





ROYAL COMMISSION ON WATER SUPPLY WITHIN THE LIMITS
OF THE METROPOLITAN WATER COMPANIES.

MINUTES OF EVIDENCE

TAKEN BEFORE

HER MAJESTY'S COMMISSIONERS

APPOINTED TO INQUIRE INTO THE SUBJECT OF THE

WATER SUPPLY

WITHIN THE LIMITS OF THE

METROPOLITAN WATER COMPANIES.

VOLUME I.

Presented to both Houses of Parliament by Command of Her Majesty.



LONDON:
PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,
BY EYRE AND SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.

And to be purchased, either directly or through any Bookseller, from
EYRE AND SPOTTISWOODE, EAST HARDING STREET, FLEET STREET, E.C., and
32, ABINGDON STREET, WESTMINSTER, S.W.; or
JOHN MENZIES & Co., 12, HANOVER STREET, EDINBURGH, and
90, WEST NILE STREET, GLASGOW; or
HODGES, FIGGIS, & Co., LIMITED, 104, GRAFTON STREET, DUBLIN.

1900.

[Cd. 45.] Price 5s. 6d.

ROYAL COMMISSION ON WATER SUPPLY WITHIN THE LIMITS
OF THE METROPOLITAN WATER COMPANIES.

LIST OF WITNESSES EXAMINED BY THE COMMISSIONERS.

