

# **History of the parliamentary contest between the Edinburgh and district water trustees and the ratepayers / by Robert Johnston.**

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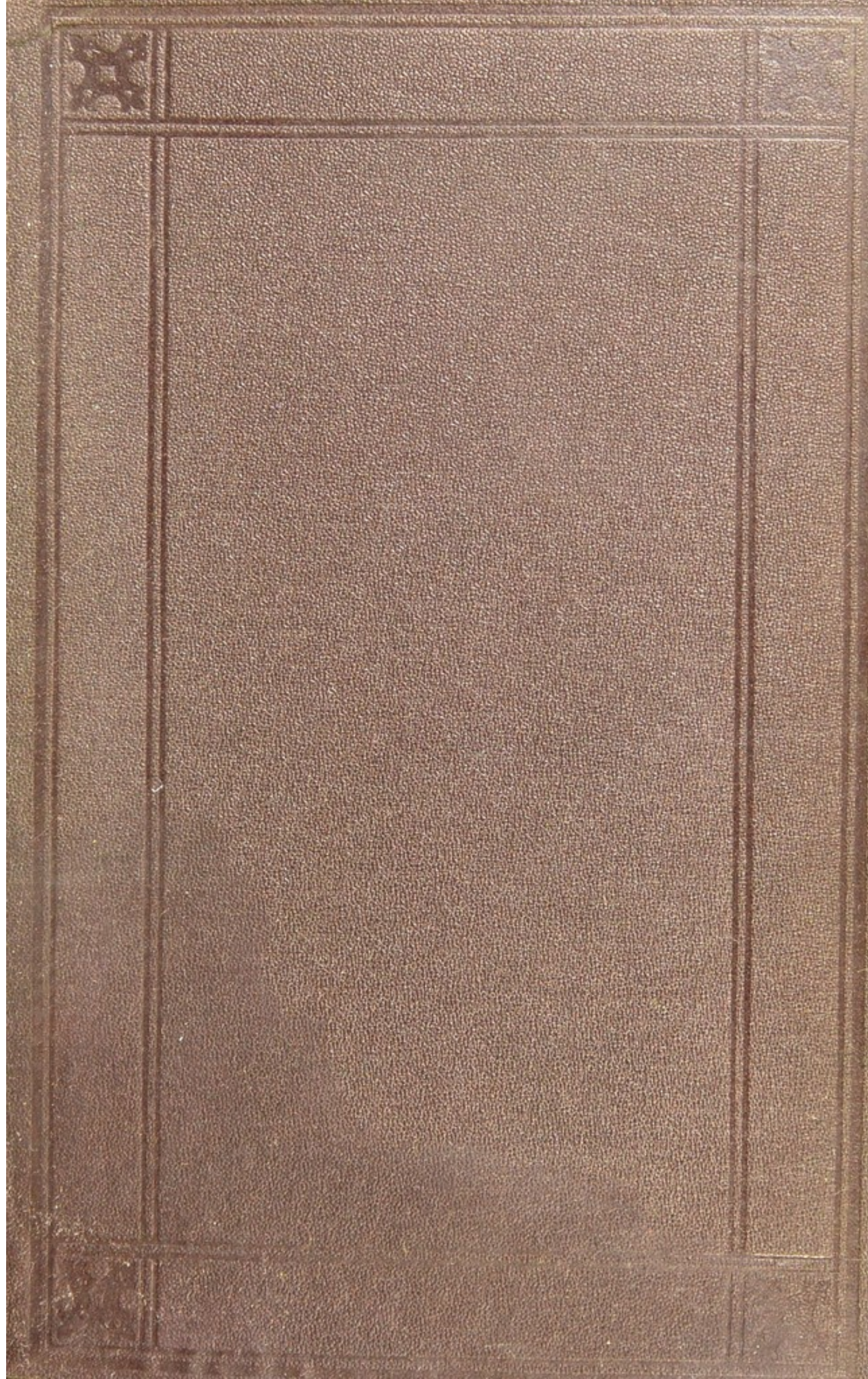
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AND  
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THE ST MARY'S LOCH WATER SCHEME OF 1871.

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HISTORY  
OF THE  
PARLIAMENTARY CONTEST  
BETWEEN THE  
EDINBURGH AND DISTRICT WATER  
TRUSTEES  
AND  
THE RATEPAYERS.

BY  
ROBERT JOHNSTON,  
SECRETARY TO THE COMMITTEE OF THE OPPOSING RATEPAYERS.

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EDINBURGH, 1872.

# HISTORY

OF THE

## PARLIAMENTARY CONTEST

IN

### EDINBURGH AND DISTRICT WATER

#### TRUSTEES

AND

#### THE RATEPAYERS

REPORT

PRESENTED TO THE COMMISSIONERS OF THE GENERAL LAND RENTS

IN 1871

## P R E F A C E .

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THE Municipal and Parliamentary Contest which agitated the City of Edinburgh in the year 1871, between the Edinburgh and District Water Trustees and the Citizens of Edinburgh, in reference to the proposed introduction by the trustees into the City, of the water of St Mary's Loch, in the County of Selkirk, as the water supply of the inhabitants, was, both on its own intrinsic merits, and with regard to the issues dependent upon it, one of the most important questions affecting Scotland, which has ever been raised and decided. The victory which the citizens achieved by their energy and determination, vindicated the principle that the members elected by them to attend to their interests in municipal councils and public trusts, are to represent their views and interests, and not their own separate interests, or it may be their whims and crotchets. The interest of the contest therefore is not confined to Edinburgh. The principle vindicated is one of general application ; and the decision of Parliament, as well as the practical results, *first*, in the revolution effected in the Town Council at the succeeding municipal election, by the ejection of nearly all the offending members who sought re-election, and the rejection of others who sympathised with them,—and *secondly*, in the freedom of the ratepayers from the pecuniary liabilities which the Water Trustees sought to fasten upon them as the result of the misconduct of these trustees, which freedom the ratepayers established in the subsequent judicial proceedings at their instance—appeared to many of the citizens who had taken part in the contest, to make it desirable that a permanent record of that contest should be preserved. Application was therefore made to the Author, who, as Secretary to the Committee of opposing Ratepayers, had better means of information as to all the details than any other person connected with the opposition, to prepare a history of the contest, to be

published at such a price as would put it within the reach of every one who should desire to possess a record of the citizens' victory. This he agreed to do, and the following pages are the result.

As the author or compiler was throughout engaged in the thick of the fight, he does not pretend to be an unbiassed narrator, it being perfectly clear that he cannot avoid viewing the question from his own stand point. From his intimate knowledge of the reasons and motives for every step that was taken on behalf of the ratepayers, their case must be much more favourably stated than that of the trustees can possibly be. At the same time, he has endeavoured not to make any statement reflecting upon the trustees, or any of them, without at the same time indicating his authority for it.

It will be seen that this publication is not constructed as a formal report of the contest, as if it had been an ordinary trial. The enormous length of the evidence and speeches, equal to 1200 pages of an ordinary blue book, precluded any such attempt. It has rather been attempted to throw it into a popular form by eliminating from the mass of evidence the salient and more interesting points on which really the issue of the question rested, and by grouping round each of them the relative evidence on both sides, so that the general reader may obtain a clear notion of what was intended by the trustees—what were the several objections—and what was the evidence applicable to each head of controversy, leaving unnoticed the more collateral, though not altogether immaterial matter. Had such a course not been taken, the narrative would have extended to such a length as to have defeated the object of publication. As it is, it has, notwithstanding every desire to condense it, run far beyond the limits originally contemplated.

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## ERRATUM.

Page 5, second line from bottom, for "Will." read "Vic."

# INTRODUCTION.

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The contest of which this is intended to be a record was one of more than ordinary keenness and determination, with, at the time at least, the advantage of the command of unlimited public funds on the one side, which were unsparingly used, and only a subscribed purse on the other, aided by the resolution and public spirit of the citizens, which counter-balanced all the advantages of the Trustees, and heralded the way to victory.

It is impossible however to understand the narrative of what took place in 1871, without the respective positions of the water Trustees and the citizens at the commencement of the struggle, in reference to the existing water works, and the contemplated new source of supply, being pointed out ; and even to make this perfectly intelligible, a good deal of preliminary explanation is necessary. Indeed it is necessary to go back to the origin of the Edinburgh water supply. The early part of this preliminary narrative, referring to the period prior to 1819, when the supply was in the hands of the Town Council will be shortly given ; but the subsequent events will require greater detail.

The subject naturally presents itself under the following heads, which will be treated of in their order :—

1. The early history of the water supply, down to the year 1819, during which time it was in the hands of the Town Council.

2. Its history in the hands of the Edinburgh Water Company, down to the promotion of the Edinburgh and District Water Works Act of 1869.

3. The Parliamentary contest in 1869, between the Town Council and the Water Company, the latter being backed to a certain extent by the ratepayers, resulting in the passing of the Act of 1869.

4. The Parliamentary contest in 1871, the history of which is the object of the present publication.

5. The results and consequences of the citizens' victory.



# HISTORY

OF THE

## ST MARY'S LOCH WATER SCHEME CONTEST

OF

1871.

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### CHAPTER I.

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#### THE WATER SUPPLY PRIOR TO 1819.

EDINBURGH seems to have been anciently supplied with water chiefly from wells within the burgh ; and it is easy to conceive, from the number of inhabitants within the walls, that the supply must have been scanty and insufficient ; nor could the quality of the water of these wells, flavoured as it must have been with the perfume of "the flowers of Edinburgh," have been otherwise than dangerous to the health of those using it.

There is no mention of the supply of water earlier than the year 1621. In that year an Act of Parliament (unprinted) was passed, setting forth that the Magistrates were about to bring in water to the city from a distance, and giving them liberty to pass through the intervening lands for the purpose of laying the pipes, on paying the damages thereby occasioned. Nothing further seems to have been done till 1672, when the Town Council resolved to put the Act of 1621 into execution, by bringing in water from Comiston. In 1674 they employed an engineer, to whom they agreed to pay £2950 sterling, to bring in the water of a spring called the Tod's well, to a reservoir to be made on the Castlehill, for distribution to the public wells through the city.

It is a most singular circumstance in the history of the water supply of Edinburgh, that whenever that supply has been under the control of the Corporation, almost every application to Parliament for powers to bring in new supplies has been accompanied by a demand for powers to impose heavy and unnecessary taxes. Three of these attempts have been made, including that of 1871. In every instance they have been resisted by the citizens, and in every instance the Corporation has been defeated. Thus it appears from Arnot's History of Edinburgh (p. 342), while the city was then possessed of corporate funds sufficient to defray the expense of the works necessary to bring in the water of the Tod's well, "that the city funds might not be applied to a purpose so beneficial to the inhabitants, the Magistrates endeavoured to obtain the authority of Parliament for imposing upon the citizens a tax by way of *hearth money*, to defray the expense. Happily they were disappointed in the scheme of oppressive exaction, a circumstance not a little extraordinary in the reign of Charles II."

The water of the spring referred to, and some other adjoining springs, seems to have been actually brought in in 1681. Some additional springs in the lands of Comiston were afterwards brought in about the year 1704. Notwithstanding their project for taxation was defeated, the Town Council appears to have had no difficulty in finding town's funds to defray the expense of the works.

In 1756 the Town Council obtained the Act 29 Geo. II. cap. 184, under which the water of the Swanston Springs was brought in. No provision was made in this Act for any power to assess the inhabitants; but before putting the powers of the Act into execution, another attempt was made to induce Parliament to authorise an assessment, and this attempt was, like the former, successfully resisted by the citizens. Mr Arnot, in his history already referred to, after narrating a dispute about the compensation to be paid to the proprietor for the springs, gives this account of the attempt to procure power to assess;—"While this dispute was agitated between the Magistrates and the proprietor of Swanston, the former were attempting to impose a burden upon their constituents, of which the clandestine proceedings of the Magistrates sufficiently betrayed their consciousness that the burden they meant to impose was unjust and unnecessary. From the votes of the House of Commons it was discovered that the Magistrates of Edinburgh had, on pretext of the expenses they would incur by bringing an additional spring of water into the city, applied for leave to bring in a bill for levying from the inhabitants no less than 6d. per pound on the whole real rents of the city. Instantly upon this discovery, a combination was formed among the citizens for opposing the bill, and that upon two grounds,—that the city was possessed of sufficient ordinary revenues to enable them to defray this additional expense,—and that the sum proposed to be levied on the inhabitants under colour of bringing in the water, was beyond parallel enormous. In course of their opposition they demanded that by a candid examination and strict inquiry into the state of the city's revenues it might

be seen whether they had funds sufficient for the proposed purpose. This demand was not relished on the part of the Magistrates, who, after all their instances, and the extraordinary measures which were taken to occasion an artificial scarcity, were obliged to abandon the proposed taxation, yet found means to carry on the work without any additional aid." It is a common observation that history constantly repeats itself. The promotion of the St Mary's Loch Schemes of 1869 and 1871, and the mode in which they were promoted, namely, by concealment, trickery, and exaggerated representations of scarcity, is so completely a repetition of the Town Council's proceedings above narrated, that it is difficult to believe that the promoters of the recent scheme did not learn their lesson from these predecessors.

A subsequent act was obtained in 1785, being the 25 Geo. III. cap. 84, under which the Bonally reservoirs were constructed for collecting the spring and surface water of a small upland district further west, on the north slope of the Pentland Hills, and the water from them was shortly afterwards led to the Swanston cistern, and thence to Edinburgh.

It will thus be seen that at this period the whole water supplies to Edinburgh were derived from the Comiston Springs, on the slope to the north of the Pentlands, and from the Swanston and Bonally springs and ponds on the north slopes of the same hills, at their eastern termination. From a report made to the Magistrates and Town Council in 1811, by Mr Thomas Telford, civil engineer, respecting the improvement of the supply of water to the city, it appears that the average produce of all the springs delivered to the city at that time was 2388·7 Scotch pints per minute, equal to 1,571,400 gallons per day. The population of Edinburgh and Leith was by the previous census stated by him to be 103,143, so that there was then supplied to the inhabitants 15 gallons of water per head per day.

## CHAPTER II.

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### THE WATER COMPANY, 1819-69.

**M**R TELFORD, in his Report of 1811, referred to in the preceding chapter, suggested to the Town Council, as new sources of supply, various springs along the Pentland range and elsewhere, viz., 1, The Black Springs on the north side of the range; 2, The Crawley Spring at the foot of Glencorse Valley, on the south side; and 3, a number of small springs on both sides of the range, and elsewhere.

In a few years afterwards, the existing supply was found inadequate for the wants of the inhabitants; and the Town Council being unable to raise money for the purpose of bringing in these springs as an additional supply, and constructing the necessary compensation reservoirs, a new Joint Stock Company was formed for the purpose of acquiring the existing works and bringing in additional supplies. To this company the Town Council agreed to surrender their rights; and in consequence, in 1819 the Act 59 Geo. III. cap. 116 was passed, whereby a large number of the leading citizens of Edinburgh were incorporated into a company by the name of "the Edinburgh Joint Stock Water Company," with a capital of £135,000, including therein the sum of £30,000 to be held by the Lord Provost, Magistrates, and Town Council, as the agreed on value of the existing works. By this Act the whole works of the water supply, and rights vested in the Magistrates and Council were transferred to the new company, who were thereby authorised to acquire the Crawley and Black Springs, to bring the water of them to Edinburgh, and to construct reservoirs in the Glencorse Valley, and on the Bavelaw Burn, to compensate the owners and occupiers of mills, and landowners and others on the streams, for the water to be so taken.

For some reason or other, it is believed because it was apprehended that if the water of the Black Springs were brought from the north side of the hills to the Crawley cistern on the south, the millers might, in a season of scarcity, compel the whole spring water, including that of the Black Springs, to be run into the stream, the company resolved not to bring in these springs in that direction; but they executed the

works authorised in the Glencorse Valley, and brought in the Crawley Spring. At the same time the number of main pipes along the principal streets to afford service to private houses was largely increased.

The following general description of these works is taken from the article "Aqueduct" in the last edition of the *Encyclopædia Britannica*, vol. iii. (1853). "The works undertaken by the Edinburgh Water Company in 1819 were probably the most complete and perfect of the time. They were designed by Mr Jardine, the then engineer of the company, and carried out under his superintendence in a style quite worthy of the city, and offering, both in the general design and in all the details, a model of propriety and skill in this species of hydraulic architecture." After a detailed description of the apparatus and mode of conveyance of the water to the Crawley cistern, and thence to Edinburgh, the reservoir is described in these terms:—"The formation of the Compensation reservoir was undoubtedly the greatest work of hydraulic engineering of its day. It was designed and completed by Mr Jardine, and with the then limited experience of contractors and workmen in the construction of similar works, its successful completion does great honour to the genius and perseverance of the engineer. It has been twice enlarged, and now (1853) forms an artificial lake, extending over an area of 46 imperial acres." There is an error in this last statement, for the area of the reservoir at present, at the level of the waste weir, is 54 acres 1 rood and 29 poles.

In the year 1826 the company obtained the Act 7 Geo. IV., cap. 108, whereby their name was changed to that of "The Edinburgh Water Company," and they were authorised to create additional stock to the extent of £118,000, and to borrow £30,000, for laying additional pipes for distribution, and acquiring and bringing in new supplies.

It appears from the Act 5 Will. IV. cap. 33, which the company obtained in 1835, that they had never created the additional stock authorised by the previous Act, having, it is presumed, found it more profitable to execute the works authorised, by borrowing money for the purpose on the personal security of the directors or individual members of the company. However this may have been, the Act of 1835 states in the preamble, that no part of the £118,000 had been raised, while the company had incurred large debts in accomplishing the purposes of that Act; and in lieu of creating the foresaid stock of £118,000, they were empowered by the present Act, to borrow that sum on the security of the undertaking, with power to capitalize it, if thought expedient. The purpose of this change in the mode of raising the £118,000 was, of course, to obtain it on good security, at a rate of interest lower than the dividend upon it would have been had it been stock, and so to increase the dividend on the original stock of £135,000.

A great drought occurred in 1842, and it became apparent that supplies of water must be got in addition to those already authorised but not yet brought in. In consequence, the company in the following year (1843) applied for and obtained another Act, the 6 and 7 Will. IV., cap. 89, whereby they were authorised to borrow a farther sum

of £20,000. They were farther of new authorised to bring in along the north side of the hills, the springs and feeders of the Bavelaw and Stream burns already acquired by them, and also to acquire and bring in such others of the springs and feeders of these burns as they had not yet acquired, but only to an extent not exceeding 1200 imperial gallons per minute,—the company being bound to construct a compensation reservoir at the confluence of these burns on the lands of Threipmuir, for the benefit of the millowners and others lower down the stream.

