

**REPORT OF THE ROYAL  
COMMISSION APPOINTED TO  
INQUIRE INTO THE WATER  
SUPPLY OF THE METROPOLIS**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649346998

Report of the Royal Commission Appointed to Inquire Into the Water Supply of the Metropolis  
by Various

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**VARIOUS**

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SUPPLY OF THE METROPOLIS**



g. Britain-ROYAL COMMISSION ON METROPOLITAN WATER SUPPLY.

# REPORT

OF THE

## ROYAL COMMISSION

APPOINTED TO INQUIRE INTO THE

### WATER SUPPLY OF THE METROPOLIS.

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

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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  
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JOHN MENZIES & Co., 12, HANOVER STREET, EDINBURGH, and  
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1893.

[C.—7172.] Price 7½d.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration and financial management. The text notes that without reliable records, it is difficult to track the flow of funds and ensure that resources are being used effectively and efficiently.

2. The second part of the document addresses the challenges associated with data collection and analysis. It highlights that gathering accurate and timely data can be a complex task, often requiring significant resources and expertise. The text suggests that organizations should invest in robust data management systems and training to overcome these challenges. Additionally, it stresses the importance of ensuring the privacy and security of the data collected, as this is crucial for maintaining trust and compliance with relevant regulations.

3. The third part of the document focuses on the role of technology in improving operational efficiency. It discusses how digital tools and automation can streamline processes, reduce errors, and enhance communication. The text provides examples of various technologies, such as cloud computing, artificial intelligence, and data analytics, and explains how they can be applied in different contexts. It also notes that while technology offers many benefits, it is important to carefully evaluate the costs and risks associated with implementation, and to ensure that the chosen solutions are aligned with the organization's goals and needs.

4. The fourth part of the document discusses the importance of continuous learning and professional development. It argues that in a rapidly changing environment, individuals and organizations must stay up-to-date with the latest trends and best practices. The text suggests that organizations should provide opportunities for training, workshops, and conferences, and encourage a culture of lifelong learning. It also notes that professional certifications and industry standards can help individuals demonstrate their expertise and commitment to their field.

5. The fifth and final part of the document concludes by summarizing the key points discussed and offering some final thoughts. It reiterates that success in any endeavor requires a combination of effective planning, diligent execution, and a commitment to excellence. The text encourages readers to take the lessons learned from the document and apply them to their own work, and to continue to seek out new opportunities for growth and improvement.

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ROYAL COMMISSION TO INQUIRE INTO THE WATER SUPPLY OF THE  
METROPOLIS.

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*VICTORIA R.*

*Victoria*, by the Grace of God, of the United Kingdom of Great Britain and Ireland Queen, Defender of the Faith.

TO Our right trusty and well-beloved Alexander Hugh, Baron Balfour of Burleigh; Our trusty and well-beloved Sir George Barclay Bruce, Knight, Civil Engineer; Our trusty and well-beloved Sir Archibald Geikie, Knight, Doctor of Laws, Professor of Geology and Mineralogy in Our University of Edinburgh; Our trusty and well-beloved James Dewar, Esquire, Master of Arts, Jacksonian Professor of Natural Experimental Philosophy in Our University of Cambridge; Our trusty and well-beloved George Henry Hill, Esquire, Civil Engineer; Our trusty and well-beloved James Mansergh, Esquire, Civil Engineer; and Our trusty and well-beloved William Ogle, Esquire, Doctor of Medicine, Fellow of the Royal College of Physicians, Greeting.

*Whereas* We have deemed it expedient that a Commission should forthwith issue to inquire whether, taking into consideration the growth of the population of the Metropolis and the districts within the limits of the Metropolitan Water Companies, and also the needs of the localities not supplied by any Metropolitan Company, but within the Watersheds of the Thames and the Lea, the present sources of supply of these Companies are adequate in quantity and quality, and, if inadequate, whether such supply as may be required can be obtained within the Watersheds referred to, having due regard to the claims of the districts outside the Metropolis but within those Watersheds, or will have to be obtained outside the Watersheds of the Thames and the Lea.