Name.	Description.	Date.	Vol.	Page.	Question.
Alexander, Hugh	Chief Sanitary Inspector of the Parish of St. Leonard, Shoreditch.	May 9, 1898	I.	440	8781.
Arnold, Sir Arthur	Alderman and Ex-Chairman of the London County Council.	April 25, May 2, 1898	I.	397	7669.
Banbury, Frederick George, M.P.	Trustee and Manager of the Stock Exchange.	July 18, 1898	I.	638	13,698.
Bigwood, James	Chairman of the Parliamentary Committee of the Middlesex County Council.	June 27, 1898	I.	553	11,452.
Binnie, Sir Alexander	Chief Engineer to the London County Council.	January 17, 18, 24, 31, May 16, 23, June 6, November 15, 1898, and January 30, 1899.	I. and II.	61; 457; 83; 317.	846; 9,209; 16,926; 23,113; 30,213.
Bonnor-Maurice, Edward Arthur.	Solicitor to the Chelsea, Grand Junction, East London, and Southwark and Vauxhall Water Companies.	March 14, 1899	II.	589	
Boulnois, Edmund, M.P.	Chairman of the West Middlesex Waterworks Company.	February 13, 1899	II.	415	25,622.
Bowles, Henry Carrington	Governor of the New River Company	January 23 and 24, 1899	II.	282	22,260.
Bramwell, Sir Frederick, Bart., F.R.S.	Past-President of the Institutions of Civil Engineers and Mechanical Engineers.	December 13, 1898	II.	197	20,298
Bryan, William Booth	Engineer to the East London Waterworks Company.	November 7, 14, and 15, 1898; January 31, 1899.	II.	19; 43; 344.	15,362; 15,881; 23,888; 9,073.
Cadoux, Gaston	Chef de Bureau at the Prefecture of the Seine.	May 16, 1898	I.	450	
Clayton, Francis Stephen	Governor of the Chelsea Waterworks Company.	February 27, 1899	II.	490	27,457.
Collins, Ernest	Distributing Engineer to the New River Company.	November 7, and 15, 1898; March 7, 1899.	II.	3; 73; 554.	15,013; 16,700; 29,225; 11,128.
Collins, John	Member of the Board of Works for the Whitechapel District.	June 20, 1898	I.	537	
Corble, George	Clerk to the Lea Conservancy Board	March 7, 1899	II.	558	29,368.
Courthope, George John	Chairman of the Parliamentary Committee of the Kent County Council.	July 4, 1898	I.	592	12,513.
Cripps, Henry Lawrence	Parliamentary Agent to the London County Council.	November 22; December 6 and 13, 1897.	I.	1	1.
Crookenden, Isaac Adolphus	Secretary of the East London Waterworks Company.	February 6, 1899	II.	366	24,302.
Crookes, Sir William, F.R.S.	Water Analyst to the Metropolitan Water Companies.	January 17, 1899	II.	254	21,462.
Deacon, George Frederick	Late Waterworks Engineer to the Corporation of Liverpool.	May 2 and 9, 1898	I.	418	8,177.
Dewar, Professor James, F.R.S.	Water Analyst to the Metropolitan Water Companies.	January 17, 1899	II.	262	21,710.
Dewey, William Francis	Clerk to the Vestry of St. Mary, Islington.	May 9, 1898	I.	436	8,681.
Diekinson, Willoughby Hyett	Chairman of the Water Committee of the London County Council.	February 28; March 7 and 14, 1898.	I.	245	4,643.
Diekson, Alexander	Secretary of the Kent Waterworks Company.	February 28; March 6, 1899	II.	516	28,171.
Dixon-Hartland, Sir Frederick, Bart., M.P.	Chairman of the Thames Conservancy.	March 6, 1899	II.	537	28,684.
Dyke, Sir William Hart, Bart., M.P.	Chairman of the Kent Waterworks Company.	February 28, 1899	II.	511	28,103.
Eaton, Edward Michael	Civil Engineer	January 16, 1899	II.	247	21,391.
Evans, Sir John, K.C.B.	Vice-Chairman of the Hertfordshire County Council.	July 11, 1898	I.	626	13,433.
Francis, Joseph	Engineer to the New River Company	November 15, 1898; January 24, 1899.	II.	80; 301.	16,807; 22,756.
Frankland, Sir Edward, K.C.B., F.R.S.	Official Water Analyst	January 17; March 6, 1899	II.	271; 540.	21,950; 28,775.
Gill, George Henry	Secretary of the Chelsea Waterworks Company.	February 27 and 28, 1899	II.	498	27,727.
Goldney, Gabriel Prior	Remembrancer to the Corporation of the City of London.	March 28; April 18 and 25, 1898.	I.	354	6,541.
Gomme, George Laurence	Statistical Officer of the London County Council.	February 14, 15, and 21, 1898.	I.	179	3,038.
Groves, Charles Edward	Chemist to the Thames Conservancy	January 23, 1899	II.	275	21,998a.
Hack, Richard	Engineer to the Chelsea Waterworks Company.	November 15, 1898; March 7, 1899.	II.	71; 549.	16,650; 29,033.
Halsey, Edward Joseph	Chairman of the Surrey County Council.	June 27, 1898	I.	568	11,885.
Harris, Frederick Ernest	Treasurer of the County Borough of West Ham.	July 11, 1899	I.	620	13,214.
Haward, Harry Edwin	Comptroller of the London County Council.	January 31; February 1 and 7, 1898.	I.	132	2,242.

CONTENTS.