Before leaving this Act a curious episode in its progress through Parliament may be noticed, which is not without its interest at the present time. The Bill was stoutly opposed by the Magistrates and Town Council, and also by certain inhabitants and ratepayers in the city, acting in concert with them. It will be observed the Corporation and the ratepayers were then allies, while in the recent contest they were antagonists. The ground of opposition urged by the Town Council and the ratepayers in 1843 was as to the quality of the water, namely, that the supplies of water brought, and to be brought in from the Crawley cistern were contaminated by the admission into the spring water conducted there, of surface water collected and stored in the Compensation reservoir, their purpose being to prevent any other supplies being brought in till this objection should be removed. Though the opposition was in form offered to the whole Bill, it was in reality a question of detail, and the purpose in view was effected by an arrangement whereby the spring water which used to flow into the Compensation reservoir, and to be there mixed with the surface water, was intercepted before it reached the reservoir, and was carried direct to the cistern for conveyance to Edinburgh, while the water in the reservoir, now more confined to surface water, was sent down the stream as compensation. This episode exhibits in striking contrast the way in which the Corporation then treated the rights and *locus standi* of the ratepayers when acting with them—and the way in which they recently treated the rights and *locus standi* of a much more numerous body of ratepayers when opposed to them; and, farther, while it shows the inconsistency of the Corporation in at one time resisting an attempt to introduce impure water, and at another time in being utterly indifferent to dangerous impurity provided they got quantity,—it also shows that the conduct of the ratepayers in 1843 and 1871 has been consistent throughout, in insisting for purity in their water supply. The following passage from the speech of Mr Talbot, the counsel for the opposition, before the Committee of the House of Commons, on 7th April 1843, states the matter very clearly:—"I appear for the Town Council of the City of Edinburgh, elected by their fellow citizens in the mass. I appear also upon a petition signed with extraordinary rapidity, and in a brief space of time, by 4600 of the inhabitants of that city, and I believe I may challenge contradiction when I assert, as the counsel of these individuals, that, with the exception of the shareholders of the Water Company,

the sentiments which the Town Council and those 4600 inhabitants profess, are the united sentiments of the whole community of which they are members. There prevails in Edinburgh at this moment what, by the gentlemen on the other side, in the printed case which they have circulated among the members of the committee, is called 'excitement' upon the question, but which more properly deserves the name of universal indignation with respect to the conduct of this company. I unquestionably shall not be the representative personally of that excitement or indignation in this room, but I will endeavour, with the patient forbearance of the committee, temperately to explain the grounds which have given rise to these feelings, and to examine whether or not that expression of indignation has proceeded from what is called in the same printed case, 'a warped judgment and local prejudice,' or whether it has a general foundation in fact. If there be good cause for this indignation and aversion, and determined hostility to the present bill upon the part of the entire community of that great city, allow me to submit to you in the very outset, that that consideration alone ought to be fatal to this bill. If this be a measure which professes benefit to a community like that of Edinburgh, and if you find that to a man that community are opposed to it, all that I have to say is, weigh the grounds of that opinion, ascertain the reason of that unanimity, and if you find that there is no false foundation for it, but that on the contrary, it rests on a solid foundation, then I say that it ought to be conclusive on the matter." Had the Town Council and Water Trustees, in their recent contest with the ratepayers, given the same respectful consideration and the same weight to the views of the latter, as expressed in two several petitions, each three times more numerous signed and in as short a time, they would have saved themselves much humiliation and personal loss, and the ratepayers much trouble and expense.

In the autumn of 1847, the springs of Bavelaw and Listonshiells, about 40 in number, were made available by being conveyed to Edinburgh. Compensation was at the same time provided to the mill-owners on Bavelaw Burn and the Water of Leith by the construction of two reservoirs at Threipmuir and Harlaw, which form one continuous chain with not more than thirty feet of difference of level between them when full, and together occupy an area of fully 200 acres.

During the construction of these works, however, the company, pressed by the threatened competition of a new company, found it necessary to increase their supplies, and in the year 1847 they obtained the Act 10 and 11 Vic. cap. 202, for increasing their works and acquiring and bringing in other springs farther west, and for that purpose the capital of the Company was increased from £184,000 to £276,000, power to create new shares to the extent of the increase being given. They procured authority for bringing in the water of the Black Springs by the new pipes laid on the north side of the hills from Bavelaw and Listonshiells; and under the Acts of 1843 and 1847 they brought in a number of additional springs and constructed

reservoirs at Clubbiedean and Torduff, and reconstructed the Bonally reservoir, all on the north side of the hills, partly for service and partly for compensation, and they increased the size of the Glencorse reservoir, and they constructed a new reservoir at Loganlee further up the same valley, overflowing into the lower reservoir. These works were completed in 1852.

The portion of the Act of 1847 which grants powers to the company, terminated at the 81st section, the remaining twenty-one sections consisting of an obligation imposed on the company by Parliament, and which was procured through the exertions of Mr Adam Black, then Lord Provost of the City, with the approval of the Town Council, to transfer the works to a Board of Trustees for the public behoof, on a requisition being made on them by the Corporations of Edinburgh, Leith, and Portobello, to the last of which places the water supply had been extended about the year 1852. As however, this latter portion of the Act, containing also relative provisions for the working of the trust if brought into operation, was repealed and re-enacted in the Act of 1856, to be afterwards noticed, which was afterwards obtained by the company, it is unnecessary here to refer farther to the powers of acquisition by a public trust. That will be done when the Act of 1856 comes under notice, as that Act contains the provisions on the subject which were in force when the Town Council's Bill of 1869 came to be promoted.

In 1853 and 1856 the company again came to Parliament for powers to bring in additional supplies, and obtained the Acts 16 Vict., cap. 49, and 19 and 20 Vict., cap. 91. By them the capital of the company was increased to £368,000; and the company was authorised to bring in the Colzium and other springs, still farther west, at the north base of the Pentlands, and to construct a compensation reservoir at Harperrig. In 1859 the reservoir was completed, and the springs brought in.

The clauses in the Act of 1856 for the transmission of the works of the company to a public trust, already referred to, which were first inserted in the Act of 1847, and which were repealed and reinserted in this Act, will be now adverted to.

The 95th section, on the narrative that it might be expedient that the management of the water supply should be vested in a public trust, bound the company, on a requisition in writing by the Lord Provost of Edinburgh, under authority of a joint meeting of the Town Councils of Edinburgh, Leith, and Portobello, to be called in manner provided in the succeeding section, to transfer all their rights, powers, and property, and the entire management and control of the water supply, to a Board of Trustees for behoof of the community, to be appointed in manner provided in section 98. The company were to receive a fixed annual dividend on their capital stock, to be fixed by arbitration, under the arbitration clauses in the Lands Clauses Consolidation (Scotland) Act, 1845.

The 97th section fixed the constitution of the trust as follows:—

"The said Board of Trustees shall consist of persons assessed for water rates on a rental of not less than £30 per annum, to be appointed or elected as follows, viz. :—Four by the Lord Provost, Magistrates, and Town Council of Edinburgh, of whom not more than one shall be a member of such Council; two by the Provost, Magistrates, and Town Council of Leith, of whom not more than one shall be a member of such Council; one by the Provost, Magistrates, and Town Council of Portobello; two by the Commissioners of the southern districts of Edinburgh, so long as these districts shall not be represented in the Town Council of Edinburgh; one by the Merchant Company of Edinburgh; one by the Faculty of Advocates; one by the Society of Writers to the Signet, and two by the Directors of the Company, so long as an annual dividend on the capital stock of the Company shall be payable to the shareholders thereof." By section 99 provision was made for the event, which afterwards occurred, of the southern districts of Edinburgh being represented in the Town Council, by transferring to the Town Council the power of electing two additional trustees in their stead, as if the word 'six' were substituted for 'four' in the clause before quoted.

By the year 1862 the Company became again apprehensive that ere long the demand for water, owing to the increase of the city, would exceed their means of supply; and to provide against this contingency they, in 1863, obtained the Act 26 and 27 Vict., cap. 187. The capital was again increased to £414,000, by authorising the creation of £46,000 of additional stock, to be applied in the construction of a compensation reservoir at Crosswood, and in bringing in a number of springs in the lands of Crosswood, to the westward of the last extension of the works.

The works authorised were duly executed, and the Crosswood springs brought in.

Such was the position of the Water Company in the year 1868, when the Corporations of Edinburgh, Leith, and Portobello began to agitate, not for a transfer to a public trust under the Act of 1856, but for a transfer to a body of trustees to be named by themselves, that is practically to themselves, of the works for the water supply of the district defined by the Water Company's Acts as the City of Edinburgh, the Town and Port of Leith, and the parishes of Canongate, North and South Leith, St Cuthbert's and Duddingston, all in the County of Edinburgh.

### CHAPTER III.

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#### THE PARLIAMENTARY CONTEST IN 1869.

IT was at first intended to treat this contest between the three Corporations and the Water Company, for the transfer of the water works to the Corporations, or at least to their nominees, as merely introductory to the great contest of 1871, the history of which is the main purpose of this publication ; but as, in its earlier stages, the St Mary's Loch Water Scheme was embraced in it, and as many of the particulars connected with that scheme have a material bearing on its promotion in 1871, it has been found impossible to treat it, down to the collapse of the portion of it comprehending that scheme, otherwise than as in substance a part of the great fight of the latter year.

For some years prior to 1868, the Town Council of Edinburgh had been popularly charged with being addicted to the practice of promoting bills in Parliament, and getting up other pretexts for sending deputations to London, professedly on public business, and of course at the city's expense ; and it was remarked that while they rarely promoted more than one bill in any one year, they contrived every spring to send up deputations more or less numerous ; and some members of Council, both late and present, were made the subject of frequent remark for the pertinacity with which they strove to be appointed on these deputations. Indeed there were not wanting instances in which more than one member of Council was open to the suspicion of having changed his opinions and course of voting in the Town Council, for the purpose of being appointed a member of some of them. The practice of sending these deputations appeared so regular that "the annual spring trip" was understood to be an institution of the Corporation, to be competed for by those whose subservience to the ruling majority entitled them to the preference. The agitation for the abolition of the annuity tax served for this purpose for several years, and would have served for several more, had not the Government taken it into their own hands and settled it, sorely against the will of the agitators ; the absorption of the Police Commission into the Town Council served for another year ; the Water of Leith drainage followed ; and then the Improvements Act and the

Provisional Order. The Water, the City Road Trust, and Gas Supply were in succession to be the objects of legislation and deputation year by year; and in the very session of 1871, while many members of the Corporation were up in London promoting the Water Bill, and receiving their travelling charges and two guineas per day for their maintenance, it is said that some of them who have been in the practice of making the loudest professions of purity, were at the same time charging travelling charges and two guineas a day against Heriot's Hospital—and were besides making similar charges, and five guineas per day in addition, as professional men, against the Tramways Company, all on the footing of having gone to London, and having their whole time occupied for each individual body.

In the year 1868, the acquisition of the water works from the Water Company, the abandonment of our present supply of undoubtedly pure and wholesome water, and the introduction instead of it, as the sole supply of the city, of what was called an unlimited supply of at best an unsafe water from St Mary's Loch, was fixed upon as the subject of the spring trip of 1869. Doubtless the fact that the summer of that year was an exceptionally dry one, causing great scarcity of water all over the country, prompted the selection of that particular subject of legislation at the time. It is not very well known who was the author of the entire scheme; indeed it seems to have had several authors. Councillor David Lewis in his evidence before the Commons' Committee in 1869 (Q. 841) claimed the honour, as he chose to call it, of being one of the originators of the scheme of transfer; but before the Lords' Committee in the same year, he (Q. 1480) disclaimed being the originator of the St Mary's Loch scheme. Mr James W. Stewart, the engineer who was employed to report on the best source from which a more abundant supply of water could be obtained, and who thereafter formally brought that scheme before the Council, does not claim the authorship, for in his interim report of 28th August 1868, which contains the first notice of the Loch, he merely says, "my attention has been particularly directed to St Mary's Loch as a source of supply," without saying who directed it. It must have been a very particular direction indeed, from some one deeply interested in the scheme, which caused him to overstep the Pentlands, the South Esk, and the Heriot, all probable sources of supply, and all within comparatively short distances from Edinburgh, and requiring no works of any unusual description to bring in the water, and to go, *as his very first move* in the course of inquiry, straight to St Mary's Loch, double the distance from Edinburgh of any of the other sources, and requiring the boring of tunnels of upwards of eight miles in length through two intervening hilly ridges, at an enormous increase of expense. This came out somewhat unwillingly from him in cross-examination in the Commons' Committee which sat on the scheme of 1871, as will appear from the following short extracts from his evidence:—

"2905. When you say you had orders to go and select the spot for further supply, where did you go first? *I forget where I went to first.*

"2906. Did you go to St Mary's Loch first? *I went to St Mary's Loch first.*"

There is no other direct evidence on the subject, and it is not in the least probable now that the real author of it will come forward and claim his work. Rumour indeed has credited with the origination of it the City Assessor, Mr Robert Paterson, who appears for sometime past to have had his finger in every pie in the public works and public affairs of the city—whether it might be the election of a member of Parliament; obstructing the erection of a new Infirmary; carrying off the Valuation Roll of the City to London for personal purposes of his own, and charging the ratepayers seven guineas per day for doing so; distributing a Water Catechism calculated and apparently intended to set class against class; or attempting to prevent the election as Master of the Merchant Company of a gentleman who had publicly reprehended him for overstepping his public duties. This rumour, extremely probable in itself, derives confirmation from some charges in his account against the Water Trustees, paid by them on 9th March 1870, for alleged professional services rendered in July 1868 for the promotion of the St Mary's Loch scheme. Mr Stewart was appointed as engineer sometime in July 1868, to report among other things on the source from which a *more abundant* (*not an ADDITIONAL* be it observed) supply could be obtained, (Int. Rep. p. 10.) Now, from Mr Robert Paterson's account, it appears that in July 1868 (the precise days are not stated) he "visited the district of St Mary's Loch with members of committee and Mr Stewart, C.E." As he was not a member of committee, or possessed of any professional skill which could be of the least use in selecting a source of water supply, though by the way he charged four guineas per day for his presence, he could only have been there with the object of urging the selection of St Mary's Loch, the aqueduct from which would pass through and interfere with the properties and possessions of a vast number of proprietors and occupants, with a corresponding number of valuations in the settlement of compensations. Palpably therefore the rumour has not been altogether groundless which credited Mr Robert Paterson with the origination of the now notorious St Mary's Loch scheme.

In June 1868, Councillor Lewis began his agitation for the acquisition by the Corporations of the water works. At a meeting of the Town Council on the 23rd of that month, he in terms of a notice given by him at a previous meeting, moved for the appointment of "a special committee to institute an inquiry into the whole question of the water supply of the city and surrounding districts, and to correspond with the authorities in Leith with a view to secure their co-operation in carrying out the remit, with powers to employ such professional assistance as they may consider necessary in making the said inquiry."

Mr Lewis commenced his task in a speech couched in the terms of absurd exaggeration, to use a mild term, which at the time, and until their real value was afterwards ascertained, passed for the ring of true metal. In supporting his motion, after stating instances in which

he said the inhabitants could not get water during that dry summer, he, with a view to shew that the company were unable to furnish the requisite supplies of water to the city, is reported to have said,—“One cause of the failure to supply water for domestic purposes was that the Water Company, after selling it to the public, sold it a second time to brewers and manufacturers, though they had only power under their Acts to sell the surplus after the inhabitants were supplied. As to the remedy for the existing evil, some thought that things would never be right till the Corporation took the water supply into their own hands. He had been long of that opinion, but he felt bound to state that although they had entire possession at present, they could not possibly improve the existing state of things under the present arrangements of the Water Company, and for the best of all reasons, that there was not a sufficient supply of water to give to the inhabitants. He would admit that the Water Company were doing the best they could to distribute the water, and keep down the surging elements of what amounted almost to a social rebellion ; but they could not manufacture the water. If they deprived the brewers and manufacturers of their present supply of water, that would only aggravate the existing evil by depriving the working classes of bread as well as water, because work would be brought to a stand. One thing they might do, and that was to prevent water being wasted on Sundays to drive organs in churches, because, he thought, it was directly opposed to the spirit of the Gospel to worship God by machinery by pouring hundreds of gallons of water into a drain, while people were famishing for want of water.” He then went on to say, “That the working at the back of the Pentland Hills gathering mere handfuls of water from sheep drains, was mere trifling, and was totally out of the question ; and they must now direct attention to where they could get an adequate supply of water. It appeared to him that if they wanted a really adequate supply, they must go the head of the Tweed at Broughton, or to the head of the Clyde at Abington.” The strong statements of Mr Lewis carried with him the majority of the Council, who were doubtless easy to be convinced with the ensuing spring trip in prospect ; and they resolved, in terms of the motion, by a majority of twenty-four to four. A committee was then appointed, consisting of Lord Provost Chambers, Bailies Handyside and Skinner, Dean of Guild Law, and Councillors Mossman, Ford, Stott, David Lewis, and Cousin. The four members who were not led away by the contradictory claptrap of Mr Lewis were Bailie Miller, Councillors Richard Wilson and Tawse, and lastly, Councillor Blackadder. The last of the four was a shareholder and a director of the Water Company, and no doubt professed *then* to be conscientiously satisfied that the water supply was adequate, and administered by the proper parties. Whether his personal interest in the Water Company had anything to do with his views at that time may be a question. But certain it is that in 1871, when his interest in the profits of the Water Company had ceased, he hoisted opposite colours, and came out as a thick and thin supporter of the St Mary's

Loch scheme, which he had formerly opposed. It would be at least amusing, if not instructive, to learn from him what in the interval had caused or enabled him conscientiously to change his opinion. If he was right in 1871, it would be not an unnatural conclusion for the world to come to, that his opposite conduct in 1869 was caused by consideration for his own personal interest overcoming his consideration for the interest of the public.

Nothing more was heard of the matter by the public until the Town Council meeting of 27th October 1868, on the morning following which they learned through the daily press that the last subject which had been set down on the programme of business for that meeting, was the consideration of a report of the Special Committee on the Water Supply, *with closed doors*. An attempt was made by the minority to have the reporters allowed to be present, but it was overruled by a large majority, and the report was resolved to be considered in private. This was the commencement of the system of concealment and deception, and contemptuous disregard of the views or wishes of the ratepayers, which grew by impunity, and attained such offensive dimensions in 1871, that the citizens rose in indignation, and at the first opportunity expelled from the Town Council nearly all their oppressors who sought re-election.

But though the newspaper reporters were excluded from the remainder of this meeting, what took place after the doors were closed came out in evidence before the Committee of the House of Lords in 1869. It appears from the evidence of Bailie Miller given there (2958-2964), that after the reporters were excluded a very high-handed attempt was made by some of the majority of the Council to get this report discussed and approved of, upon a bare reading of it by the Clerk, and to get full authority given to them to prosecute the scheme, without any member of Council out of the Special Committee, the press, or the public, having been furnished with copies for information or consideration. Others of the majority, who evidently could not bring themselves so to outrage all decency, and yet had not the courage to go directly against their leaders, left the meeting, which was thereupon counted out for want of a quorum. The attempt was repeated two days afterwards, viz., on the 29th, but that meeting, too, of which the reporters got no notice, ended in a count out; and at last the Special Committee was forced into printing and furnishing to each member of Council, copies, not merely of one report, but of a bundle of reports, to be discussed at a special meeting called for the 5th of November. But the print was marked "Strictly Private and Confidential," and it was kept back till it should have appended to it a supplementary interim report by the same Special Committee, bearing date 3rd November, and it is believed that the completed print, extending to twenty-eight pages, and involving a great variety of details as to a proposed scheme, of which every member of Council who was not on the Special Committee was completely ignorant, was not delivered to the members of

Council till late on the evening of the 4th, and which they were expected to master and discuss next day.