*Now know ye*, that We, reposing great trust and confidence in your knowledge and ability, have authorised and appointed and do by these presents authorise and appoint, you, the said Alexander Hugh, Baron Balfour of Burleigh; Sir George Barclay Bruce; Sir Archibald Geikie; James Dewar; George Henry Hill; James Mansergh; and William Ogle; to be Our Commissioners for the purposes of the said inquiry.

*And* for the better effecting the purposes of this Our Commission, We do by these presents give and grant unto you, or any three or more of you, full power to call before you such persons as you shall judge likely to afford you any information upon the subject of this Our Commission; and also to call for, have access to, and examine, all such books, documents, registers, and records, as may afford you the fullest information on the subject; and to inquire of and concerning the premises by all other lawful ways and means whatsoever.

*And* We do by these presents authorise and empower you, or any three or more of you, to visit and personally inspect such places as you may deem it expedient so to inspect for the more effectual carrying out of the purposes aforesaid; and to employ such persons as you may think fit to assist you in conducting any inquiry which you may hold.

*And* We do further by these presents will and ordain that this Our Commission shall continue in full force and virtue; and that you, Our said Commissioners, or any three or more of you, may from time to time proceed in the execution thereof, and of

every matter and thing therein contained, although the same be not continued from time to time by adjournment.

And We do further ordain that you, or any three or more of you, have liberty to report your proceedings under this Our Commission from time to time, if you shall judge it expedient so to do.

And Our further will and pleasure is, that you do, with as little delay as possible, report to Us, under your hands and seals, or under the hands and seals of any three or more of you, your opinion upon the matters herein submitted for your consideration.

Given at Our Court at St. James's, the fifteenth day of March, one thousand eight hundred and ninety-two, in the fifty-fifth year of Our Reign.

By Her Majesty's Command,  
(Signed) HENRY MATTHEWS.



# REPORT.

TO THE QUEEN'S MOST EXCELLENT MAJESTY.

MAY IT PLEASE YOUR MAJESTY,

We, the Commissioners appointed by Your Majesty for the purpose of ascertaining whether the sources available within the watersheds of the Thames and Lea are adequate in quantity and quality for the water supply of the Metropolis, humbly report as follows:—

1. The Commission issued by Your Majesty, and dated the 15th day of March 1892, commanded us to ascertain, "Whether, taking into consideration the growth of the population of the metropolis and the districts within the limits of the metropolitan water companies, and also the needs of the localities not supplied by any metropolitan company, but within the watersheds of the Thames and the Lea, the present sources of supply of these companies are adequate in quantity and quality, and, if inadequate, whether such supply as may be required can be obtained within the watersheds referred to, having due regard to the claims of the districts outside the Metropolis, but within those watersheds, or will have to be obtained outside the watersheds of the Thames and the Lea."

## PROCEDURE.

2. For the purpose of acquiring the information necessary to enable us to form a judgment upon the questions submitted to us, we placed ourselves without delay in communication with the metropolitan water companies, the Corporation of the City of London, the London County Council, and the councils of the counties of Bedford, Berks, Buckingham, Essex, Gloucester, Hants, Hertford, Kent, Middlesex, Oxford, Surrey, and Wilts. We also invited the Boards of Conservators of the Thames and Lea and all the urban and rural sanitary authorities whose districts are wholly or partially situated within the watersheds of those rivers, and all the water companies and public authorities which own waterworks in the same area to give us any information bearing on the subject of our inquiry which they might be in a position to afford.

