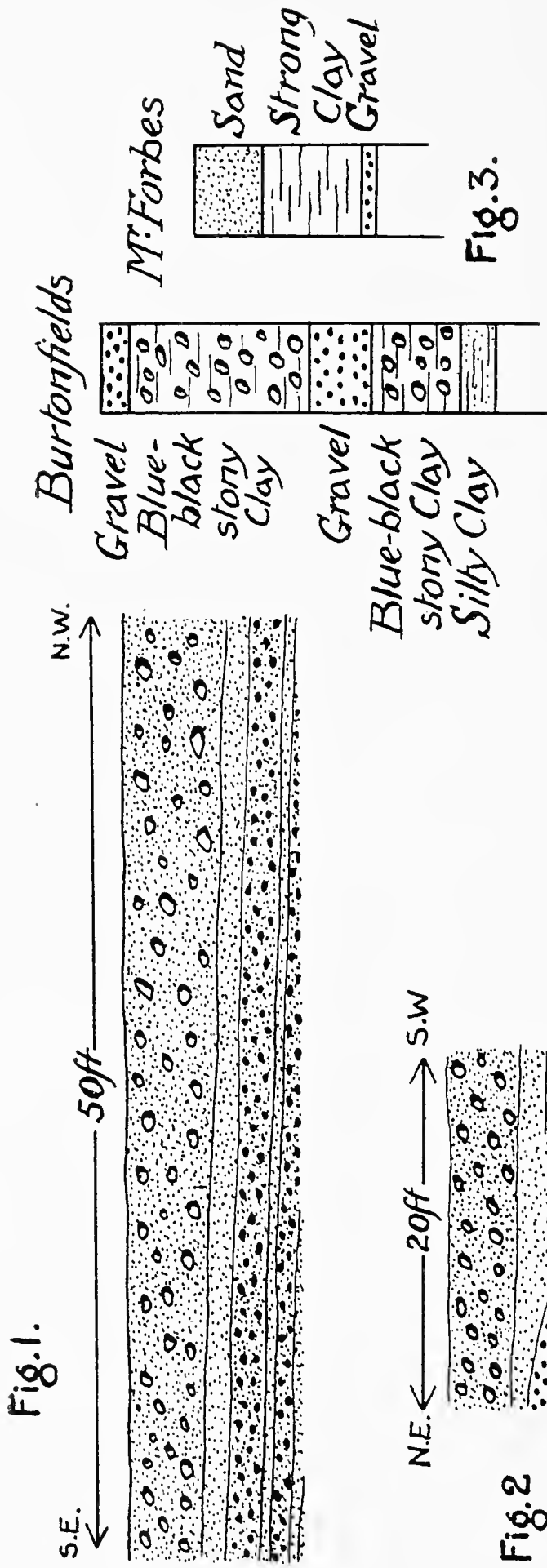
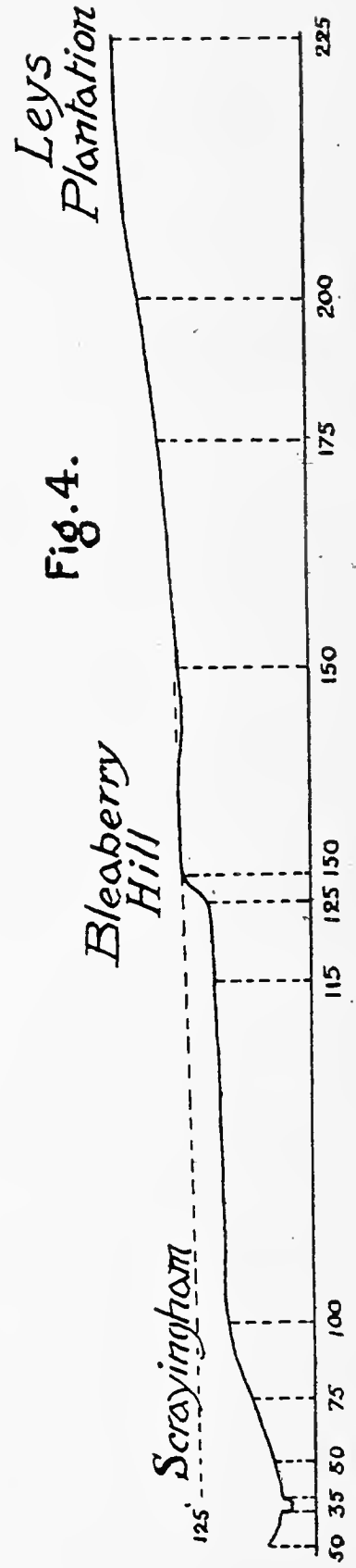


Fig. 3.