At the special meeting of Council of 5th November 1868, a manœuvre was had recourse to, by which the newspaper reporters were deceived into giving a report of the meeting which concealed from the public the real spirit in which the scheme was to be promoted. The report of the meeting in the *Scotsman*, and also, it is presumed, in the other papers, bears that the first thing done was to submit the interim report of the Special Committee, which is there printed as if it had been placed in the hands of the press for publication *before* any discussion took place. Doubtless, the reporters were made to understand that the reports furnished to them at the close of the meeting for publication were to be considered as having been put into their hands at the commencement, and so they treated them; but these had omitted to observe, or at least to attach any importance to the unusual circumstance, that they were not, as is customary, admitted at the assembling of the Council, and that some time had elapsed *after* the specified hour of meeting before they were admitted. It now appears from the formal minutes of the meeting, a copy of which was got at in the contest of 1871, taken in connection with the report of the same meeting in the newspapers of 6th November 1868, that the Town Council took the extraordinary step not only of constituting their meeting in secret, but also prior to the admission of the press of discussing and disposing of a motion in secret, the very fact of the discussion of which was carefully concealed from the press and the public. The minutes of that meeting are so important that they are now given at full length:—

*Edinburgh, 5th November 1868.*

“At a Special Meeting of the Magistrates and Council held to consider the Interim and Supplementary Interim Reports by the Special Committee on the Water Supply of Edinburgh, Leith, and Portobello,

“The LORD PROVOST in the Chair.

“The Interim and Supplementary Interim Reports of the Special Committee having been printed and circulated among the members of Council as ‘strictly private and confidential,’ were held as read.

“Baillie MILLER moved, seconded by Councillor HOWDEN, ‘That the Interim and Supplementary Reports be placed in the hands of the press, and that the discussion be conducted in public.’

“Councillor STOTT, seconded by Councillor MOSSMAN, moved as an amendment, ‘*That until the Magistrates and Council have considered these reports, and resolved on the course of action to be followed, and have otherwise authorised, the reports be not communicated to the press or to the public; but that the discussion proceed with open doors.*’

“The vote was thereupon taken as between the motion and the

amendment, when five members voted for the motion and eighteen for the amendment, one member declining to vote. The Magistrates and Council therefore adopted the amendment, and resolved accordingly.

"The following members voted for the motion:—Bailie Miller; Treasurer Marshall; Councillors Howden, Blackadder and Cousin. The following members voted for the amendment,—The Lord Provost; Bailies Handyside, Russell, and Fyfe; Dean of Guild Law; Councillors Russel, Crichton, Cattanach, Mossman, Younger, Bladworth, Gordon, Rowatt, Peat, Stott, Pairman, David Lewis, and Colston. Convener Cox declined to vote.

"Councillor DAVID LEWIS thereupon moved as follows,—'Having considered the Interim Report and Supplementary Interim Report of the Special Committee, the Magistrates and Council approve thereof, and re-commit the whole subject to the Special Committee to take such steps as they may consider proper to promote the requisite measure in Parliament during the ensuing session; to elicit the opinion of the community on the scheme, and, on securing their approval, to negotiate with the Water Company and other parties interested, so as to avoid, as far as possible, opposition in Parliament.' This motion was seconded by Bailie Handyside.

"Bailie MILLER moved the following amendment,—'That inasmuch as an abundant supply of water for domestic use, as well as for sanitary and commercial purposes, is essentially requisite to meet the daily increasing wants of the city and neighbourhood, and as it would, in the opinion of the Magistrates and Council, tend to promote the public interest were the supply of water placed in the hands of a public trust acting for behoof of the community, the Magistrates and Council resolve, as a preliminary to the attainment of that object, to enter into negotiations with the Edinburgh Water Company for the purchase of their property by mutual consent, and failing that, to acquire under the provisions of the 95th section of the Edinburgh Water Company's Act 1856, and the Lands Clauses Consolidation Act incorporated therewith; and that in the meantime application to Parliament for bringing in an additional supply of water from St Mary's Loch be delayed until next year, and until the scheme be properly matured, and the sanction of the ratepayers obtained.' The amendment was seconded by Councillor HOWDEN.

"After lengthened discussion, Councillor Howden, with the consent of the Council, withdrew his seconding of the amendment, and subsequently Bailie Miller withdrew his motion.

"The Magistrates and Council thereupon unanimously adopted the motion, and resolved and remitted accordingly, adding Bailies Miller, Russell, and Fyfe to the Special Committee."

The disclosure which this minute makes is a very curious, but at the same time a very painful one. It is not uncommon to exclude the press from discussions, the particulars of which it is thought desirable to keep from the knowledge of the public; but it was reserved to the Town Council of Edinburgh, by concealment as if there had been no-

thing to conceal, to deceive the press into reporting something the very reverse of the fact. From the passages italicised in the above minute, it will be seen that a large majority of the Council resolved in secret meeting that the reports of the Special Committee were to be made public at the ensuing discussion, only in the event of the Council resolving at once to proceed with the St Mary's Loch scheme. But the reporters were not informed that the reports furnished to them at the close of the meeting, as is usually done for publication, had been deliberately withheld till the result of the discussion was ascertained, and would have been withheld indefinitely, and perhaps altogether, had the result been different.

The Town Council, once entered on the downward path, had now, to simple concealment, added deceit and trickery.

Coming back to the reports which formed the subject of discussion at this meeting, it is not intended here to enter into any detail of them, though they call for some remarks. There were two reports from the Special Committee, one termed an interim report, and the other a supplementary interim report,—the former having embodied in it two reports by Mr James W. Stewart, civil engineer, an analysis by Dr Stevenson Macadam of the water of St Mary's Loch, and the substance of a report by Mr Bateman, civil engineer.

From the interim report of the Special Committee it appeared that a Special Committee of four had been appointed by the Town Council of Leith, and another of three by the Town Council of Portobello—and that the aggregate Committee formed of the Special Committees of Edinburgh, Leith, and Portobello had conducted the enquiry ordered. Under their employment, Mr Stewart had made a report (1.) on the then supply of water, which he reported to be 30 gallons per head per day; (2.) On the distribution, which he described as defective, there being in many places insufficient supplies; and (3.) On the source of a more abundant supply;—in reference to which he preferred the natural lake of St Mary's to any artificial reservoirs for collecting and storing the waters of the Clyde or Tweed. Although an analysis of the water of that loch had been obtained, it never seemed to have occurred to any member of the Committee, or to the engineer, or to any other person concerned, to compare with that water the waters of the Clyde or Tweed. The whole scope of Mr Stewart's report shows that St Mary's Loch was intended from the first to be the only future source of supply to Edinburgh, to the exclusion of the present supplies, because the quantity proposed to be brought in (10,000,000 gallons per day) would afford  $47\frac{1}{2}$  gallons per head per day to a population of 210,000, which was then estimated to be the population of the district to be supplied. It was not an additional, but a more abundant supply that was reported on.

There was also a supplementary report by Mr Stewart, in which he estimated the total expense of this scheme, including new pipes for town service, &c., at £550,000; but he stated how, by reducing the size of the aqueduct pipes from the loch, and utilizing the existing

distribution pipes, the cost of the new scheme might be reduced by about £200,000. In reference to this report the Special Committee stated, that after Mr Bateman, their consulting engineer, had, along with Mr Stewart, carefully considered the entire subject, he had reported it to be his opinion that "any scheme to be introduced by the Corporation should be a complete one for procuring and bringing water to the city, which might be carried out independently, or in connection with the city works."

But Mr Bateman farther reported, "It is too late in the season to lay out a scheme with all the care which ought to be bestowed upon it; but its parts are so simple, and the six-inch ordnance survey affords such material assistance in the preparation of Parliamentary plans, that I believe it is still possible to prepare and deposit a satisfactory scheme. The main features can now be determined, and details of arrangement may conveniently stand over."

The Special Committee's interim report concludes this subject with the following paragraph:—"On the whole, the Special Committee are unanimously of opinion that the Magistrates and Council should resolve to authorise an application to Parliament during the ensuing session, to sanction the scheme now proposed, subject to such modifications and alterations as may be afterwards considered advisable; and that they should recommit the whole subject to the Special Committee, to take such action as they may consider expedient in carrying out that resolution."

The supplementary interim report of 3rd November 1868 comes to be next noticed. The way in which in it the Special Committee arrogated to themselves a supreme dictatorship, and displayed such an utter disregard of the ratepayers, characteristic of all upstarts when they attain power for the exercise of which they have no proper qualifications, is so marked, that even at the risk of its being considered tedious, the first two paragraphs of that report are now given:—"Of this date, (Oct. 30, 1868), the Special Committee had under consideration the subject of the interim report with reference to what took place at the meetings of Council on 27th and 29th instant, when it was resolved that the report should be printed and circulated among the members of the Special Committee, in order that they might consider deliberately how far it could, with a due regard to the public interest, be distributed among the members of Council previous to their next meeting. Proofs having accordingly been transmitted to the members of the Special Committee on the following day, the Committee met of this date (Nov. 2, 1868), and went carefully over the print, when it was unanimously resolved to place the same in the hands of every member of Council. In doing so, the Special Committee were fully sensible that they were incurring the risk of having their case prematurely disclosed to the Water Company, and of being subjected to obvious consequent disadvantages. But, on the other hand, they were impressed with the reasonableness of the desire expressed by several members of Council to be afforded an opportunity of maturely considering the report, before they were

called upon to decide a question so seriously affecting the interests of the community. The Special Committee felt that in deferring to a wish so natural in itself, and so generally expressed, *they fulfilled their duty when they issued the print as a confidential document for the private information of the Magistrates and Council exclusively.*

"It has been suggested that, instead of going to Parliament during the ensuing session to promote the scheme explained in the interim report, it might be more prudent, in the first instance to take over the Water Company's rights, powers, and property, under the provisions of "The Edinburgh Water Company's Act, 1856," and thereafter go to Parliament to obtain the requisite powers to bring in the necessary additional supply of water from St Mary's Loch. This suggestion, which seems a feasible one at first sight, has been duly considered by the Special Committee, but appears to them to be open to insurmountable objections. In the first place, the Committee are of opinion that if the supply of water for Edinburgh, Leith, and Portobello, is to be taken out of the hands of the present Company, and vested in that of a body of public trustees, these trustees must be elected by, or on behalf of the several communities concerned, in proportions corresponding to their respective rentals, and that the trustees so elected must be directly responsible to public opinion. *The Special Committee are not disposed to believe that, in the present day, the communities of Edinburgh, Leith, and Portobello would be prepared to vest the management and direction of their water supply in a Board of Trustees constituted in the way and manner specified in the Water Company's Act of 1856.*"

All this looks very plausible, provided it can be assumed that it was seriously intended to consult and be guided by the opinion of the ratepayers. Whether this was ever seriously intended may be matter of very serious doubt. But, be this as it may, the cloven foot seems to peep out in a paragraph a little farther on, which follows some objections to come under the Company's obligations, by a Trust under their Acts (which obligations, by the way, few of the promoters could come under, one only of each Corporation being eligible for election to that trust), and also to the mode provided for fixing the compensation to the Company for their stock. The following is the paragraph referred to:—"Moreover, it would be exceedingly dangerous to saddle the three communities with the existing works of the Company, which are manifestly insufficient to provide the required quantity of water, unless they were at the same time ensured that they would get powers to bring in an independent supply, which is absolutely indispensable. So sensible were the Corporations of Liverpool, Manchester, Glasgow, Greenock, and Paisley, of the propriety of this course in these cases, that the powers to take over the existing water works in these places, and to bring in an independent supply, were obtained simultaneously."

Some farther remarks are then made upon a suggestion which had been made to delay procedure for another year to afford opportunities to mature a proper plan, and possibly to negotiate an amicable

arrangement with the Water Company, with whom the Special Committee had communicated as little as with their own constituents ; and after this the report proceeds :—" Having thus disposed of the more technical of the objections to proceeding this year, the Special Committee are of opinion that on general and broader grounds it is not expedient to delay. If the Magistrates and Council are of opinion that an independent and unlimited supply of water should be obtained, delay would only be attended with danger. It would afford the Company an opportunity, which they should not have, of going to Parliament for powers to obtain an additional partial supply, and thus unnecessarily and seriously increase the cost to the community of afterwards taking over their works. Or, if they did not ask leave to obtain an additional supply, the delay of another year would be just postponing unnecessarily, and possibly indefinitely, the obtaining of that independent and inexhaustible supply, which is almost universally admitted by all who are cognizant of the true state of matters, to be so much needed.

" It appears to the Special Committee to be a mistake to suppose that negotiations with the Water Company could be advantageously prosecuted by the public upon any other footing than this, that the Corporations negotiating had taken the requisite steps to establish their case in Parliament, if negotiations fell through.

" As a matter of business the Committee are of opinion that if the Magistrates and Council are agreed as to the necessity of having a constant and abundant supply of water, and of having that supply under the control of a public trust, it is essential that all the requisite steps for going to Parliament should be immediately taken, by giving the necessary advertisements, and making the required deposits. After this is done, and the three Corporations have secured a proper Parliamentary footing, *the sense of the public MAY be taken on the scheme* as so matured and prepared, and if approved, negotiations should be forthwith opened with the Water Company, with the view to an amicable arrangement on fair and equitable terms, which would supersede the necessity for any Parliamentary contest."

In short, the Special Committee were determined to hurry on, ready or not ready. They thought that they had the Company at disadvantage, and that if they gave breathing time in their assault, the Company might bring in additional water, and so deprive them of their fulcrum of scarcity on which to poise their lever to raise their scheme. Besides, they had a strong objection to having the works transferred to them, unless they got at the same time power to introduce the water of St Mary's Loch. Their cry was to be St Mary's Loch or nothing. The Trustees contemplated under the Act of 1856 were not to be relied on by them to go in for the St Mary's Loch scheme. These Trustees would, from the composition of the trust, have had such a leaven of position and responsibility that they would have seen with their own eyes, and used their own judgments, and so would never have gone blindfold into any such undertaking. And even supposing that they

ultimately did so, the honour and glory would have been theirs, and no advantages would have redounded to those adventurous spirits who had resolved that, whether the ratepayers agreed or not, they would bring into Edinburgh the water of St Mary's Loch.

It was in these circumstances that the Town Council, on 5th November 1868, unanimously adopted the resolution of Councillor Lewis, before quoted on page 16. The minutes, however, shew that the meeting was not in the first instance unanimous, for an amendment was moved by Bailie Miller, and seconded by Councillor Howden, though afterwards withdrawn, to the effect that preliminary negotiations for an arrangement with the Water Company as to the transfer of the works were expedient before going to Parliament; and that the scheme for an additional supply should be postponed and matured, and submitted to the ratepayers for approval. No wonder that some Councillors hesitated until they should see what the cost of the whole would be, and whether their constituents would approve of the scheme. It had been estimated by Mr Stewart, that taking advantage of the existing works for distribution of his new supply, the cost of introduction of water from St Mary's Loch would be £350,000. But he had given no estimate of what would have to be paid for the undertaking of the Water Company. The Special Committee had, however, in their interim report made a wild guess that a million sterling at the utmost would carry out the proposed scheme and compensate the Water Company on the footing of taking over their entire works. Now, the capital of the Company was nominally £414,000, paying a dividend of  $6\frac{1}{2}$  per cent., and there was a statutory mortgage debt of £133,000, besides other debts and obligations, which, when the transfer was ultimately effected, were fixed at about £20,000. £414,000 at, say 6 per cent. was equivalent to £552,000 at  $4\frac{1}{2}$  per cent.; and assuming this to be its value, these three sums of £552,000, £133,000, and £20,000, amount in gross to £705,000. Add to this £350,000 as the estimated cost of construction of the new works, and the million sterling spoken of as the outside estimate of the entire cost was exceeded by £55,000. Instead of this state of things there should have been a broad margin to cover the contingency, which experience, if they had any, should have told them was absolutely certain, of the cost of the new works far exceeding the estimate which Mr Bateman shewed to be no estimate at all, since the details of the scheme had not even been resolved on. That an estimate of complicated works, without something like details, should have been even seriously looked at by this Special Committee, and subsequently by the Town Council, only shews their utter ignorance of the subject with which they were professing to deal. It would not have been a bit more absurd had the Governors of George Heriot's Hospital asked Councillor David Lewis, whose name it had been the chairman of the Special Committee, and the moving spirit of the whole scheme, to estimate to furnish a ton of boots and shoes to fit the inmates of that institution, without giving him the least specification of numbers or sizes.

Neither in the Minutes of the Meeting nor in the newspaper reports, is any full explanation given why the amendment was withdrawn, beyond a short statement in the newspaper reports that Bailie Miller had done so, because so many appeals had been made to him. This does not indicate very much repugnance to the scheme. In his evidence before the House of Lords' Committee, in 1869 (2967), he explained that he withdrew it because a number of gentlemen who he expected would have supported him asked him to do so. But in the Town Council he added a statement which is somewhat at variance with the position which he took up afterwards, viz. :—"He was glad that the Town Council had been so unanimous upon the subject, and if the ratepayers of the city were as unanimous as the Council he would gladly support the scheme." But Mr Howden gave before the same Committee an explanation of his share in the matter (4280-4284), that he withdrew his opposition to the commencement of the promotion of the scheme, in order to admit of the Parliamentary notices being given, on the assurance by a gentleman on the Committee, that the whole cost would not exceed the estimated sum of one million sterling, and, "that the ratepayers would be fully consulted before another shilling of expense was incurred." It is believed that the gentleman referred to was Councillor Cousin, who, as reported (though he made a very sudden and not very intelligible change in all his views and votes afterwards) "expressed his belief that the estimates were not understated. They had been prepared by a very able engineer, who had had great experience in connection with the Loch Katrine Works."

The scheme was now fairly launched, by the remit back to the Special Committee to promote the requisite measure in Parliament during the ensuing session, and "to elicit the opinion of the community on the scheme." The Special Committee had treated the proposed transfer of the works as a mere means to an end, and therefore the opinion which was to be elicited was on the St Mary's Loch Scheme.

The Committee lost no time in publishing the notices required by the standing orders of Parliament to entitle them to proceed with the Bill in the ensuing session, and some members of the public who took interest in the water supply also published various letters on the subject in the newspapers, some in their own names, and others anonymously.