By the metropolitan water companies and the Conservancy Boards we have been furnished with a very large amount of information, and from some of the other county councils, local sanitary authorities, and extra-metropolitan water companies we also received statements which proved to be of service. Mr. Dickinson, Deputy Chairman of the London County Council, and Lord Farrer attended at our sitting on June 27th, 1892, and handed in a statement on behalf of the Council, in which, after narrating some of the circumstances which led to the appointment of the Commission, the position of that body in regard to the inquiry is defined in the following words:—

"In order to assist the Royal Commission in their inquiry, the Committee have App. C. 16. instructed their principal officers to summarise the results of their observations in their respective departments, and to lay these results before the Commission, and they have also arranged that other gentlemen who have made reports or otherwise informed the Council on the subject should be in readiness to lay before the Commission the results of their observations.

"The Committee have considered the above-mentioned reports, and in some instances have had them circulated to the Council, but these reports without further information are clearly not sufficient to enable the Council to form a judgment upon the various questions connected with the future water supply of London, and therefore the Council is anxious to avoid taking up any definite position either in favour of or antagonistic to the present methods of supply."

In fulfilment of these intentions, the Council has placed at our disposal, in the shape of reports and oral evidence of their principal officers, much valuable information.

3. A request was made to us on behalf of the metropolitan water companies and others that they might be represented by counsel at our sittings. To this request we did not see our way to accede, but as it appeared to us reasonable that, in a matter affecting large public and private interests, an opportunity of watching the progress of the inquiry should be given to persons materially concerned, we deemed it expedient to allow those connected with any of the companies and public bodies interested in the inquiry, and representatives of the press, to be present at all of our sittings at which evidence was taken. By grouping the subjects, and by providing that those taking opposite views should be heard on the same or immediately succeeding days, we have avoided the risk of injury to the material interests of those concerned.

4. From each witness who was about to be examined before us we obtained a written or printed statement, in as much detail as possible, of the matters upon which he was prepared to give evidence. All the statements so furnished that seemed to us to throw light on the subject of our inquiry, and were derived from the actual observation and knowledge of the persons tendering them, we have included among our appendices, and by this means have been enabled greatly to shorten the examination-in-chief of the witnesses, as well as to allow each to tell his own story in a concise and connected form. In some cases where tables of figures were included which we had obtained for ourselves, or which appear in another way, they have been omitted, for the sake of avoiding expense and of reducing the size of the volume.

App. E.

5. We had under our consideration at an early stage of our proceedings the question whether it would be desirable that we should ourselves undertake any independent investigation, with scientific expert assistance, and we availed ourselves of the knowledge and experience of Sir George Buchanan, lately chief medical officer of the Local Government Board, who was good enough to discuss the question with us, at an interview on May 10th, 1892. After that interview it became known to us that such an investigation as that which we had been contemplating had been shortly before undertaken by some eminent scientific specialists under directions from the Royal Society, with the assistance of funds supplied by the London County Council, while other inquiries of a like nature were in progress at the instance of the metropolitan water companies, and we were informed that the results of all of them would be put before us by the persons by whom they had been conducted, provided that when they were completed it appeared likely that they would throw any light on the questions submitted to us.

We therefore came to the conclusion that it was unnecessary for us to enter upon an independent inquiry into these subjects.

The promise made to us was subsequently fulfilled, and evidence on the points referred to was furnished to us by Dr. E. Frankland, Professor E. Ray Lankester, Professor W. R. Smith, Professor P. F. Frankland, Dr. Klein, and Dr. Sims Woodhead.

The Royal Society was likewise so good as to furnish us with copies of the report of the investigations conducted under their directions as mentioned above.

Major General Scott, the water examiner under the Metropolis Water Act, 1871, also showed every desire to help us in the course of our inquiry. He attended many of our sittings, and on February 15th gave evidence in regard to his duties and powers as water examiner, on the position of the metropolitan companies, with special reference to their subsidence reservoirs and filter beds, and also on the condition of the Thames and Lea.