Apart from sedimentary rocks of local origin, Carboniferous Limestone, Shap Granite and St. John's microgranite have been found in it, together with *Gryphæa incurva* and *Am. cf. convolutus*.

In another part of the pit a large cake of comminuted green Keuper marl studded with chalk pebbles lies at the base of the loam. Another large bedded slab of the same material similarly situated has probably been transported intact into its present position. Occasionally stones a foot or eighteen inches in length are found standing on end.

Beneath the loam is a bed of sand at the base of which a fragment of the right radius of *Elephas primigenius* has been found. Below is an alternation of beds of sand and gravel all parallel to one another.

In the gravel removed from the pit Belemnites and Pentacrinites have been found.

The only place where the regular bedding of the gravels is not maintained is in the north-west side of the pit. Here the upper loam fills a deep pocket and there is also a large hollow filled with pure sand (derived Triassic) with a thin parting of coal dust at its base.

Within a hundred yards south-west of the pit a boring has been put down for a supply of water. It is proposed to deal here only with the superficial deposits passed through.

They are as follows :—

	Feet.
5. Yellow clay and gravel	3
4. Blue-black stony clay	20
3. Gravel	7
2. Blue-black stony clay	10
1. Silty clay with small pebbles ...	4
Keuper Marl.	

Five and three-quarter ounces of the silty clay (No. 1) contained a quarter of an ounce of pebbles to five and a half ounces of pure clay. The clay, from which the pebbles had been squeezed out, dried at 100°-110° C., yielded CO₂ equivalent to 13 per cent of CaCO₃. The pebbles extracted are sedimentary rocks of Jurassic type and vary from 0.1 to 0.5 inches in diameter. No chalk or flint pebbles were found in the sample.

The blue-black stony clay (Nos. 2 and 4) is the local brick clay, but containing pebbles. The York boulder clay has a red matrix ; its absence here is noteworthy.

It is interesting to compare the record of this boring with that put down at Mr. Forbes' residence one mile east of the pit (fig. 3). The blue-black stony clay (No. 4) of Burtonfields is evidently the "strong clay" without stones at the latter place.

The black boulder clays described by Mr. J. Edmund Clark in his account* of the York railway excavations of 1872 are probably of the same character, being brick clay with stones.

The Burtonfields gravels have clearly come from the upper reaches of the Derwent, and their arrangement in their present position represents an outwash fan of that river.

As the diversion of the Derwent took place at the time the Basement Clay of Holderness was being laid down†, the lowest of these gravels must be assigned to the same period. They are in any case older than the overlying loam.

THE PRE-GLACIAL VALLEY OF THE DERWENT.—How far the valley now occupied by the Derwent had been already excavated before the diversion is a question not hitherto considered.

Judging by the soil, the ground east of Scrayingham is covered with brick clay with a few stones, mostly chalk and flint.

At 125 feet O.D., Stather's quartzite pebbles‡ appear ; and at 150 feet they occur in as great profusion as on the top of the Wolds. These, together with red flint or jasper, are all the stones that have been found except for a single piece of oolitic limestone.

* J. Edmund Clark. Glacial Sections at York. Proc., Yorks. Geol. Soc., vol. VII. (1878-1881), p. 434.

† G. W. Lamplugh, Drifts of Flamborough Head, Quart. Jour. Geol. Soc., vol. XLVII (1891), p. 428.

‡ J. W. Stather. Quartzite Pebbles on the Yorkshire Wolds, Naturalist, 1904, p. 9.