The year 1868 was remarkable for the passing of the Act which conferred the Parliamentary franchise on all owners and occupiers of premises rated for payment of taxes; and to give time for the new electoral roll, made up in that year, being rendered available for the municipal elections, these elections were postponed for that year from the first Tuesday of November to the first Tuesday of December.

It has been the practice in Edinburgh, and it is believed elsewhere in Scotland, in imitation of the nomination days in Parliamentary elections, for the Councillors for the different wards to call meetings of the electors of their respective wards, at periods varying from three

weeks to a few days before the day of election, for the double purpose of giving the sitting representatives an opportunity of giving an account of their stewardships, and candidates for election an opportunity of explaining the grounds on which they aspire to the representation of the ward. The reports in the newspapers of the meetings held prior to the December elections in that year have been examined. At several of them the question of water supply does not appear to have been mentioned at all, or at least to have been so slightly alluded to as not to have attracted the notice of the reporters; at others what was mentioned was rather the proposed transfer of the works from the Water Company to the Corporation, than the St Mary's Loch Water Scheme; at St George's Ward the scheme was approved of by Bailie Skinner and condemned by Councillor Richard Wilson; at St Stephen's Ward it was condemned by Councillor Howden; at St Luke's Ward it was stated by both Councillors Tawse and John Wilson that they had no proper information to form an opinion on it; at Newington Ward, Councillor Colston pronounced in favour of the scheme; at St Andrew's Ward Lord Provost Chambers promised to submit it to a public meeting of the inhabitants, to be called for the purpose, before proceeding further; and the meeting at Broughton Ward pronounced in favour of a meeting being specially called to consider the question. At no one ward was the question of approval or disapproval of the St Mary's Loch Scheme put for the purpose of eliciting any opinion. The understanding was universal that the particulars of the scheme, or at least such particulars as were necessary to let it be understood, were to be submitted to the community in some satisfactory manner for their opinion, in terms of the resolution of the Town Council of the previous 5th of November, before proceeding to promote it in parliament.

In consequence of this understanding, the matter of the water supply did not in the least degree influence the municipal elections. At the first meeting of the new Council the re-election of Mr Chambers, as Lord Provost, was moved by Bailie Miller and seconded by Dean of Guild Law, the present Provost. In seconding the nomination the Dean of Guild expressed his anxiety "to assist in carrying out the scheme for providing a sufficient water supply, and the other matters which his Lordship so ably promoted. In regard to the water question, judging from the letters which appeared in the newspapers, there was the greatest amount of ignorance prevalent on the subject throughout the town, and he thought it would be the duty of the Council to enlighten the people upon it. They did not seem to read at all. They just wrote without knowledge of the subject." The duty of the Council to give to the inhabitants proper information on the St Mary's Loch Scheme was thus directly admitted by the Dean of Guild, and acquiesced in by the Council then assembled. How they performed that duty will form the subject of examination ere long.

Probably with some faint idea in his head of trying to perform his part of this duty, the Dean of Guild published a letter in the *Scotsman*

of 14th December, for the purpose of controverting the views advocated in a leading article in that paper a few days previously, the tenor of which was unfavourable to the Town Council's scheme. The letter was of no great moment in itself, as it contributed nothing to the scanty information as yet made public; but it contained a sentence or two which deserve a passing notice. In contrasting the Water Company's Moorfoot scheme, with the Council's St Mary's Loch scheme, of course to the advantage of the latter, he said,—“Supposing the Yarrow scheme to cost double the Moorfoot hill scheme, is there any comparison between the permanent stability of the two? At the best, the one is a probable quantity, depending on the clouds and the seasons; the other is a positive quantity depending on the inexhaustible resources of a natural lake.” The drivel of this, published doubtless by way of information, is so great that it is absolutely painful to read it. But it is of a piece with one and all of the grounds on which the St Mary's Loch scheme has been promoted throughout. The absurdity of this ground of preference of that scheme to the Moorfoot scheme was made thoroughly plain to the meanest capacity in a letter in the *Scotsman* of 15th December, bearing the initials “C. E.,” from which the following passage is taken in reference to the portion of the Dean of Guild's letter just quoted:—“Now, one can but regret that the Dean of Guild does not stop to point out where the water of St Mary's Loch comes from, if not from the clouds. Even if springs exist in the loch, they can but get their supply from the clouds. The fact is, as known by every one who has paid the slightest attention to the subject, that the only difference between the St Mary's Loch scheme and any scheme on the South Esk, Heriot, or Lyne, is that in the one case the storage is by a natural reservoir, and the other by an artificial one, and that if the rainfall is the same in both instances, they are both equally dependent for their supply upon, and in proportion to, their drainage areas. If the drainage area of the South Esk, Heriot, and Lyne is much larger than that of St Mary's Loch, and the water properly stored in artificial reservoirs, they will, exactly in the same proportion, yield larger or smaller supplies without reference to the size of St Mary's Loch itself, and the public must learn that the whole question is one of drainage area at a proper elevation, and that alone.” One would have thought that this lucid explanation would have cleared the mind of the Dean of Guild as to the absurdity of his estimate of the inexhaustible resources of his natural lake. Subsequent events seem, however, to have proved that his brain is impervious to reason or propriety. But, whether this be so or no, the idea evolved in this letter of the Dean is evidently the germ of the comical exhibition which he made as Provost two years afterwards, when he trotted at the heels of Councillor, then Bailie, David Lewis, to the air holes in the ice of the loch, imagining them to be springs, and dipped his thumb into the water as a thermometer to test its temperature. That exhibition was thus, after all, his own original idea, and not dictated to him by Councillor David Lewis, as was erroneously supposed.

The question was again raised for discussion in the Town Council at a meeting on 15th December 1868, on a motion by Councillor Crichton, for the appointment of a Special Committee on the Water Supply. An amendment to delay the appointment was moved, and a discussion followed, in the course of which it was stated that at several Ward meetings, and particularly St Giles', St George's, and George Square Wards, the scheme had been approved of. When reference is made to the reports of the meetings, this simply means that no disapproval of the scheme, that is, the St Mary's Loch scheme, had been stated ; but neither was there any approval of it. On the other hand, it was stated distinctly by Bailie Stott, an active promoter of the scheme, that after the Bill should be lodged, " the matter would be laid before a public meeting of the inhabitants of Edinburgh, and before every ward ; and then, if the public should approve of it, the Council, as the servants of the public, would go on with it ; and if the public at these meetings disapproved of the scheme, they would never hear a word about it." On that footing a Special Committee was appointed, consisting of the old Committee, with the name of Mr Richard Wilson substituted for that of Bailie Handyside, who was not now in the Council. It is due to Mr Wilson to say that he declined to act on this Committee.

At the next meeting of Council on 29th December 1868, there was another discussion. By this time the Bill had been lodged in Parliament, and a copy of it was then laid on the Council table. A letter from the Manager of the Water Company, and a printed statement by the Directors which had been published, were also laid on the table. A long discussion took place on these documents, which ended in the passing, by a majority of 26 to 10, of the following resolution, moved by Bailie Fyfe :—" The Magistrates and Council, considering that the Special Committee are at present engaged in obtaining additional information regarding the new scheme of the Water Company lately submitted to the Committee, and other sources of supply, with the view of laying the same before the ratepayers, agree to delay consideration of the Bill now on the table, until the Special Committee shall have completed their investigation, and report the same to the Council."

On 15th February 1869 the Joint Committee of the three Corporations had a meeting, at which were submitted a report by a Sub-committee on the water supply, with relative reports by Mr Stewart and Mr Bateman on the Moorfoot and St Mary's Loch schemes, and also on the Tweed scheme of Mr Coyne, C.E. ; also a report by Mr B. H. Blyth in 1863, on the capabilities of the Moorfoot district, and an analysis of the Moorfoot water by Professor Lyon Playfair, also made in 1863. The Committee approved of the reports of Messrs Stewart and Bateman, and agreed to report to the several Corporations that in their opinion, the St Mary's Loch scheme was the one which, in all the circumstances, was the best.

All these reports appear to have been handed to the newspapers for

publication, as next day (16th February), the substance of them was given in the daily papers, with numerous quotations.

A special meeting of the Town Council was held on 18th February 1869, for the purpose of considering the documents thus reported to them by the Special Committee.

Councillor David Lewis made a long speech, full of the wildest invectives against the Water Company and their Moorfoot scheme, and of the strongest recommendations of his St Mary's Loch scheme, all on the same grounds as the one already mentioned as advanced by Dean of Guild Law, and shown to be ridiculous, viz.—that the supply was inexhaustible. While he stated that “this was a struggle between the Council and a moneyed monopoly,” and that “the Water Company were fighting for money, and the Council were fighting for water and the interest of the community,” he, with characteristic inconsistency, totally forgot that those in whose interest he professed to be fighting, had some right to be consulted in a matter involving a large expenditure of money, and a necessary increase of burdens to be met by additional taxation; and he concluded with the following motion, in which, in disregard of all the promises of the Town Council and its members, the rights of the ratepayers to be consulted were altogether ignored, viz.—“The Magistrates and Council having considered the reports of the Special Committee, with the relative reports of the Sub-committee, and of Messrs Stewart and Bateman, and the financial vidimus appended thereto, approve thereof, and resolve to prosecute the Bill now before Parliament, to the effect of taking over the Company's undertaking by agreement or arbitration, and of obtaining an additional supply of water from St Mary's Loch, under the scheme recommended by Messrs Stewart and Bateman, as the best *for the CORPORATIONS* of Edinburgh, Leith and Portobello: Remit to the Special Committee to carry out this resolution; to take such steps as they may consider expedient *to inform the community* of the respective schemes; and if they [*who?*] approve of the St Mary's Loch scheme, remit farther to the Committee to adjust the clauses of the Bill, and to confer with all parties interested and to report.”

Two amendments were moved, one by Bailie Miller to the effect that, as an abundant supply of water could be got at a less expenditure of money than would be required for bringing in an additional supply from St Mary's Loch, the Council should resolve to delay farther consideration of that scheme, and recommend the Corporations to acquire the entire undertaking of the Company; and another by Councillor Tawse, which is so important as showing the true meaning of the motion, that though negatived, it is now given, viz.—“That the reports and relative documents lie on the table till the opinions of the ratepayers be obtained on the scheme recommended by the Committee; that it be remitted to the representatives of the various wards to ascertain the opinion of their constituents; and that in the meantime all proceedings for promoting the Bill lodged with Parliament by the Sub-committee be stayed.” On a division between the motion and

the amendment of Councillor Tawse, the amendment was negatived by 23 votes to 12. It was thus resolved by a large majority of the Town Council, that the ratepayers were to be informed of what the Special Committee intended to do, but that no action should be taken to ascertain their opinions in the matter. The following members of the present Council voted against taking steps to ascertain the opinions of the ratepayers, viz.—Messrs Law, Cousin, Russel, Sloan, Hope, Mossman, Younger, Cranston, Bladworth, Rowatt, Lewis, and Colston.

During the course of this discussion, a suggestion was thrown out by the Lord Provost to the Committee, that they “should see whether voting billets could not be sent out to the ratepayers. They would thus ascertain the real views of the constituency, and run no risk of having meetings packed by either party.” It did not suit the views of the Committee even to take any notice of this suggestion.

The minority of the Council, however, were not disposed to acquiesce in this dictatorial style of treating the community, and some of them began to take steps for holding meetings of their own wards, at which the subject should be brought before their constituents, and their opinions elicited.

In rivalry to this movement, or rather with a view to stamp it out, the Special Committee of the Town Council suddenly resolved to take the opinion of the wards, with unwonted expedition, and after an unprecedented fashion. Altogether disregarding the Lord Provost's suggestion of issuing voting billets, probably because a fair and uninfluenced vote was not likely to suit their intended schemes, they grouped the thirteen wards into four districts, three of them comprising three wards each, and one of them comprising four; and in the daily papers of Monday, 22nd February 1869, appeared the following extraordinary advertisement:—

#### “ EDINBURGH AND DISTRICT WATER SUPPLY.

“ The Special Committee of the Town Council of Edinburgh on the water supply have to request the ratepayers in the several wards of the city to attend public district meetings, to be held as undernoted, for the purpose of considering the best means of securing an adequate supply of water for the city and adjoining districts :—

#### *Wards.*

“ CALTON, . . .	} In New Street Church, on Monday 22nd
BROUGHTON, . .	
CANONGATE, . .	
	curt., at eight o'clock.
“ GEORGE SQUARE, .	} In Brighton Street Chapel, on Monday
ST LEONARD'S . .	
NEWINGTON, . .	
	22nd curt., at eight o'clock.

“ ST GEORGE'S, . }  
 ST GILES', . . } In the Corn Exchange, Grassmarket, on  
 ST CUTHBERT'S, } Tuesday 23rd curt., at eight o'clock.

“ ST BERNARD'S, . }  
 ST STEPHEN'S, . } In Queen Street Hall, on Thursday 25th  
 ST LUKE'S, . . } curt., at eight o'clock.  
 ST ANDREW'S, . }

“ City Chambers,  
 “ Edinburgh, February 20, 1869.”

That these meetings were got up with indecent haste cannot be doubted, seeing that two of were called to be held within twelve hours of the time when the earliest ordinary readers could see the advertisements ; and it may, without any stretch of propriety be inferred, that the other two were only postponed to the Tuesday and Thursday following, to suit the convenience of some members of the Special Committee, and not of the public. The only excuse for such haste which those who at the meetings faced the responsibility of calling them could give, lame and impotent as it was, was that the Lord Provost had been on the Continent for some time, had come home only in the previous week, was anxious to return in that present week to England, *and was desirous of knowing the decision of the Ward meetings BEFORE HE WENT AWAY (!)* ; and hence, as Bailie Russell innocently explained at the meeting of the Calton, Broughton, and Canongate Wards, “ there is somewhat *an appearance of haste* in calling this meeting.” Lord Provost Chambers was never deficient in a sense of self-importance ; but it may well be doubted if he ever reached what, if it were true, could not be termed otherwise than a height of presumption never before attained by any Chief Magistrate of Edinburgh. The circumstances under which the meetings were called afford a not unreasonable ground for concluding that the Provost's peculiarities were made the scape-goat to cover the real reason for such haste, viz., to stamp out the threatened independent and separate meetings of the wards.

The plan of grouping the wards into districts was, after all, probably not altogether without precedent ; but if the precedent to be alluded to was actually followed, it can only be remarked that it was a very bad one. Formerly, and before the extension of the municipal boundaries in 1856, so as to include the Southern districts, the municipality was divided into five electoral districts, four of which returned six member each to the Council, and one returned seven—the gross number being thirty-one, who, with the Dean of Guild and Convener, formed the old Town Council of 33. When the Southern districts were included by the Edinburgh Municipality Extension Act of 1856, it was considered expedient that the large cumbrous districts should be broken down into smaller electoral districts or wards so as to secure better representation of the electors. In this way, while the number of

Councillors to be elected was increased from thirty-one to thirty-nine, the whole city was divided into thirteen wards, each sending to the Council three representatives, and each intended to have in all municipal matters a separate action of its own.

Any attempt by the Council as a body, or by any Committee appointed by it, to revert, without the authority of the wards themselves, to the old mode of holding meetings of districts composed of wards arbitrarily selected by themselves, for the purpose of eliciting the opinion of the community on a proper municipal matter, was a direct contravention of the spirit of the Municipality Extension Act ; and, reprehensible as it was in any circumstances, it was doubly so when done with the intention, or at least with the effect, of neutralising or stifling the opinion of any one ward. The effect, and doubtless the intention, of the district meetings so called, was altogether to invert what would in all probability have been the result of ward meetings held separately.

For many years prior to this period, the municipal elections had been to a very great extent influenced by sectarian opinions, nourished and kept alive by the agitation for the abolition of the Annuity tax, which was in full swing in 1868 and 1869. To be sound on that question was, with the majority of the electors of several of the wards, and notably those of the Canongate, St Giles', St Leonard's, and, latterly George Square Wards, the sole qualification required in a candidate for election ; and in consequence the party which called itself the Independent Liberal party, the leaders of which had taken that agitation under their peculiar care, had hitherto commanded overwhelming majorities in each of these wards. Councillor David Lewis, too, had taken especial care that these wards, and particularly St Leonard's and the Canongate Wards should be well stirred up to go in for any scheme that would promise an additional supply of water. In his speech in the Town Council on 18th February, he had talked in moving terms of the want of water by the residents in St Leonard's, Lothian Street, Chessels' Court, the Pleasance, Adam Street, Brown Street, Viewcraig, and the Canongate ; and no doubt, when these persons heard their sufferings described in such glowing terms, they were apt to believe them real, and might be reasonably relied on to support the scheme of the great philanthropist who discoursed so feelingly of their wants. Other two wards, St Cuthbert's and Newington, might be classed as partaking of the character both of the New Town and the Independent Liberal wards, and in their elections had showed pretty decided independent liberal leanings. It so happened also, that the active promoters of the St Mary's Loch Scheme were nearly all prominent Independent Liberals, so that that party was identified with the promoters of the scheme. The grouping of the wards was so effected that those wards likely to be adverse to the scheme were overwhelmed by those whose support of it was to be relied on ; and even the localities where the meetings were to be held were carefully selected, so as to be very convenient to the reliable wards, that large attendances from them

might be easy—and to be very inconvenient to the suspected wards, with the view of discouraging attendances from them.

The first of these meetings held on 22d February 1869, comprised the Calton, Broughton, and Canongate Wards, being two New Town wards, and one Old Town ward. The gross number of the electors in the two New Town Wards was about 2100; the number in the Canongate Ward exceeded 3000. Practically, therefore, the Canongate Ward could swamp the meeting;—and to make sure of this being done, the place of meeting was of course in the Canongate Ward, in New Street Chapel, about three quarters of a mile from the nearest point of Broughton Ward, and half a mile from the nearest point of Calton Ward, by the only accessible road on a winter night. The number who attended was about 200, and the meeting before proceeding to business was formally protested against as being of an irregular and unprecedented nature. The Chairman's (Bailie Russell's) explanation of the haste with which it had been called has already been given; and he added farther, this extraordinary reason for calling the meeting at a place so inconvenient for the New Town Wards:—"You are well aware that at most of the meetings that are held in the New Town of Edinburgh—the Broughton Ward among others—there is but a very scanty attendance, and it was thought that by combining three of the wards together—such as the Calton, Broughton, and Canongate—we should have a full meeting. I regret to say that it is not exactly full yet, but I hope ere yet there will be a full attendance." In point of fact there were scarcely any ratepayers present from either Calton or Broughton Wards. A motion for adjournment was put to the vote, but the meeting decided to proceed by 93 votes to 75. A motion approving of the scheme was then proposed, which was met by an amendment recommending the action of the Town Council to be in the meantime restricted to the acquisition of the existing works. The Chairman declared the motion for approval of the scheme carried. Considering the circumstances in which the meeting was called—the inconvenience of the place of meeting—the paucity of the attendance, and the very decided opposition manifested even among the small number present—to represent the resolution of this meeting as expressing the opinion of each of the wards, or even of the community of the three wards, is simply nonsense.