6. We have sat on 45 days, of which 32 were occupied in hearing oral evidence. The witnesses examined have numbered 92, most of whom were put forward by the metropolitan water companies or the County Councils of London and the counties of Hertford, Middlesex, Surrey, Essex, and Buckingham, and by other public bodies in London and the neighbourhood. Some of the evidence produced to us was of such a character that we found that it could only be thoroughly investigated by the employment of an

Assistant Commissioner to visit the localities concerned, and ascertain for us upon the spot the precise facts. For this purpose, with the sanction of the Treasury, we appointed Mr. Reginald E. Middleton, M.Inst. C.E., whose services have been of great value to us, as well in conducting these local investigations as in examining the gauging arrangements at Teddington Weir, in carrying out independent gaugings of the River Thames at Sunbury and Molesey Weirs, and in estimating, with regard to the published returns of the quantities of water pumped by the water companies, what allowances should be made on account of slip of valves and short stroke of pumps.

7. For the purpose of answering the questions put to us in the reference, we divided our inquiry as far as possible into two divisions, the first of which comprised all the particular evidence as to the individual circumstances of the water companies at the present time, and the anticipations of the future which might be based upon them. Under this division, we took, first, the evidence of the metropolitan water companies as to the quantity of water which they were daily supplying per head of the population, the sources at their command to meet that supply at the present time, and the grounds upon which in their opinion future demands ought to be based; secondly, the evidence of the officers of the Conservators of the Rivers Thames and Lea as to the powers of the water companies to abstract water from those rivers, and the measures taken to prevent their pollution; thirdly, the evidence of officials in the employment of the London County Council, and of persons who had made investigations under the directions of the Council as to the amount of rainfall in the valleys of the Thames and Lea, the existing pollutions of those rivers, and the probable future requirements of the metropolitan area; fourthly, evidence prepared at the General Register Office as to the populations of the areas affected by our inquiry; fifthly, evidence offered by councils of counties, and by corporations and local boards within the watersheds. Nearly the whole of this division of the evidence was taken before the end of July 1892, and our sittings since the month of October of that year have been mainly devoted to the second division of the evidence, which included the general evidence of engineers, geologists, chemists, and bacteriologists bearing upon the subject as a whole.

#### AREAS AFFECTED BY THE INQUIRY.

8. It seems desirable that we should define as accurately as is possible the areas which appear to us to be affected by the inquiry with which we are charged, and that we should mention the various water authorities by which at present such areas are supplied.

The administrative county of London extends over 121 square miles, and is co-extensive with the area called REGISTRATION LONDON by the General Register Office, 3056. except that the Hamlet of Penge, which is included in the county of London, is excluded from Registration London.

GREATER LONDON is the name given by the General Register Office to the area included within the Metropolitan and City Police districts. Such area includes all parishes wholly comprised within a circle of 15 miles radius from Charing Cross, and all other parishes of which any part is included within a circle of 12 miles radius from the same centre. Greater London thus not only includes the whole of the administrative county of London, but extends widely beyond it, and contains 3053. an area of 701 square miles. In the evidence given before us the area within Greater London and outside the County of London has been called the Outer Ring, and it is within this area that at present the most rapid increase of population App. C. 16. appears to be taking place.

The Water Companies included in the term Metropolitan Water Companies are eight in number, and the area over which collectively they have parliamentary powers of supply has been frequently termed WATER LONDON in the evidence given before us. This area, of which the boundaries bear no relation to those of any of the areas previously mentioned, includes the whole of the county of London and part 3054. of the Outer Ring; but in the north and north-east, and again in the south-east and south-west, it extends beyond the limits of Greater London, stretching, in the case of the New River Company, to Ware in Hertfordshire, in the case of the East London Company, to Romford in Essex, in the case of the Kent Company, to Sundridge and Chevening in Kent, and, in the case of the Lambeth Company, to Esher in Surrey. "Water London" is the expression which we propose to use to describe this district, which comprises an area of about 620 square miles. 3056.