If these quartzites had been washed down from the Wolds they would have been so diluted with flint and chalk as to be well nigh lost. Their relative abundance suggests that they are really in situ and, therefore, the valley was already excavated to this extent in pre-glacial times, the subsequent denudation amounting to about 90 feet (fig. 4).

THE YORK BOULDER CLAY.—In the York boulder clay stones from Jurassic sources have been found, but Carboniferous Limestone and Lake District rocks preponderate. So that, applying Stather's criteria*, this clay is composed of materials of Purple Clay age.

Mr. J. E. Clark considered the beds described by him "most resemble the Purple Boulder Clays of Messrs. Searles V. Wood and Harmer. Their appearance, however, indicates a deposition from floating ice, rather than, or as well as from the *moraine profonde* of an ice-sheet. Otherwise it would be hard to account for beds of gravel, boulders, and current-bedded sands so closely associated with the tough stony clays. Judging from the material, the ice-sheet or floes must have come chiefly from the N.W.; though even in the boulder clay specimens occur showing drift from the E. or N.E."†

Carvill Lewis examined some sections of drift near the York railway station and described them as follows: "There is river sand on top, and below a great thickness of boulder-bearing clay, resembling the clay on the Lehigh River, south of the moraine. Numerous boulders occur in the clay, which seem to have been *derived* from glacial till, but have since been rounded by flood action. The larger boulders were probably borne by icebergs."‡

The York boulder clay is thus derived from, and therefore of more recent date than, the Purple Clay. While it has not the constitution of Hessle Clay it is generally regarded as its equivalent in time.

All that has been quoted regarding the York Clay applies equally to the red stony loam overlying the Burtonfields gravels.

* J. W. Stather; Vertical Distribution of East Yorkshire Erratics, Proc. Yorks. Geol. Soc., vol. XXI (1929), p. 151.

† J. Edmund Clark, *op. sup. cit.*, p. 438.

‡ H. Carvill Lewis, *Glacial Geology of Great Britain and Ireland*, 1894, p. 188.

CORRELATION WITH THE KIRMINGTON RAISED BEACH.— Thus it has been seen that none of the deposits at Burtonfields are of direct glacial origin, but are fluviatile and either lacustrine or marine.

The Kirmington raised beach rests on Purple Clay at an altitude of about 80 feet O.D., and is covered by Hessele Clay*. The overlying clay has been described as “red stony clay believed to be a boulder clay.”† If it is Hessele Clay, then, according to Woolacott‡ it is a reassorted clay not of direct glacial origin.

It is thus of the same character and age as the upper deposit at Burtonfields and the York boulder clay.

In deciding whether the body of water in which the Burtonfields deposits were formed was lacustrine or marine, the choice lies between “Lake Humber,” the level of which would fall suddenly on the withdrawal of the ice-sheet from the coast; and the sea, which retreated gradually as the Kirmington beach reached its present position.

The course of the Derwent below Stamford Bridge affords some evidence in support of the latter alternative. In the former case it is difficult to conceive how the river cut a gap through the Escrick moraine at Wheldrake instead of flowing into the Ouse near Naburn. On the other hand, the main current may well have kept pace with the slow uplift of the land and produced the observed effect. In fact, the straight southerly trend of the ridge from Stamford Bridge to Elvington parallel to the river suggests that it partly owes its shape and position to the action of the river.

In conclusion, I desire to express my thanks to Mr. Sydney H. Smith, who afforded me every facility for examining the deposits herein described; to Mr. J. T. Hymas and those directly concerned with the boring for giving me all the information required; and to Dr. John S. Gayner for the loan of an extensive series of maps.

* P. F. Kendall and H. E. Wroot, *Geology of Yorkshire*, 1924, pp. 472-473.

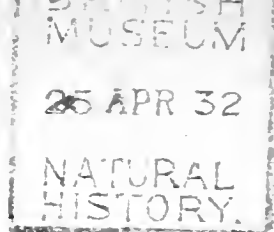
† Report of Committee, *Brit. Assoc. Rept.*, 1904, p. 272.

‡ D. Woolacott, *On the 60-ft. Raised Beach at Easington, Co. Durham*, *Geol. Mag.*, 1922, p. 64.

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WALTER E. COLLINGE,
Keeper of the Museum.

APRIL, 1932.

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