The next meeting, held on the same 22nd February, comprised George Square, St Leonard's, and Newington wards. Newington was the only dangerous ward here, and therefore the meeting was made as far away from it as possible, Bailie Cousin and Mr Colston, two of the representatives of the ward, approving. In point of fact the meeting was not held in the district at all, having been held in Brighton Street chapel, in St Giles' Ward. The whole breadth of George Square ward was interposed between it and Newington ward; but it was very conveniently situated for George Square and St Leonard's wards. Councillor David Lewis seems to have taken care to have a good contingent from St Leonard's ward present, for the area of the chapel is said to have been well filled. The aggregate number of electors in George Square and St Leonard's wards exceeded 4000, while those in

Newington ward were little over 1600. Newington ward was therefore completely swamped. This meeting was protested against by Councillor Muirhead, one of the representatives of Newington ward, as irregular and unprecedented. Bailie Cousin and Councillor David Lewis addressed the meeting at great length, both urging the adoption of the whole scheme, and scouting the idea of any objection to it, on any ground whatever, being well founded. As might have been expected, a motion approving of the scheme was carried, said to be almost unanimously.

The meetings of the wards of St George's, St Giles', and St Cuthbert's followed on 23rd February. St George's was the dangerous ward, with not 800 electors; but it was swamped by St Giles' with 1500; St Cuthbert's with upwards of 3000 electors being, if not favourable, at least fairly divided. The meeting too was held in the Corn Exchange, Grassmarket, the most favourable possible place for a large attendance from St Giles' and St Cuthbert's wards, and the most unsuitable for St George's. It was also protested against by electors of St George's ward, both on account of the locality in which it was held, and of the manner in which it had been called. Only about 600 persons were present, and the principal speakers were Councillor Romans and Bailie Cousin, neither of whom were electors in any of the wards, and Councillor David Lewis, who though an elector in St Giles' ward, was one of the representatives of St Leonard's ward, and had taken his part in the meeting of the group or district of which it formed part. A resolution in favour of the introduction of St Mary's Loch water was, as might have been expected, carried without any amendment having been moved.

The last meeting, held on 24th February, comprised the remaining four New Town wards, viz., St Bernard's, St Stephen's, St Luke's, and St Andrew's. That meeting, like the others, was protested against, on the ground that separate ward meetings were the proper mode of ascertaining the opinions of the ratepayers. Great diversity of opinion was expressed at the meeting, which was said to consist of about 700 or 800 persons, and various divisions took place. The ultimate division was between a motion approving of the St Mary's Loch scheme and an amendment that farther information was necessary to enable the meeting to express any opinion on the scheme. The Lord Provost (Chambers) who was in the chair decided that the motion was carried; but his decision was challenged at the time, and the *Scotsman's* report bears that "the vote seemed very close."

The practical effect of these meetings is well given in the following extracts from a leading article in the *Scotsman* of 25th February 1869:—"The farce of taking the opinion of 40,000 ratepayers on the Edinburgh 'Water Question,' by means of meetings called by surprise, has of course been played out, or nearly played out, to the desired *dénoûment*. Only the merest fraction of the persons concerned attended the meetings, probably indeed only a small proportion knew anything of the matter till all was over; the majority at those meetings were

whipped up by peripatetic Town Council orators, (some of them, scandal says, Town Council expectants) ; and having listened to strings of wild mis-statements, and having for the most part refused to listen to replies, solemnly decided sundry great questions of engineering and finance. The Lord Provost, though at the head of the majority, urged on Thursday that voting billets should be sent out to the ratepayers,—“they would *thus* ascertain the real views of the constituency. But ‘the Committee’ knew better what was wanted, and how to get it.” “To see the absurdity of accepting the late meetings as representative of the ratepayers, or even of the electors, it is only necessary to glance at two or three figures. We are not aware that there is any means of obtaining the number of payers of water rate in each municipal ward taken separately ; but the total number is about 40,000, or about double the number of municipal electors, and after deducting about one fifth for Leith and Portobello, we shall take them as bearing about the same proportion to the municipal electors in each ward, a method, which, though not quite accurate in detail, must be substantially correct in the total. In the cluster, made up by the Town Council Committee, of the wards of George Square, St Leonard’s, and Newington, the number of municipal electors is about 5850 ; of water rate payers (say) 9360 ; the attendance of the meeting was 700. In Broughton, Calton, and Canongate, the electors are about 5200 ; the water rate payers 8320 ; the attendance was 200. In St George’s, St Giles’, and St Cuthbert’s, the electors are 4500 ; the water rate payers 7200 ; the attendance was 600. In these nine wards the totals are, municipal electors, 15,550 ; water rate payers, 24,880 ; attenders, 1500 ! Thus the manœuvre of the Town Council Committee obtained a response from one tenth part of the electors ; and one fourteenth part of the ratepayers. Add to that the facts that even those meetings of one in fourteen were very far from unanimous, and were composed in no small proportion of persons who are neither electors nor ratepayers, and the bubble blown by the Committee will be seen to be quite burst, as well as ridiculously small.” When that article was written, the meeting of the cluster of St Bernard’s, St Stephen’s, St Luke’s, and St Andrew’s wards had not been held. To continue the statement, the number of electors in these wards was about 4500 ; of water rate payers, 7200 ; of attenders, 700. When these numbers are added to the above totals, the proportions stated by the editor of the *Scotsman* remain unchanged.

As these meetings were attempted to be made a prominent part of the case for the promoters of the St Mary’s Loch Water Bill before the Committee of the House of Commons in 1871, the notice of them here has been somewhat detailed to save after reference ; and for the same reason a similar notice is necessary of some other meetings held about the same time.

During the progress of these district meetings, there had been on the 23rd of February, a meeting of the Town Council, at which the opponents of the scheme endeavoured to get the minutes of the previous meeting, in favour of it, disapproved of. The result was of course the approval of

the minutes, Bailie Cousin in particular being most emphatic in his support of the St Mary's Loch scheme, on every ground that could be urged, and as emphatic in his denunciation of every other scheme.

The discussion, however, at this meeting afforded the most remarkable illustration of the wild grounds on which the scheme was supported by the dominant majority, in an estimate of the expense of it, being the only one in detail ever made public before 1871, given by Councillor Romans, who, to add weight to it, stated that he had been practically engaged for twenty-five years in the construction and management of gas and water works, and that he had deemed it a duty he owed to the citizens to visit St Mary's Loch, and make up an estimate of the cost. He concluded his speech by giving the following as his estimate :—

The embankments at mouth of loch, Compensation reservoir on the Megget, and the tunnelling, open cutting, and culverts, are calculated for supplying and carrying 30,000,000 gallons daily ; the pipes ditto for 10,000,000 gallons daily ; but all exclusive of purchase of land and Parliamentary expenses :—

Embankment at loch, and compensation reservoir on Megget, . . .	£20,000
Open cutting from loch, 2200 yards long, 70,000 cubic yards, at 1s. 3d, . . .	4,475
Pitching bottom and sides of loch, 15 feet of broad surface, at 2s. per yard, . . .	1,100
Tunnel, 350 yards, at £9 per yard, 30 feet area, . . .	3,150
Built culvert, 880 yards, 7 feet area, at £4, 10s. per yard, . . .	3,960
Tunnel, 6456 yards, at £9 per yard, 30 feet area, . . .	58,104
Built culvert, 273 yards, 7 feet area, at £4, 10s. per yard, . . .	1,229
Built culvert, 847 yards, 7 feet area, at £4, 10s. per yard, . . .	3,812
Cast iron pipe, 36 inches diameter, 26,879 yards, at £3, 10s. per yard, . . .	94,076
Viaduct across the Tweed, about 10 feet above river, . . .	1,800
Tunnel north of Peebles, 7460 yards, at £9 per yard, 30 feet area, . . .	67,140
Tunnel to Blackwater, 417 yards, 30 feet area, at £9 per yard, . . .	3,753
Tunnel to the Esk, 450 yards, 30 feet area, at £9 per yard, . . .	4,050
Shafting tunnels over entire tunnelling—1000 yards, at £7, . . .	7,000
Viaduct over the Esk, 135 yards long, 90 feet above river, . . .	3,800
Built culvert from Esk to reservoir, 9347 yards at £4, 10s., . . .	44,312
Reservoir and all fitments complete at Straiton, . . .	10,000
Cast iron pipe, 30 inches diameter, to Minto Street, 5467 yards, at £3, . . .	16,491
Total Estimate, . . .	£348,162

It is not a little amusing to contrast this estimate with the detailed estimate of Mr Stewart, the engineer of the works, which he exhibited in Committee in 1871. Mr Stewart's estimate (given afterwards) was £457,325 ; but then it included a sum of £20,000 for land, way-leave and water, which item is not included in the estimate of Mr Romans. On the other hand, that of Mr Romans includes a reservoir on the Megget, estimated by Mr Stewart at £15,000, which is not included in Mr Stewart's £457,325. Taking this at £10,000 only—then for the sake of comparison £10,000 being withdrawn from the estimate of Mr Romans in respect of the Megget reservoir, and £20,000 from that of Mr Stewart in respect of way-leave, the difference between their respective estimates for the same work was £101,163 ! At that time the cost of the projected scheme was the only ground of controversy, the quality of the water not having been as yet properly tested ; and yet these were the data on which the Town Council took it upon them to promote so gigantic a scheme.

Mention has already been made of an intention on the part of the minority in the Town Council to call meetings of their own wards for the purpose of ascertaining the views of their constituents. Undeterred by the manœuvres of the Special Committee, many of them, in concert with some of the more fair-dealing of the majority, proceeded to carry their intentions into effect.

Thus, the three Councillors for St Stephen's Ward called a meeting of the ward, which was held on the 24th February, to consider the water question. About 170 persons attended, and adopted a resolution deprecating the action of the Town Council in promoting the St Mary's Loch Scheme without consulting the ratepayers. The resolution was passed almost unanimously, an amendment approving of the conduct of the Town Council having found only six supporters.

A mode was adopted of testing this expression of opinion, by supplying all the electors with schedules from a private but reliable source, which they were requested to return filled up with an expression of their opinions on the Town Council's scheme. As these were only private documents, the request to make the returns had not the same weight as an official requisition would have had. But yet the returns made showed 300 electors, representing a rental of £21,750 (average £72, 10s.) against the scheme; and 44 electors, representing a rental of £1987 (average £45), in favour of it. The result of the written returns therefore verified the resolution of the meeting; and, doubtless, similar results would have been obtained in almost every ward, had the same means been taken.

On 1st March, meetings of Broughton and St Luke's Wards, convened by the representatives of the wards, in compliance with requisitions, were held to consider the competing schemes for water supply. At the Broughton Ward meeting, there being about 200 present, a resolution was adopted by a majority of fully two to one, requesting the Magistrates and Council to withdraw their Bill, on the ground that the ratepayers had not had a sufficient opportunity of enquiring into and forming a judgment upon the competing schemes for increasing the water supply. In St Luke's Ward, there being also about 200 persons present, a resolution was adopted objecting to the St Mary's Loch scheme being proceeded with till further information should be received as to the water supply and distribution, but approving of the water supply being in the hands of a public trust directly elected by the ratepayers.

The mode in which the representatives of St Andrew's Ward dealt with their constituents, when required by a number of them to call a meeting, was somewhat peculiar. Unfortunately, as it appears, it was then, as now, represented by the Lord Provost. The last Provost, like the present, seems to have been imbued with the idea that such a high functionary was above his constituents, and represented only his own self-importance. But while the ideas of both in this respect appear to have been similar, Lord Provost Chambers had more decorum in his mode of showing it. No doubt his lordship had gone to London before

the requisition to call the meeting was got up ; but the way in which, before he left Edinburgh, he, as Provost, treated a requisition by a deputation of citizens, to be immediately noticed, justifies the conclusion that he would have refused to call a meeting of his own ward. As for Councillor Mossman, his idea of his own importance, as representative of the ward, was much the same in 1869 as it is now, and on that occasion was shown in the same way, viz., by treating with contempt a requisition of his constituents to call a public meeting to ascertain the opinion of the ward on the water question, and refusing to meet them. The Lord Provost being absent, Councillor Blackadder who was then, in the interest of the Water Company, or more probably in his own interest, opposed to the scheme, called the meeting in his own name alone. The meeting was held on 2nd March, but was attended by only about fifty persons. A resolution was adopted almost unanimously, only five hands being held up against it, declaring that the St Mary's Loch Scheme was far in excess of the requirements of the community, and that if carried out, it would create a great and unnecessary addition to the present excessive taxation of the city. It was also agreed to request the representatives of the ward to oppose the further action of the Special Committee in promoting the scheme.

In Calton Ward, two of its representatives (Bailies Fyfe and Russell), chose to treat in the same way as Councillor Mossman, a requisition to them by a number of their constituents, to call a meeting of the ward to consider the Water Scheme ; and, as in the case of St Andrew's Ward, a meeting was called by the remaining representative, Councillor Methven. At the meeting held on 5th March, and attended by about 150 persons, a resolution precisely similar to that carried at the meeting of St Andrew's Ward, was unanimously adopted.

In St George's Ward, Bailie Skinner and Councillor Hope refused to meet their constituents when required to call a meeting, and in consequence a meeting was convened by Councillor Richard Wilson, and held on 8th March. The attendance is not stated in the newspaper report. A resolution was adopted almost unanimously, only three hands being held up against it, condemning the St Mary's Loch Scheme, and requesting the representatives of the ward to oppose further action in the matter.

In Newington Ward, Bailie Cousin refused to concur with his colleagues in calling a meeting of the Ward, or to attend the meeting when it was called by Councillors Muirhead and Colston. It was held on 8th March, and was attended by about 200 persons. A motion was submitted disapproving of the scheme ; and also an amendment approving of the action of the Town Council, and recommending the prosecution of the Bill. On a division the amendment was adopted by 76 votes to 73. This was the only ward meeting at which the St Mary's Loch Scheme was approved of, the majority in favour of it being however only three.

In St Bernard's Ward a large meeting assembled, on 8th March, on

the invitation of the three representatives. Bailie Cousin, though he refused to call a meeting or to meet his constituents in his own ward, chose to present himself as a ratepayer in the ward, the hour of meeting in which was the same as in his own; and he favoured those present with a long speech in favour of the scheme which the Town Council, and he as an active member thereof, were promoting. Two motions were submitted to the meeting, one "That this meeting approve of the scheme proposed by the Town Council," and the other, in favour of a public trust, but "that all proceedings, either for St Mary's Loch or any other scheme, be delayed till this" (that is the transfer to a public trust) "be effected, and fuller information on the entire question be laid before the public for their consideration." On a vote, the last motion, demanding farther information, was carried by an immense majority.

The result of these ward meetings completely reversed the apparent sanction of two of the grouped district meetings which the Town Council had contrived to obtain in the manner already mentioned. Thus, in the group of Calton, Broughton, and Canongate Wards, the two wards of Calton and Broughton severally held meetings, the aggregate attendance at which was nearly double that of the combined district meeting, and each ward decidedly condemned the scheme, leaving only the Canongate Ward to be presumed (for there was no ward meeting) to be in favour of it. And in the group of St Bernard's, St Stephen's, St Luke's, and St Andrew's Wards, each ward, in its own separate meeting, declared emphatically against the scheme, the gross numbers present and voting far exceeding the attendance at the district meeting.

In regard to the remaining two districts,—in the group alone of George Square, St Leonard's, and Newington Wards was the *status quo* maintained, there having been only one ward, viz., Newington, in which a meeting was held; in it the scheme was approved of by a majority of three. The representatives of the other two wards were either active supporters of the scheme, or were at least not opposed to it, and were satisfied to allow things to remain as they were. In the remaining group of St Giles', St Cuthbert's, and St George's Wards, there was only one meeting held, viz. in St George's, where a decided condemnation of the scheme was pronounced. The three representatives of St Giles' Ward were all ardent supporters of the Town Council's scheme, and took care to give no facilities for reversing the resolution of the district meeting which they had obtained. They were challenged by a ratepayer in the ward, in a letter in the *Scotsman* of 9th March, to redeem a pledge said to have been given by them at the ward meeting before the preceding election, to call a meeting of the ward to consider the water question. They did not answer the challenge, and on examining the report of the meeting in the newspaper, it is found to be very short and condensed, and not to mention the pledge referred to. At that time, however, the general Parliamentary elections were in progress, in consequence of which everything

of a local nature was cut down to the smallest possible dimensions, and very probably the promise in question was omitted to be published.

In the most favourable view, therefore, for the Town Council, it is impossible to extract from these meetings as a whole, any evidence indicating that the St Mary's Loch Scheme had the support of any considerable body of the inhabitants.

Before leaving the subject of these meetings there is another circumstance connected with them, which, as Lord Provost Chambers was not merely the principal performer, but performed a somewhat singular part, must receive some notice.

The promotion of the St Mary's Loch Water Scheme by the Town Council in the high-handed way which has been detailed, had roused the opposition of a considerable body of the ratepayers; and in the course of the spring they had formed themselves into a body termed the "Edinburgh Ratepayers' Association," for the purpose, among others, of preventing the adoption of all schemes which should appear ill-advised and extravagant. This association had a meeting on 24th February 1869, at which both the scheme and the way in which it had been promoted were denounced, and the following resolution was passed:—"That this meeting resolve that the Lord Provost be requested to call a public meeting of the ratepayers to consider the question of the water supply, and appoint the committee to wait upon the Lord Provost to make this request." That this was a meeting whose resolutions were entitled to, at least, polite consideration on the part of the Lord Provost, will be at once evident, on reading the following names, from the public report of the meeting, of the gentlemen who took part in it, viz., Major Crombie, late of the 72nd regiment, (chairman); Mr William F. Kay, wine merchant; Mr James Tod, advocate; Dr Winchester; Mr Robert Bryson, watchmaker; Mr G. H. Girle; Mr Robert Lee, advocate; Mr George Robertson, W.S., and others.

A deputation from the meeting, comprising some of the above gentlemen and others, waited upon his Lordship the same day, and in order to avoid all possibility of a charge of exaggeration, the following account of the interview is taken from his Lordship's own evidence before the Committee of the House of Lords, on 30th June 1869, in the question between the Town Council and the Water Company as to the transfer of the works to a public trust, in which certain ratepayers appeared and opposed the transfer.

In the course of cross-examination by Mr Will, on the part of these ratepayers, and after the subject of the district meetings had been touched upon, his Lordship proceeded to say farther in cross-examination:—

267. After those ward meetings, did not a deputation of the citizens of Edinburgh wait upon you to ask you to call a public meeting? Not of the citizens; there was a number of persons calling themselves ratepayers.

268. They were none the worse for that, I suppose; did they complain to you that those ward meetings did not correctly represent the sentiments of the public in Edinburgh? I do not remember exactly the date of their calling upon me, whether it was before or after the meetings.