	Page
LIST OF WITNESSES EXAMINED BY THE COMMISSIONERS	iii
LIST OF WITNESSES IN VOLUME I.	v
MINUTES OF EVIDENCE	1

Name.	Description.	Date.	Vol.	Page.	Question.
Hawksley, Charles	Civil Engineer	December 19, 1898; January 16, 1899.	II.	212	20,640.
Hervey, Matthew Wilson	Engineer to the West Middlesex Waterworks Company.	November 15, 1898; February 14, 1899.	II. I.	66; 435; 445	16,467; 26,080. 8,918.
Hills, Henry George	Clerk to the Wandsworth District Board of Works.	May 9, 1898	I.	20;	15,386;
Hollams, John	Sollicitor to the Associated Metropolitan Water Companies.	November, 7 and 8; March 13, 1899.	II.	570.	29,716.
Hunter, Walter	Engineering Director of the Grand Junction Waterworks Company.	November 8; December 12 and 13, 1898.	II.	35; 181	15,686; 19,913.
Ivey, William	Mayor of the Borough of West Ham	July 11, 1898	I.	615	13,070.
Johnston, Andrew	Chairman of the Essex County Council	July 11, 1898	I.	606	12,872.
Kidd, Charles Newman	Chairman of the Dartford Urban District Council.	July 4, 1898	I.	600	12,702.
Knight, Sir Henry	Chairman of the Southwark and Vauxhall Water Company.	November 8, 1898; February 6 and 7, 1899.	II.	29; 373.	15,542; 24,567.
Knight, Thomas Loonan	Chairman of the East Ham Urban District Council.	July 11, 1898	I.	624	13,349.
Latham, Baldwin	Civil Engineer	March 13, 1899	II.	583	30,051.
Leete, William Chambers	Clerk to the Vestry of the Parish of St. Mary Abbots, Kensington.	June 20, 1898	I.	531	10,988.
Littler, Ralph Daniel Makinson, C.B., Q.C.	Chairman of the Middlesex County Council.	June 13 and 20, 1898	I.	508; 545.	10,454; 11,244.
Lockwood, Lieut.-Col. Mark, M.P.	Chairman of the East London Waterworks Company.	January 30 and 31, 1899	II.	337	23,657.
Lubbock, Sir John, Bart., M.P.	Alderman and Ex-Chairman of the London County Council.	March 14 and 21, 1898	I.	310	5,713.
Marriott, William Kenaz	Chairman of the Barking Urban District Council.	July 11, 1898	I.	621	13,267.
Martin, Howard	Chairman of the Water Committee of the County Borough of Croydon.	July 4, 1898	I.	576	12,027.
Middleton, Reginald Empson	Civil Engineer	July 18 and 25; November 22, 28 and 29; December 5, 12, 1898.	I. and II.	658; 87. 329	14,212; 17,007. 23,378.
More, Charles James	Engineer to the Thames Conservancy	January 30, 1899	II.	77	16,733.
Morris, William	Engineer to the Kent Waterworks Company.	November 15, 1898	II.	77	16,733.
Mullen, Robert Gordon	Clerk to the Guardians of the Bromley Union.	July 4, 1898	I.	603	12,830.
Murphy, Shirley Forster	Medical Officer of Health for the Administrative County of London.	May 2, 1898	I.	414	8,077.
Musgrave, Christopher George	Chairman of the Leyton Urban District Council.	July 11, 1898	I.	624	13,373.
Norman, Frederick Henry	Clerk to the Bromley Urban District Council.	July 4, 1898	I.	602	12,793.
Plant, Alfred	Accountant to the East Ham Urban District Council.	July 11, 1898	I.	622	13,307.
Parkes, Thomas Farmer	Engineer to the Lambeth Waterworks Company.	November 8, 1898	II.	41	15,841.
Randell, Reginald Maurice Henry.	Chairman of the Water Committee of the Beckenham Urban District Council.	July 4, 1898	I.	596	12,582.
Resler, James William	Engineer to the Southwark and Vauxhall Water Company.	November 7 and 8, 1898; February 13, 1899.	II.	15; 39; 403.	15,277; 15,807; 25,280.
Searle, James	Clerk of the New River Company	January 24, 1899	II.	298	22,616.
Smith, Urban Armstrong	Surveyor and Engineering Adviser to the Hertfordshire County Council.	March 13, 1899	II.	572	29,736.
Stoneham, Allen	Official Auditor	July 18, 1898	I.	653	14,065.
Tendron, Frederick	Chairman of the Grand Junction Waterworks Company.	February 14 and 20, 1899	II.	440	26,263.
Waring, Arthur Thomas	Chairman of the Dartford Rural District Council.	July 4, 1898	I.	601	12,733.
Watney, Theodore	Chairman of the Water Committee of the Borough of Richmond.	July 4, 1898	I.	586	12,336.
Weeden, Henry	Vice-Chairman of the Ilford Urban District Council.	July 18, 1898	I.	635	13,615.
Whitaker, William, F.R.S.	Late Senior Officer on the English Staff of the Geological Survey.	March 7, 1899	II.	546	28,928.
Whiter, Salter	Chairman of the Croydon Rural District Council.	July 4, 1898	I.	582	12,191.
Whitmore, Charles Algernon, M.P.	Alderman of the London County Council.	March 21 and 28, 1898	I.	334	6,109.
Whittingham, Walter Basden	Chairman of the Water Committee of the Essex County Council.	July 11, 1898	I.	613	13,015.
Wilkins, Harry	Secretary of the Lambeth Waterworks Company.	February 20, 21, and 27, 1899.	II.	450	26,570.
Wybroo, Frank Henry	Secretary of the West Middlesex Waterworks Company.	February 14, 1899	II.	424	25,834.