269. But did they not represent to you that the ward meetings did not correctly represent the feeling of the public of Edinburgh, and did they not in consequence ask you to call a public meeting? I have no recollection of their saying that to me, but I most distinctly refused to call a public meeting at their request, because I thought that they were not entitled to do so.

270. You refused to call a public meeting? I did so, and I would do it again.

271. Do you think that it is right? Yes, I think it is right. I will explain that I think it is the duty of the Lord Provost of Edinburgh, or any chief Magistrate, to call a meeting of the inhabitants on getting a proper requisition from the ratepayers, from the inhabitants, and from a respectable body, but not to call a meeting at the request of a society which resembles a private club. I think that would be quite improper, and that I should be committing a dereliction of office to do so.

272. I never mentioned any club. I asked you whether a number of gentlemen among the Edinburgh ratepayers did not attend upon you? Yes, but those ratepayers assumed the position of a private society.

273. It does not signify what they were. Were they ratepayers? Well, I suppose they were.

274. Have you any doubt upon the subject? I should think there ought to be no doubt. They were persons well dressed.

276. Were not those people who attended upon you Colonel Wellwood, Major Crombie, Mr Robertson, W.S., Mr James Tod, Ex-councillor Girle, and Mr Douglas, Chartered Accountant? Yes.

277. Have you any doubt that those persons were ratepayers? I have no actual evidence that they were, but I have no doubt that they were.

278. And you refused to call a public meeting? Decidedly.

The pragmatism of the Provost, his lofty contempt for every person not, in his opinion, coming up to his own standard, and his reluctance to tell anything, even the plainest facts, which might throw doubt on the propriety of his conduct, are so exquisitely painted by himself in the foregoing passages, that comment would only spoil their effect.

But while the Corporation and its members were playing such antics in Edinburgh, the St Mary's Loch Scheme, which was the object of all their anxious manœuvring, was fast drifting to shipwreck in London.

Long previous to these meetings, the Water Company had lodged a Memorial in Parliament, urging that the plans which had been deposited, shewing the contemplated works, were defective at St Mary's Loch, in certain details required by the Standing Orders of Parliament to be shewn, and that this non-compliance with these orders was fatal to the Bill. No notice of these objections had been taken in the various statements issued, and communications made by the Corporation to the ratepayers; possibly, because in the confidence of ignorance, the promoters of the Bill treated them lightly, or, as possibly, because the knowledge of alleged defects in their pet scheme might increase the opposition to it. But, be that as it may, the citizens were not a little surprised on the morning of the 10th of March, to learn in the newspapers that the Select Committee of the House of Lords on Standing Orders had resolved that the Bill ought not to be allowed to proceed.

The grounds on which their Lordships proceeded were, as stated in the report of the Examiner on Standing Orders, that these orders had not been complied with, inasmuch as the deposited plan did not shew the line or situation of the whole of the proposed work. The section

shewed that a cut was to be made into St Mary's Loch, and extending into the loch for a distance of ninety yards from a point marked on the plan "aqueduct commences." But the plan deposited did not describe the line or situation of the said cut, and did not shew any centre line corresponding to the line shewn on the section as extending from that point to the loch.

Divested of all technicality, the fatal objection was that the line of aqueduct, as laid down in the plan, stopped some ninety yards short of the loch, though the section shewed that the gap had been intended to be filled up. Probably, when the plan was drawn, the precise point at which the cut was to enter the loch had not been determined on, and when it had been determined on, if indeed any determination had ever been made, it had been forgotten to lay it down on the plan. As the matter stood, these ninety yards lay an insuperable barrier between the loch and the works.

This decision was a very awkward one for the promoters. It might have been very questionable, and subsequent events have shewn that it would have been very far beyond questionable, whether the promoters of the rejected Bill could have charged the Corporation funds with the expense of promoting it; and so to save their pockets they resorted to the device of now confining their scheme to a mere transfer of the existing works to the Corporations; thus falling back in desperation on what many of the ratepayers—who were not opposed to the transfer of the works, but were determinedly opposed to the St Mary's Loch scheme—had unsuccessfully urged upon them long before. It was a bitter pill to swallow, to be compelled to adopt a course which they had scouted formerly. But it is wonderful what self-interest will do; and so, under the pressure of necessity, the Corporations resolved to promote, as an independent measure, the transfer of the works alone, as to which, in their opening report of 24th October 1868, the Special Committee had said, "It would be exceedingly dangerous to saddle the three communities with the existing works of the company, which are manifestly insufficient to provide the required quantity of water, unless they were at the same time ensured that they would get powers to bring in an independent supply, which is absolutely indispensable." What was then in the view of the Special Committee, was the danger to the public; but this became a very small affair when it came to clash with the danger to the pockets of the individual promoters.

They did not, however, give up their pet scheme without another effort to revive it. They applied to the House of Lords to have the Bill recommitted, on the ground that the clauses for creating a Water Trust and getting the works transferred from the Company to that body, were entirely independent of the St Mary's Loch portion of the Bill, and that the Bill ought to be allowed to proceed as to that independent portion of it. On that footing the Bill was allowed, on the motion of Lord Redesdale, the Chairman of Committees, to be sent back to the Special Committee. When it afterwards came before the

Committee, an attempt was made to induce them to review their former decision, as to the non-compliance with the Standing Orders in reference to the St Mary's Loch scheme, on the pretext that since that decision they had got the consent of Lord Napier to their inserting in the plan the line of aqueduct onwards to the loch, he being, they said, the sole owner of the ground through which the omitted portion of the aqueduct should have been shewn to proceed. But the Committee refused to re-hear this question; and on being satisfied that the clauses for the creation of the trust and transfer of the works, were separable from the clauses to which the objection of non-compliance applied, they, on 16th March allowed the Bill to proceed, on the clauses relating to the proposed new works being struck out.

As so restricted the Bill was introduced, and ultimately passed. By it the Edinburgh and District Water Trust was created, and the works of the Water Company were transferred to the trust, the transfer to take effect at 15th May 1870.

So closed the contest of 1869, in so far as the St Mary's Loch scheme was concerned.

## CHAPTER IV.

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### THE PARLIAMENTARY CONTEST IN 1871.

#### 1. THE PROCEEDINGS OF THE TRUSTEES IN PROMOTING THEIR BILL.

“THE Edinburgh and District Waterworks Act, 1869,” received the Royal Assent on 26th July 1869. By it the Provosts of the three burghs of Edinburgh, Leith, and Portobello, with seventeen persons to be elected by the Corporation of Edinburgh, four by the Corporation of Leith, and one by the Corporation of Portobello—twenty-five in all, were appointed trustees, and erected into a corporate body by the name and style of “The Edinburgh and District Water Trustees,” for the purpose of carrying the Act into execution. The Act provided that on 15th May 1870 the undertaking of the Edinburgh Water Company should be vested in the trustees, with all the powers, rights and privileges of the Company, and subject to all their obligations.

Before proceeding with the history of the transactions which led up to the Bill of 1871, it is essential to advert to the ideas which the trustees entertained of the powers which were vested in them by the Act, without in the meantime considering whether these ideas were right or wrong, because, without having these definitely in view, it is impossible to understand and account for the extraordinary and high-handed proceedings they afterwards adopted.

To make the position assumed by the trustees intelligible, it is requisite first to explain the nature of the obligations under which they asserted they lay, and the penalties to which they said they were exposed, because, as they alleged, the necessity of fulfilling these obligations, and avoiding these penalties created the inevitable presumption that the Act which imposed these obligations and exposed them to penalties, gave them powers to do what was necessary to fulfil the one and avoid the other.

#### (1.) *The supposed Obligations in reference to supplying water.*

The preamble of the Act of 1869 states that it is expedient that the

*supply of water* to the City of Edinburgh, town and port of Leith, town of Portobello, and places adjacent, *should be provided by* and placed under the management of the trustees.

The Act incorporates "The Waterworks Clauses Acts 1847 and 1863," with certain exceptions—one of the incorporated provisions being the 35th section of the general Water Works Act of 1847, in the following terms :—

The undertakers shall provide and keep in the pipes to be laid down by them a supply of pure and wholesome water, sufficient for the domestic use of all the inhabitants of the town or district within the limits of the special Act, who, as herein after provided, shall be entitled to demand a supply, and shall be willing to pay water rate for the same ; and such supply shall be constantly laid on at such a pressure as will make the water reach the top storey of the highest houses within the said limits, unless it be provided by the special Act that the water to be supplied by the undertakers need not be constantly laid on under pressure ; and the undertakers shall cause pipes to be laid down, and water to be brought to every part of the town or district within the limits of the special Act, whereunto they shall be required by so many owners or occupiers of houses in that part of the town or district, as that the aggregate amount of water rate payable by them annually at the rates specified in the special Act shall not be less than one-tenth part of the expense of providing and laying down such pipes ; provided that no such requisition shall be binding on the undertakers, unless such owners or occupiers shall severally execute an agreement binding themselves to take such supply of water for three successive years at least.

Subsequent clauses of the same Act require all pipes to which any fire plug shall be fixed, to be kept constantly charged, unless prevented by frost, unusual drought and other unavoidable accident, or during necessary repairs, with a sufficient supply of water for cleansing the sewers or drains, cleansing and watering the streets, supplying public pumps, baths, or washhouses that may be established for the free use of the inhabitants, or paid for out of any poor or borough rates, and for extinguishing fires.

The whole of these obligations and duties, however, are qualified in their application to the Edinburgh and District Water Trust, by the 4th section of their special Act of 1869, which contains the following proviso :—

Provided always that the trustees shall not be bound to have the water constantly laid on under pressure, and that no penalty under the said incorporated Acts in respect of the supply, shall attach to the trustees for a period of five years from the vesting of the undertaking in the trustees under this Act.

## (2.) *The supposed Penalties.*

These are contained in two sections of the General Waterworks Act of 1847.

§ 36. If for twenty-eight days after demand in writing made to the undertakers, and tender made of an agreement signed by such number of owners or occupiers as aforesaid, to take and pay for a supply of water for three years or more, the undertakers shall refuse or neglect to lay down pipes in the manner herein before directed, and to provide such supply of water as aforesaid, or as provided by the special Act, they shall forfeit to each of such owners and occupiers, the amount of rate which he would be liable to pay under such agreement, and also the further sum of forty shillings for every day during which they shall refuse or neglect to lay down such pipes, or to provide such supply of water : Provided always that the undertakers shall not be liable to any penalty for not supplying water, if the want of such

supply shall arise from frost, unusual drought, or other unavoidable cause or accident.

§ 43. If, except when prevented as aforesaid, the undertakers neglect or refuse to fix, maintain, or repair such fire plugs, or to furnish to the Town Commissioners a sufficient supply of water for the public purposes aforesaid, upon such terms as shall have been agreed on or settled as aforesaid; or if, except as aforesaid, they neglect to keep their pipes charged under such pressure as aforesaid, or neglect or refuse to furnish to any owner or occupier entitled under this or the special Act to receive a supply of water during any part of the time for which the rates for such supply have been paid or tendered, they shall be liable to a penalty of ten pounds, and shall also forfeit to the Town Commissioners, and to every person having paid or tendered the rate, the sum of forty shillings for every day during which such refusal or neglect shall continue, after notice in writing shall have been given to the undertakers of the want of supply.

On referring to the terms of the proviso in the 4th section of the special Act of 1869, above quoted, it will be seen that it postpones the application of these penalty clauses to the Edinburgh and District Water Trust for five years from the vesting of the Water Company's undertaking in the trustees, *i.e.*, five years from 15th May 1870.

### (3.) *Their supposed Powers.*

An exposition of the views taken by the trustees of their obligations, liabilities and powers, under the Acts referred to, was furnished by Councillor Archibald of Leith, in a letter which he published in the *Daily Review* of 31st August 1871. As he is simply a practical baker, though probably a man of great skill in his trade, his views of the legal obligations and rights of the trustees are entitled to about the same weight as those of the writer would have on the practice of baking; still as Mr Archibald was a prominent promoter of the Act of 1869, and has been, ever since it came into operation, one of the elected trustees by the Corporation of Leith, his views are referred to here as showing what powers the promoters of the Act of 1869 intended to get, and what powers the trustees acting under it conceived they had got, over the rates and sums authorised to be raised. What powers they really did get were the subject of judicial decision afterwards, all remarks as to which will be deferred till the proper time. At present it is enough to ascertain the views under which the trustees promoted the Bill of 1871.

The fatal hallucination that pervaded the minds of the trustees was, that the proviso, already quoted, in the special Act of 1869, that they should not be bound to have the water constantly on under pressure, or be liable to penalties in default thereof, for five years from 15th May 1870, made it imperative upon the trustees to provide water sufficient to supply all the inhabitants within the district, on the principle of constant service, from and after Whitsunday 1875, and that under heavy penalties. It does not seem to be asserted that the words of the Act by themselves bear that meaning; but the trustees arrived at it by inference, derived from the circumstance that the clause was differently expressed when it passed the House of Commons, and that the Committee of the House of Lords altered its terms in such a way that they were entitled to assume that *it was intended* to impose an

imperative obligation on the trustees to the effect stated. Common sense ought to have made the trustees conscious, without the aid of any legal advice, that as they derived all their powers from the Act of 1869, that Act, including the clauses of other Acts incorporated with and made part of it, could alone be looked at for the obligations and liabilities imposed on them. This cardinal error of the trustees was the source of all their troubles. If there was no obligation imposed on them to prospect for and bring in additional supplies of water at the expense of the rates and monies authorised to be raised by them, there could have been no breach of obligation by not providing more water than their existing works could afford, and of course no liability to penalties. Had they been properly advised as to their position, it cannot be believed that the more sensible and independent of them, who were beyond the suspicion of having personal objects of any kind to serve, would at their own personal risk have promoted the scheme of 1871 in defiance of their constituents, and courted the humiliating defeat which they sustained.

(4.) *What they did in consequence.*

Resuming the narrative, the first thing to be done to bring the Act into operation was for the three corporations each to elect their appointed number of trustees, which they were directed to do not later than the third Tuesday after the passing of the Act, who should continue in office till the third Tuesday in November following, on which day in each year thereafter a new election of the whole trust (excepting, of course, the three Provosts, who are members *ex officio*) should take place.

The Town Council of Edinburgh met for this purpose on 3rd August 1869. To appreciate precisely what took place then, it must be borne in mind, in the *first* place, that Lord Provost Chambers, whatever might have been his high estimation of himself, and consequent under-estimation of the opinions of others, was a man of high notions of honour, and incapable of any act, public or private, except what he should believe to be fair and proper in its truest sense. He therefore proposed that in the election of trustees, as there was no obligation to confine their choice to members of the Town Council, they should not proceed on any fixed rule as to selecting the whole or any fixed number of the trustees from the Council, but should take the best men wherever they could be found; and he proposed that in the election in hand, twelve persons (including himself, though *ex officio* a member) should be taken from the Corporation, and six from outside of that body. This proposal encountered a perfect storm of opposition, Councillor David Lewis, now become a Bailie, even going the length of saying, in the wildest spirit of gasconade, that he "believed that, at present, the Council consisted of a class of men that, for business habits, social position, integrity of purpose, and public spirit, was never excelled in any age in connection with the city. He believed that, taking man for man, there never was a

Council that more thoroughly possessed the popular confidence, and, therefore, he was prepared to abide the consequences of having all the seventeen trustees elected from the Corporation. Those imported from outside might be gentlemen of great talent and social position, but they had not the evidence which each Councillor had, that they possessed the confidence of the community." Perhaps this line of conduct, and much of the over-bearing and head-strong behaviour of the dominant majority, was due to what must be borne in mind in the *second* place, viz. : that the Corporation had fallen into the cardinal error of supposing, as already mentioned, that they and their Water Trustees were independent of the ratepayers in promoting new schemes of water supply, by having it in their power to use for that purpose the rates and monies to be levied and raised under the Act of 1869.

To keep the control of the Water Trust absolutely in the hands of the more extreme of those who had devised and carried through the Act of 1869, but in plausible terms that like the cat's velvet paw concealed the claw within, and carried the votes of some trusting Councillors who had suspected no guile, Bailie Fyfe proposed a list of seventeen persons for trustees, fifteen of whom were members of Council, and all, with one exception (Convener Field,) had been earnest supporters of the St Mary's Loch scheme, and two gentlemen out of the Council, viz. : Mr T. J. Boyd, Master of the Merchant Company, who had never declared himself for or against the scheme, and Mr Josiah Livingston, Chairman of the Chamber of Commerce, an avowed partisan of it. Thus all except two were declared partisans of the St Mary's Loch scheme.

The Provost, who, from the manner in which his proposal as to the composition of the trust had been received, saw that there was no hope of carrying it, then proposed for appointment another list composed of eight of the same members of Council, including Convener Field, and seven other members of Council, who were understood to be less of partisans of any particular scheme than those for whom they were intended to be substituted,—the other two proposed being Mr Boyd, who was in the other list, and Mr George Harrison, the late Chairman of the Chamber of Commerce, who was uncommitted to any scheme of water supply, instead of Mr Livingston.

The Council went to the vote on these lists—one being a list of (with two exceptions) declared partisans of the St Mary's Loch scheme, and the other (the Lord Provost's) being a list as nearly impartial as the determination of making the selection almost entirely from the Town Council would permit. Bailie Fyfe's partisan list was carried by the large majority of 24 to 5, five members declining to vote. The composition of the trust thus afforded a very strong ground for presuming that the promotion of the St Mary's Loch scheme was, notwithstanding of all the previous professions of the Town Councillors, a foregone conclusion in the minds of the majority of them, and more especially of nearly all the members of the Water Trust whom they had elected.

The Lord Provost felt deeply that the high-handed mode in which his proposal to get a fair and impartial Water Trust selected had been set aside, indicated such a spirit of determined partisanship that he declined longer to occupy the dignified office which he held; and he intimated by a statement by him read by the Town Clerk at the next meeting of the Town Council, on 17th August 1869, his intention of resigning his seat in the Council, and his office of Lord Provost in the following month of November. The following are extracts from that document:—

I have a statement to make to which I invite your attention. The time has come when, both as regards my duty to the city and to myself, I ought to intimate my design to retire from the Council, and likewise from the office of Lord Provost at the close of the present civic year in November. I therefore now make this announcement in order to afford ample time for you to look out for a fitting successor.

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With health impaired by assiduous official labours, I sought restoration by a residence of a few months abroad in a southern climate last winter. Returning home in February I found the united Corporations of Edinburgh, Leith, and Portobello, engaged in promoting the progress of a bill in Parliament which had for its object the bringing in of an additional supply of water to the respective towns, and of taking over the undertaking of the Water Company by a public and municipally constituted trust. Frankly embracing the principle that water, as a prime necessary of existence, should be supplied in abundance by those constituted authorities who are charged with the duty of superintending sanitary arrangements, and that it ought in no case to be made a matter of commercial speculation, I gave such assistance as was in my power to the promoters of the bill. Whether, as some may be disposed to think, I was wrong in so doing, I can at least say that the broad principle which I advocated has been recognised and confirmed as the right one by the impressive report of the Royal Commission on Metropolitan Water Supply, of which the Duke of Richmond is chairman. What part I took in carrying through the bill in its abridged form, until it became an Act of Parliament, I refrain from mentioning. I only speak of the subject at all, because it is intimately associated with the circumstances which have quickened my resolution to retire from office. Seeing that the legislature had imposed on me as Lord Provost the obligation of acting as *ex officio* chairman of the trust, in which capacity I was to be responsible in some degree for conducting the financial negotiations requisite to bring the Act into practical and satisfactory operation, I did not think it unreasonable that I should have had something to say as regards the selection of Trustees who were to act along with me in perfecting a measure of so much gravity. My attempts in that direction, as you are aware, while designed to inspire public confidence, were at once set aside. A list of nominees from the Corporation of Edinburgh, prepared without my knowledge, and in which I could scarcely be expected to concur, was carried by such a conclusive majority as to leave room for neither hesitation nor debate. Of this I make no complaint. The Council is quite entitled to adopt its own course; but it is equally obvious that I could not with any feeling of self respect sit down complacently under the decision arrived at on the subject. Had a means been devised to facilitate my wish to retire from office, and save me from the additional toil and anxiety which will now fall to the lot of the Chief Magistrate, it could not have proved more opportune or effectual. Only one course is open to me, and that is to take the first reasonable opportunity of relinquishing the position which I at present occupy. I cannot, in arriving at this conclusion, regret that I should have contributed to the promotion of a measure which is very much the complement of the City Improvement Act, 1867, being designed as it is, to ensure that justice, as far as practicable, shall be done to all classes, rich and poor, in the matter of water supply. At the sametime, I am not blind to the fact that all must depend on the temper, discretion, and self-denial with which the measure happens to be administered, and it is important to add that in what is so plainly a piece of business, political partisanship must be deemed entirely and dangerously out of place. In some of these respects, I fear the first step taken by the Corporation to set the Act on foot has been unfortunate, and far from likely to command general favour, or to avert opposition, should any ulterior effort in legislation be made to increase the water

supply from new sources. To this, however, as in other cities, the citizens must look. I have selected to retire to the privacy from which I was drawn in 1865. The resolution so abruptly forced upon me while I was otherwise meditating retirement, is probably expected within, as well as outside the Council.

If the citizens had formerly reason to suspect that the new Water Trust was not launched in circumstances to recommend it as a fair and impartial body, the fact of, and reason for, the Lord Provost's retirement were not calculated to remove the unfavourable impression already made; and this suspicion soon bore fruit in the refusal of Mr Boyd to act as a trustee, in consequence of which the Town Council, thus refused countenance from without, had to fill up the vacancy from their own ranks; but taught caution at least, if not wisdom, by this rebuff, they selected Councillor John Wilson, who as yet had stood neutral.

The Water Trust commenced with a profession that they were to start altogether unbiassed in reference to the quantity of water that was required, and the source from which additional supplies could best be obtained. They had seen that the Town Council, in promoting the St Mary's Loch scheme previously, had committed a blunder in stating that their programme was to be the introduction, not of an additional, but of a *more abundant* supply; implying that the existing sources of supply of a water not to be surpassed were to be abandoned altogether. The trust therefore lulled the former suspicions to rest by stating their programme to be merely (with what truth will be afterwards seen) for an additional supply, corresponding to what should be required after checking preventable waste. Accordingly, they, on 8th September 1869, made a remit to a Committee, termed the Works Committee, in the following terms, the authorship of which is proved by the high sounding adjectives with which the first sentence is seasoned:—

That as it has now been proved by incontestable evidence that the present water supply is utterly inadequate to meet the wants of the communities of Edinburgh, Leith, and Portobello; it be remitted to the Works Committee—*First*, To adopt measures to ascertain, as far as possible, to what extent there is unnecessary and preventable waste of water, and how far the present supply can be most equitably and advantageously distributed; and *Second*, To take steps to ascertain where an additional supply, to meet the increasing wants of the communities, may best be obtained; with power to obtain such professional assistance as may be necessary for the above purposes, it being understood that no Bill shall be lodged in Parliament until a full report of the results of the foregoing inquiries shall have been submitted; and farther, that no engineering or parliamentary expenses in connection with any scheme shall be incurred until those already contracted shall have been ascertained.

The first purpose of this remit, it will be observed, was to ascertain the preventable waste in the present supply, and how that supply was to be most advantageously distributed; and the next purpose was, on the ascertainment of these heads of inquiry, to inquire as to where an additional supply might be got. In short, the ostensible purpose of it was to ascertain waste and improve distribution, and *on these things being done*, to get what additional supply might then be needed.

Reading the remit by what was done, or rather by what was not done, it will be seen that it was used as a mere blind to cover the real

intention of its movers to promote the St Mary's Loch scheme. No report was ever made to the Works Committee, or by that Committee to the trust, on the subject of preventable waste, or improved distribution ; and so far the ratepayers could ascertain from the promoters of the St Mary's Loch scheme, and their witnesses in the contest shortly to be narrated, not one intelligible attempt was ever made to ascertain the one, or improve the other. The scheme was, undoubtedly, intended to be brought forward and promoted at the proper time, irrespective of whether there were waste or not ; and the remit to inquire, while the scheme was being secretly but deliberately matured, kept the citizens from being unduly inquisitive, and disturbing their preparations, until the mine was charged, and ready to be sprung.

Bailie Lewis, who was the author and mover of the remit, and was also the chairman of the Works Committee charged with the inquiry, seems to have been conscious that some appearance of an attempt was necessary to keep up the delusion that a *bona fide* inquiry into, and attempt at stopping waste was in progress ; so he got his Works Committee, on 28th July 1870, to request him, as convener, "to draw up a report as to the present supply, and the probability of that supply being continued." This report, which he presented on 9th August, contains the following passage,—“With the view of economizing the water and checking the waste, Mr Cameron was instructed to employ several inspectors. They have been unremitting in their visitations of those parts of the city where the service during the day is kept up. This arrangement, it is satisfactory to say, has been attended with the most beneficial results.” This information being vague and unsatisfactory, he was asked, when under cross-examination before the Committee of the House of Commons, on 25th April 1871, as to what measures had been adopted to ascertain the extent of preventable waste. That he evaded and fenced with the inquiry may easily be understood, when it is explained that his examination on this subject alone extended over questions and answers from No. 376 to 409 of the official report of the evidence, when half a dozen questions with candid answers would have exhausted it. In substance, what was literally torn peace-meal from him, was, that he had directed the attention of Mr Stewart, the engineer, to the question—that Mr Stewart made no report, because he found it impossible to ascertain whether there was waste or not—that he next applied to Mr Gale of Glasgow, as a person of large experience, who made a report as to the causes of excess of the use of water in Scotland, but said nothing as to waste, except to commend it to attention—that in consequence, the Works Committee appointed four inspectors, practical plumbers,—and his examination on this head, closed with the following question by a member of Committee, and his answer :—

409. As a matter of fact, no report has been made by those inspectors as to the amount of waste ? I cannot speak positively whether they have or have not reported, but I have no doubt that Mr Cameron can speak very distinctly upon that head.

Bailie Lewis having thus rolled the burden from his own shoulders to those of Mr Cameron, let it now be seen what he said about the extent of waste. Not one word is to be found in his evidence from beginning to end about reports from inspectors or extent of preventable waste. All that he could say on the subject was as follows :—

2627. Has a thorough inspection of the whole district of supply been made since the works came into the hands of the trust? It has.

2628. About how many thousand houses have been visited? Upwards of 30,000.

2629. Has the apparatus in the different houses been examined? Very perfectly examined; I believe they were examined in each individual case.

2630. Are the apparatus now repaired? Yes, they have to a very large extent been repaired.

2631. Is the supply still found to be deficient? Yes, it is still deficient.

Mr Stewart, again, ran his head directly against Mr Cameron on the attempted prevention of waste, for he, without a single enquiry under the remit, came at once to the conclusion that there was no preventable waste in Edinburgh, whether the water fittings in the houses were good or bad! The following were his ideas on the subject, as given in evidence before the same Committee, and anything more exquisitely absurd and inconclusive can hardly be imagined :—

2934. Are you aware whether there has been great waste in Edinburgh? There is great waste, but it cannot be avoided.

2935. Do you not think that by a better system of plumbing, the waste might be avoided? No, I do not.

2936. What is your reason for saying that? It is the carelessness of the people.

2937. But do not you think that by certain penalties, and so on, people might be made more careful? You might attempt to educate the people, but it is a very difficult thing; in Glasgow they tried it and failed.

2938. Are you aware that in other places they have diminished the rate to an extraordinary degree, and economised the water supply? I have heard of such cases.

2939. But you do not believe in it? No.

2940. There is no peculiarity in Edinburgh but that they should be subject to the same process as other people? They are very fond of water.

2941. Do you consider that the waste of water is useful in a sanitary point of view? I do.

2942. That is to say that the trickling of the taps, and the water so finding its way into the sewers and drains, cleanses the drains? Yes; the aggregate of all these little tricklings soon becomes a considerable stream, and it then has a great effect upon the drains in keeping them clear. In fact it does keep them clear in many instances.

And, to crown all, it was in these circumstances that Bailie Lewis, with these two contradictory witnesses to fall back upon for support, took it upon himself to give the following extraordinary evidence in his examination already referred to,—the question having reference to the ascertainment and checking of waste :—

275. Has everything been done which, in your judgment, could have been done to answer such an object, and to obviate such a complaint? *Everything that human ingenuity could devise has, I think, been done to meet the complaints that were being urged against us in the prosecution of this undertaking.*

Either the ingenuity of Bailie Lewis was of very little public value, or otherwise the ascertainment and prevention of waste was a matter of no moment in reference to the scheme which had already fixed itself so firmly in his mind that nothing would be allowed to check

its promotion. But, unintelligible as this evidence is, the following *morceaux* from the same gentleman are even more outrageous :—

436. What is the present available supply (of water)? I do not profess to know up to the present date. I say that Mr Cameron will know, but as a director or member of the trust, I am not presumed to know until we have the report submitted, which has not been for the last month, or two months perhaps.

457. Are you, then, promoting this Bill without knowing what is the present available amount of water for distribution? *I do not think that the present amount of water supply at all affects my position as a promoter of this Bill.* I am here, after seven long years' experience, and I have stated, as I now state, that the difficulties are continually increasing, and altogether irrespective of the present supply we have had overwhelming evidence of the necessity of an increased supply under the present Bill.

If anything had really been done in the way of ascertaining the waste by defective fittings, and checking it, why was not proper evidence of it brought, viz., the inspectors who must have seen the defective fittings put into proper order? They did not execute the repairs, or receive from Mr Cameron any pay for doing them. The only witness who spoke about this was Mr Cameron, whose evidence was not worth the paper it is printed on, because he personally could know nothing about it, and had not even a report to refer to in support of what he said. If there had been any truth in the account of the labours of these inspectors, surely one of them might have been brought among the crowd of deputationists and hangers on who, day after day, thronged the Committee room, and been examined to verify Mr Cameron's statement. But probably their evidence, when brought to the test, would not have been worth more than that of the working men of square yard celebrity, afterwards brought as witnesses before the Lords' Committee.

But there is more in the matter of waste than this, even had all defective fittings been made right. Despite what Mr Stewart says, waste by mere carelessness in the use of water can both be ascertained and checked, and that very simply too. Last autumn, while the old water trustees were preparing to face the wards at the November elections, they considered it necessary to show some symptoms of an earnest desire to check waste, and so they instructed Mr Leslie, who had the experience which Mr Stewart lacked, to see what he could do to assist Mr Stewart in ascertaining and checking it. As a specimen of what he did, he first put the inhabitants of Jamaica Street upon supply by measurement, without calling their attention to it, and ascertained their consumption. He then got all the fittings in the street examined and put into order, and when the inhabitants were on their guard, knowing that their consumption was measured, the meter showed that consumption, as if by magic, diminished by nearly one-half, and every person fully supplied, their being no check on their use; so that in this street there was a large wanton waste of water, not caused by the objects of the vituperation of Bailie Lewis, namely, the citizens with large cisterns, but by a tradesman population occupying small houses, numbers of the very class of citizens whose sufferings for want of water, that veracious magistrate represented to be perfectly indescribable

(*Commons*, 119). Perhaps, after all, he was not wrong in strict literal accuracy, for what did not exist was certainly indescribable.

Even this, however, was not all in the matter of waste ; for there was much more demanding enquiry, the propriety of investigating which seems never to have entered the minds of either trustees or engineer. The principal mains through the city must have been laid about the year 1822, when the Crawley main was laid, or shortly afterwards. Cast iron pipes lying imbedded in the earth for half a century must have been much decayed, and their joinings must have become loosened and leaky by oxidation. Mr Stewart said (*Commons*, 2904) that the present supplies, if well managed, would give 28 gallons per head per day—that is to say, that quantity would be sent into the pipes at the reservoirs in the country. But the pressure to raise the water to the necessary heights for delivery must be considerable, and if the mains happen to be leaky, then much of the water must be wasted by leakage before reaching the points of delivery. Common sense might have dictated the propriety, nay the necessity of ascertaining whether the quantities of water delivered into the mains were not wasted by leakage in their transit. Yet strange to say, the idea of testing the state of the mains never seems to have occurred to Mr Stewart, for there is not one word in his evidence as to the state of these mains. The only information vouchsafed by the trustees was got from Provost Watt of Leith, and what he said only went to this, that he knew many of the mains were in a bad condition, and yet it never occurred to him to ascertain the waste from them. (917-922).

Having thus discussed the question of what was not done in reference to the ascertainment and checking of preventable waste, the other branch of the same enquiry, namely, improved distribution, may be disposed of in a few words. It was never taken into consideration at all, for there is not the slightest reference to it either in the reports to the Water Trust, or in the evidence of the promoters of the St Mary's Loch Water Bill. It may therefore be assumed that these heads of the remit by the trustees to the Works Committee on 8th September 1869 were a mere blind, never intended to be entered on at all ; and attention will now be directed to what was done in the enquiry as to the best source of new supply, as the only subject which was seriously intended to be reported on under the remit.

On 25th October 1869, the Works Committee published in the newspapers a report by them to the trust, dated the 20th, in reference to the sources of additional supply. The Pentlands they laid aside ; St Mary's Loch was spoken of in terms of high commendation ; the sources of the Tweed were said to deserve serious and favourable consideration ; and the Moorfoot and Heriot districts were spoken of favourably as to the quality of water, but doubtfully as to the quantity to be got. The report concluded with the following general observations :—

Having thus visited all the sources of additional supply which have been referred to as likely to be available, and reported the result of their independent observations,

the Committee feel that nothing more can be done under the *second* branch of the remit to them without further instruction from the trustees. The Committee have not entered upon any engineering details, or obtained any analysis of water. These must be left in the hands of competent professional men, by whose opinion and advice the trustees and the public must be guided. There are, however, some general considerations affecting the selection of sources of water supply, upon which the trustees and the public may form a judgment for themselves, and upon this the Committee may be permitted simply to indicate their opinion.

*First*, The supply to be obtained should be pure and wholesome, and otherwise well suited for domestic use.

*Second*, The supply should be drawn from a practically inexhaustible source affording facilities for obtaining additional supplies as the growing requirements of the communities demand, at comparatively moderate expense.

*Third*, Subject to these conditions, the element of expense should be kept steadily in view; and that scheme should be selected which can be carried through at the lowest possible cost.

*Fourth*, As far as as practicable, and having regard to the effect upon the quality of the water, as well as to the avoidance of risks, and the saving of the permanent costs of maintenance and management, a natural reservoir should be preferred to an artificial one.

The foregoing report, it will have been observed, has been confined exclusively to the *second* branch of the remit. The Committee have not been able as yet to deal with the *first* branch. Since the trust was constituted, Edinburgh, Leith, and Portobello have not possessed constant service. The supply has been intermittent, and many of the houses have been without water for days. In such circumstances, therefore, it would have been impossible to ascertain even approximately how much water leaks from defective house apparatus, or is otherwise wasted. The Committee are, therefore, compelled in the meantime, to delay dealing with the *first* branch of the remit.

Though this report, more especially in the 2nd and 4th general observations, indicates a palpable leaning to the St Mary's Loch scheme, and probably was so framed as cunningly to lead up to the adoption of it, the other observations, and particularly the reference to the public forming their own judgment, as an important element in the selection of a source, made the report appear so reasonable, as altogether to disarm any suspicions which the evident leanings in it on the part of the Works Committee might have aroused as to the St Mary's Loch scheme being a foregone conclusion with them.

From that date up to the end of October 1870, the citizens were left in the belief that the trustees were deliberately and carefully preparing the information which was to be submitted to them for the purpose of obtaining their approval of any proposed scheme before it should be promoted in Parliament; and therefore a very brief notice of what was doing during this period, is all that is required.

The first step of the trustees after publication of this report was skilfully adapted, if not intended, to foster this delusion of the citizens; for on 25th October 1869 they remitted back to the Works Committee to examine into and report upon the other parts of the original remit, viz., the ascertainment and prevention of waste, and the improvement of distribution, implying that the ascertainment of the facts as to them was absolutely necessary before coming to any conclusion as to new supplies.

What was done upon this was to instruct Mr Gale to ascertain the rainfall in the districts of St Mary's Loch and the Talla, and also to ascertain the flow of water in the Yarrow and Talla respectively, and

this inquiry seems to have mainly occupied them up to the time for taking over the works of the Water Company on 15th May 1870. What was done under this remit is of no great moment here, as from either source, with proper works, a sufficient quantity of water could be obtained, and as farther no comparative estimates of the cost of each scheme have ever been got.

Mr Gale was also instructed to report on "the present state of the ponds and reservoirs, and on the means by which the supply of water can be most economically and advantageously distributed." Now, in regard to this employment of Mr Gale, it cannot fail to strike the reader that a very important part of the first instruction to the Works Committee in the resolution of the trustees on 8th September 1869 is omitted, namely, "to adopt measures to ascertain, as far as possible, to what extent there is unnecessary and preventable waste of water;" and there is substituted for it something which, however necessary as a subject of independent inquiry, is scarcely, if at all, within the letter, and certainly not within the spirit of the trustees' instructions, which had reference, not to waste at the ponds and reservoirs, but to waste after the water had been delivered into the mains for conveyance to Edinburgh, and in distribution there. There can be little doubt now that this was just a mode of shunting into a siding, an inquiry which was never intended to go farther.

Mr Gale reported under this last instruction, on 16th May 1870. The following is the commencement of his report addressed to the trustees:—

In the prospect of your coming into possession, on an early date, of the works of the Edinburgh Water Company, I have been requested to report on "the present state of the ponds and reservoirs, and on the means by which the supply of water can be most economically and advantageously distributed." Such an inquiry involves an examination into the capacity of the existing works to supply water, and into the general arrangement of the distribution in the city. As the works have grown up from small beginnings, and have been extended from time to time, under eight separate Acts of Parliament, as the demand for water increased, the unavoidable result is a certain amount of intricacy in the collection of the water, the obligations to discharge compensation water, and in the arrangement of the piping leading into and through the districts supplied. I shall, however, confine this report to the leading points bearing on the quantity of water the works can supply to the town, and disregard all minor questions of detail.