LIST OF WITNESSES IN VOLUME I.

Date.	Name.	Description.	Page.	Question.
FIRST DAY. November 22, 1897	Mr. Henry Lawrence Cripps	Parliamentary Agent to the London County Council.	1	1
SECOND DAY. December 6, 1897	Mr. Henry Lawrence Cripps	"	19	249
THIRD DAY. December 13, 1897	Mr. Henry Lawrence Cripps	"	41	594
FOURTH DAY. January 17, 1898	Sir Alexander Binnie	Chief Engineer of the London County Council.	61	846
FIFTH DAY. January 18, 1898	Sir Alexander Binnie	"	79	1127
SIXTH DAY. January 24, 1898	Sir Alexander Binnie	"	99	1451
SEVENTH DAY. January 31, 1898	Sir Alexander Binnie Mr. Harry Edwin Haward	Comptroller of the London County Council	116 132	1827 2242
EIGHTH DAY. February 1, 1898	Mr. Harry Edwin Haward	"	138	2323
NINTH DAY. February 7, 1898	Mr. Harry Edwin Haward	"	157	2621
TENTH DAY. February 14, 1898	Mr. George Laurence Gomme	Statistical Officer of the London County Council.	179	3058
ELEVENTH DAY. February 15, 1898	Mr. George Laurence Gomme	"	199	3530
TWELFTH DAY. February 21, 1898	Mr. George Laurence Gomme	"	222	4135
THIRTEENTH DAY. February 28, 1898	Mr. Willoughby Hyett Dickinson.	Chairman of the Water Committee of the London County Council.	245	4643
FOURTEENTH DAY. March 7, 1898	Mr. Willoughby Hyett Dickinson.	"	271	5020
FIFTEENTH DAY. March 14, 1898	Mr. Willoughby Hyett Dickinson. Sir John Lubbock, Bart., M.P.	"	294 310	5444 5713
SIXTEENTH DAY. March 21, 1898	Sir John Lubbock, Bart., M.P. Mr. Charles Algernon Whitmore, M.P.	Alderman and Ex-Chairman of the London County Council.	320 334	5857 6109
SEVENTEENTH DAY. March 28, 1898	Mr. Charles Algernon Whitmore, M.P. Mr. Gabriel Prior Goldney	"	342	6226
EIGHTEENTH DAY. April 18, 1898	Mr. Gabriel Prior Goldney	Remembrancer to the Corporation of the City of London.	354	6541
NINETEENTH DAY. April 25, 1898	Mr. Gabriel Prior Goldney Sir Arthur Arnold	"	362	6753
TWENTIETH DAY. May 2, 1898	Sir Arthur Arnold Mr. Sbirley Forster Murphy Mr. George Frederick Deacon	Alderman and Ex-Chairman of the London County Council.	385 397	7418 7669
TWENTY-FIRST DAY. May 9, 1898	Mr. George Frederick Deacon Mr. William Francis Dewey Mr. Hugh Alexander Mr. Henry George Hills	Medical Officer of Health for the Administrative County of London. Late Waterworks Engineer to the Corporation of Liverpool. Clerk to the Vestry of St. Mary, Islington - Chief Sanitary Inspector of the Parish of St. Leonard, Shoreditch. Clerk to the Wandsworth District Board of Works.	407 414 418 429 436 440 445	7932 8077 8177 8456 8681 8781 8918