I fear that the nature of this subject has induced me to write a prolix report. The general conclusions are, that Edinburgh is at present using nearly 9,000,000 gallons of water a-day; that the quantity must be reduced to 7,000,000 gallons a-day till the reservoirs get filled up; that not more than 7,500,000 gallons a-day can be got from the works in a moderately dry year; that the reduced quantity should be regularly spread over the summer; and that the only proper way to accomplish this is to institute a system of intermittent supply.

By the way, and before leaving this subject, the supply of 7,500,000 gallons which, according to Mr Gale, can be relied on in a moderately dry year, would afford  $29\frac{1}{2}$  gallons per day to every man, woman, and child in a population of 254,000.

This report of Mr Gale had been prepared previously to the works being taken possession of by the trustees; and it, and a supplementary report by the same gentleman on the condition and state of repair of the ponds, &c., when actually taken possession of, having been sub-

mitted to the trustees on 12th July 1870, the reports were remitted back to the Works Committee, with farther instructions. The trustees at the same time resolved to appoint a resident engineer.

On 10th August 1870, Mr Leslie was appointed consulting engineer, and Mr Stewart resident engineer to the trust; and on the same day the trustees adopted the following resolution:—

The trustees, considering the great scarcity of water at the present time, remit to the Works Committee to consider and report as to the best means of obtaining an additional supply of water for the inhabitants, and to obtain all information necessary to enable the trustees to judge and determine as to what is best, and to use all diligence so as to enable them to apply to Parliament in the next session for power to carry out the same; also to adopt and carry out any of the suggestions in Mr Gale's reports for economising and distributing the present supply.

#### (5.) *Ward Meetings.*

No farther proceeding of the trustees or of the Works Committee had been made public when the time arrived for holding the customary ward meetings before the municipal elections to take place on Tuesday, 1st November 1870. Three of these meetings deserve particular notice.

(1.) **ST GILES' WARD.**—The meeting of this ward was held on 20th October 1870. Bailie Lewis, who was present as an elector, said in answer to a question from the meeting, that the trustees had been for twelve months busy checking the waste, (by the way, they had got possession and control of the works only on the 15th May preceding,) but that the correction of waste had scarcely made any perceptible difference in the supply; and after a deal of animadversion on alleged misdeeds of the Water Company, he wound up with this emphatic statement, in answer to Dr Cochrane's implied doubts: "In regard to an increased supply, he might say that the whole matter would be before the public in the course of eight or ten days, and it would be for the public to say whether the trust should go in for an unlimited supply of water, or only go on creating additional embankments, and squandering away money without any permanent or satisfactory result." This was fully reported in next morning's newspapers; and looking to the fact that Bailie Lewis was chairman of the Works Committee, who were specially charged with the matter of the new supplies, and was well known to be practically the dictator in the trust, the citizens relied on the promise so distinctly and publicly given by him on behalf of the trustees and the Works Committee over which he presided, being honourably kept, and so they paid little attention to the statements of Councillors at other ward meetings, which were regarded simply as the expressions of their views as individuals to their own constituents, and as affecting no persons except themselves.

(2.) **ST LUKE'S WARD.**—This meeting which was held on 21st October deserves notice, because at it a statement was made by Councillor John Wilson, which Bailie Lewis had afterwards the hardihood, to use a very mild term, to represent in his evidence, as a fulfilment of the pledge which he had given at the St Giles' ward

meeting on the evening before, as well as previously, to lay any projected scheme before the public for their approval, before it should be adopted.

Mr Wilson mentioned for the first time the fact, (which Bailie Lewis, strange to say, had not chosen to mention) that Messrs Stewart and Leslie had separately reported to the Works Committee upon the best sources of supply in the neighbourhood, and the probable expense of each, and he stated a number of figures of quantities of water to be got, with the relative costs, as being specified in these reports. Upon these data he gave an elaborate statement of the probable amount of water rating, were the St Mary's Loch scheme adopted.

In reference to this statement of Mr Wilson, Bailie Lewis took it upon himself to give the following account of it, when examined as a witness in Committee on 25th April 1871. (*Commons*, 659-662.)

659. Now, is this a report of a meeting of the electors of his (Mr Wilson's) ward, at which he stated publicly the whole of his objections to the St Mary's Loch scheme at that time (*handing a paper to the witness*)? Yes, this is such a report.

660. That is a newspaper report, is it not? Yes, this is a newspaper report.

661. Now, does it appear from that, without going through the details, that he is there discussing with his ward meeting, prior to his election, this very difference of estimate between Mr Leslie and Mr Stewart? Mr Wilson, who is a gentleman who has a peculiar faculty for figures, made a motion that Mr Stewart and Mr Leslie be brought before the Water Committee, and that they be examined personally by the Works Committee in regard to these estimates. He took down the whole details, went into the matter thoroughly, and this is the result of his investigations.

662. And he delivered that to his constituents? Yes, he delivered this to his constituents, and stated that he was perfectly satisfied that the whole work could be executed, *even upon Mr Leslie's estimates*, at eleven pence, and not a shilling.

The *bona fides* of the Counsel, who with the newspaper report in his hand, put these questions, and the truthfulness of the witness who answered them, may be seen from the following quotations from the *Scotsman* of 22nd October 1870, of what Mr Wilson really did say, viz.:—"From St Mary's Loch Mr Stewart reported that 12 millions of gallons could be got at a cost of £428,000. Mr Leslie reported that 12 millions of gallons could be got for £553,000. It would be noticed that there were differences between the two engineers, both as to the amount of water that could be furnished by the different districts, and the estimated cost. But it was right to mention that both engineers stated that these were not final and reliable figures, that they made up their report without detailed surveys, and that they must be taken as close approximations. Mr Leslie had specially guarded himself by stating that he had had far too little time to do his work to his own satisfaction, and that his figures must indeed be taken as little else than guesses. The question now was which of the sources would likely be that on which the Trust would ultimately fix? and he need not conceal that all along, notwithstanding that the engineers were employed to hunt about at various sources for supplies, a great majority of the Trustees, from the very beginning were in favour of going to St Mary's Loch. So much did this prepossession in favour of St Mary's Loch exist, that he was told one of the Trustees, on being asked to visit the Talla, said,—'It is no use going there; it is no use going anywhere

else. I have been out, and I have seen St Mary's Loch, and I wish to see nothing better.' No decision whatever had yet been come to by the Trust, but, although he was neither a prophet nor a prophet's son, he did not hesitate to say that the Trust would decide in a very few days on St Mary's Loch." After noticing Dr Frankland's certificate of analysis of the water of St Mary's Loch, the Heriot and the Talla, of which more anon, he returned to the subject of the estimates:—"He had stated that Mr Stewart's estimate for St Mary's Loch was £428,000, whilst Mr Leslie's was £553,000. That however was not the total expense. There fell to be added to both estimates for increased pipeage in the town, about £50,000. Then the new works would take, at least, about four years to execute, and during that time the Trustees would require to employ numerous inspectors, and there would be a deal of travelling to and from Edinburgh; and all that of course would fall to the debit of the new works. There would also be interest on the capital they would require to advance, from time to time, to the contractor, and the expense, both of the bill carried two years ago, and of the bill which the Trustees intended to introduce next session; so that, even *although Mr Stewart's estimate should ultimately be found sufficient*, he did not think, with all the items he had named, the inhabitants would get water at a less cost than about £525,000. *On this footing*, he estimated the annual expenditure which would fall upon the Trustees at a total of £65,512." He then went into a detailed calculation of the rates required to produce this revenue, and he closed his address thus:—"The total of the items of income he had named was £65,608, and if they deducted the expenditure, which he had calculated at £65,512, there was left a small surplus of £96. It thus appeared that with a shop rate of 3d., a domestic rate of 11d., and a public rate of 1d., they would be able to face even the large and expensive scheme of St Mary's Loch." Now, it will be seen that all this calculation relates entirely to Mr Stewart's estimate, which is stated at £125,000 lower than that of Mr Leslie. Bailie Lewis then, on oath, told a deliberate falsehood, for it could not possibly have been a mistake, when, with the report of Mr Wilson's speech ostentatiously put into his hand, as if for dramatic effect, he stated to the Committee of the House of Commons, in the words already quoted, that Mr Wilson had stated "that he was perfectly satisfied that the whole work could be executed, *even upon Mr Leslie's estimates*, at 11d., and not a shiling."

The estimates of the engineers are not contained in their reports, and so must have been separate statements. As there were then, as explained by Mr Wilson, no detailed plans, and of course no specifications or measurements, the different items of which the gross amounts of the several estimates were composed must have been mere round sums, as approximations to the probable cost, that is, so much for each of the items of embankments at the Loch—sluices—the aqueduct from the Loch to the first tunnel—that tunnel—and so on. It is clear that Mr Wilson must have had these statements or estimates before him;

but it is as clear, now that the citizens have got access to the reports of the engineers, that he had never seen these reports at all, but had assumed as correct the statement of their import contained in an interim report of the Works Committee, which he had doubtless seen in draft, and which was laid before a meeting of the Trustees five days afterwards, and was published in the daily papers of the following day, (27th October 1870). Indeed this surmise may be said to be made almost absolutely certain by the following remit which was made on 12th October 1870, by the Works Committee to a Sub-Committee, on the very subject of these estimates:—"That it be remitted to the Lord Provost, Provost Watt, Provost Wood, Bailie Lewis, Convener Field, Councillors Wilson, Romans, and Archibald, to confer with Messrs Leslie and Stewart in regard to their respective estimates, with a view to bringing these estimates as nearly as possible to each other; and if necessary, to obtain such information as may enable the Trustees to form a satisfactory estimate for themselves as to the probable cost of the St Mary's Loch scheme." It was therefore merely the estimates, and not the reports, which were remitted to the Sub-Committee, of which Mr Wilson was one, and the report which the Sub-Committee made had no reference whatever to the reports. How secret these reports were kept by Bailie Lewis and Mr Marwick, the clerk and parliamentary agent of the Trust, will appear afterwards.

This interim report of the Works Committee, which bore the attestation of Bailie Lewis, was, as will immediately be shown, simply a mass of misrepresentation and falsehood, in so far as the St Mary's Loch scheme was concerned. Many passages of the engineers' reports, bearing on the practicability, merits, and expense of the scheme, were entirely suppressed; the probable cost of the works, as deliberately estimated by Mr Leslie, was concealed; and a reduced sum at which he was got to say that works, apparently cut down by themselves to suit their own views, might be executed, if every possible favourable circumstance concurred, was stated as his deliberate estimate of the probable cost of the works which he considered necessary for the scheme. This being the case, it is unnecessary to examine a financial statement based on error, and which Mr Wilson afterwards repudiated when he ascertained how he had been imposed upon. It needs no conjuror to explain why Bailie Lewis, who knew the contents of the engineers' reports, got Mr Wilson, who did not, to make the statement referred to, instead of doing it himself, and so enlisted Mr Wilson for the time as a promoter of the scheme.

(3.) ST LEONARD'S WARD.—The meeting of this ward was held on the evening of the 26th October, being the Wednesday before the sacramental fast day; and this was the last day on which any ward meeting was held. The subject of the St Mary's Loch scheme was mentioned by all the representatives, all of whom expressed a preference of it over any other. Bailie Lewis, one of them, spoke of it thus:—"Coming to the St Mary's Loch scheme, he said there was no doubt the Trustees had got into a fix about the cost, but he had made up his

mind to stand by Mr Stewart's estimate of £400,000." This is all that he said on the subject, and its looseness is evident on referring to Councillor Wilson's speech already quoted, where the amount of the same estimate is stated at £428,000, with an addition of £50,000 for increased pipeage in the town. Bailie Lewis, however, concealed from his constituents that the Water Trustees had, at a meeting on that very day, *on his own motion*, resolved, without even thinking it necessary to consult the citizens, to promote the St Mary's Loch Scheme in Parliament.

At the meetings of some of the other wards, the subject was not mentioned at all ; at others, opinions both in favour of and against the scheme were expressed ; but in no one of the thirteen wards in the city was a motion of either approval or disapproval of the St Mary's Loch Scheme put to the meeting ; nor did the question in the most remote degree influence any one of the elections, because the electors expected any proposed scheme to be submitted to them, and their opinions to be taken, before the trustees should promote it. In fact no information had yet been made public to enable any promiscuous meeting to form an opinion on the subject.

It was therefore with the most unpleasant feelings of surprise that the citizens saw in the newspapers of 27th October 1870, being the Sacramental Fast Day, that the Water Trustees had, at a meeting on the previous day, on the motion of Bailie Lewis, adopted the following resolution :—" Having considered the report and relative documents now submitted, the trustees approve thereof, and recommit the whole subject to the Works Committee, to take such steps as they may consider necessary to promote the St Mary's Loch Scheme in Parliament, during the ensuing session." Convener Field was the only member of the trust who opposed the motion and entered his dissent. Nor was the surprise diminished on reading the interim report of the Works Committee on which the resolution proceeded. The feeling was universal that that report ought to have been published much earlier, so that there might have been time for its consideration to admit of the opinion of the electors being expressed at the ward meetings ; and that its publication had been purposely withheld till after all these meetings were over, in order to preclude any discussion of it prior to the elections, and so to prevent a foregone conclusion on the part of the majority of the trustees being interfered with by a possible adverse majority in the city. There was also an uneasy suspicion that material information had been withheld from the public—though the suspicion at the time fell far short of the reality, as subsequently ascertained.

The feeling that the electors had been unfairly dealt with was increased by another circumstance. The publication of the interim report, and the resolution of the trustees to promote the St Mary's Loch Scheme, was made on the morning of the Thursday preceding the elections. By the Municipal Reform Act of 1868, it is provided that no person shall be entitled to be elected a Councillor who shall not

have been nominated, by lodging with the City Clerk a signed paper of nomination in a particular form, before four o'clock on the afternoon of the Thursday immediately preceding the day of election. The public, therefore, knew nothing of the interim report, or the resolution come to by the trustees to promote the Bill without consulting them, till the morning of the last day on which the nomination of any candidate in opposition to the now avowed promoters of the scheme could be made. But it being also the Sacramental Fast day, there was, of course, no opportunity to the electors to meet and consider the information so vouchsafed to them, and to nominate a candidate of their own opinion, if they should be dissatisfied with the information. That there was a purpose in this was shown afterwards in the Parliamentary Committees, for it made a sort of profession of putting information before the electors, but in such a way that, while it was of no use to them, it could be afterwards stated as information given to them.

(6.) *Concealment of Mr Leslie's Report.*

THE ward meetings being thus dexterously got over without any untoward expression of public feeling, this seems a suitable place for explaining what it was that was concealed and misrepresented, although the means of ascertaining the facts were not got till the month of May following, when the reports themselves were forced from the promoters before the Committee of the House of Commons.

1. In the first place, Mr Leslie condemned Mr Stewart's scheme as insufficient to supply the quantity of water proposed to be brought to Edinburgh, after providing the requisite compensation to the district; and there is not one word in the interim report, published on 27th October 1870, even to raise a suspicion of such a possible objection to the scheme. Mr Stewart's idea, as appears from his supplementary report to the three Corporations, dated 7th October 1868, was that to provide and store up the necessary quantity of water for compensation and supply to Edinburgh, it would not be necessary to raise the level of the loch above its flood or winter level, if power were taken to draw off ten feet in depth; and he added, "The cost of forming a proper embankment at the outlet of the loch, to retain the water at the flood level, and to regulate discharge, with waste weir and sluices complete, and the requisite embankment for a compensation reservoir on the Megget, I estimate at £20,000, exclusive of land." In his scheme of 1871 the Megget reservoir was abandoned as unnecessary, and in his suppressed report he said, "On the Yarrow, St Mary's Loch renders any artificial reservoir unnecessary for the quantity proposed to be drawn from it, a weir across the outlet being sufficient for these purposes." Mr Stewart's plan was therefore to construct the works necessary to keep the loch at its ordinary winter level, but not adapted for raising it higher. Mr Leslie, however, took a totally different view of what was necessary to provide adequate storage. The portion of his suppressed report on this subject is somewhat long, but

as it bore so directly against views which the trustees were evidently determined to maintain, and was therefore fraudulently concealed from the citizens, out of whose rates it was intended to be paid for, it is now given at full length :—

The sixth and last source to be considered is the Yarrow or St Mary's Loch, which has already been before Parliament, though not on its merits. That source could doubtless afford a very ample supply of very good water, and St Mary's Loch provides a comparatively cheap means of impounding, storing, and settling it, but there are difficulties in the way of drawing off the water which have never yet been fairly looked in the face. The barrier forming the mouth of the loch consists of a great bed of gravel, the depth of which has not yet been ascertained, except that of four bores, put down in the spring of last year, the depths varying from 20 to 48 feet before reaching the rock. In order to be able to exercise a thorough control over the discharge of water after the surface of the loch has been raised and its outlet much lowered, it is necessary that some means should be taken to make this gravel bed water-tight, which need not by any means be a difficult operation, but must cost a considerable sum. The outlet for the town water must be taken at some distance from the gravel bank and above the Kirkstead burn, in order to get into deep water at a place where the ground is solid and impervious, so that the water of the loch may be kept out of the track while it is being formed. I consider this precaution is necessary to keep the outlet from being liable to be choked up; and I also consider it necessary to have the outlet of the compensation water separate from that for the town. The latter ought to be covered so as to prevent surface water getting in during floods, washing gravel into the channel, and otherwise polluting the town supply; while the former ought to be a very capacious channel, so as to be able to carry a large quantity of water at any time, when, for the sake of preventing flooding, or for any other purpose, it may be necessary to discharge a large quantity by sluices, instead of allowing it to run over the waste wear; and being consequently of necessity made very wide, it must for the sake of economy be open. The available storage provided by the Parliamentary plan, which seems to be about 436,000,000 cubic feet, is not sufficient for the requirements, even assuming that the compensation is not to exceed the quantity formerly spoken of—viz., 15,000,000 gallons, or 2,400,000 cubic feet a day. For 15,000,000 gallons compensation, equal to 1666 cubic feet a minute, it would hold 182 days' supply; for 15,000,000 compensation and 10,000,000 to the town—25,000,000 together, or 2777 feet a minute—it would hold 109 days; for 15,000,000 compensation and 15,000,000 for town—30,000,000 together, or 3333 feet a minute—it would hold 90 days; for 15,000,000 compensation and 20,000,000 to the town—35,000,000 together, or 3888 feet a minute—it would hold 77 days' supply; and for 10,000,000 compensation, 30,000,000 maximum supply for town—40,000,000 together, 4444 feet a minute—it would hold 68 days. To meet these large discharges, the storage will require to be much increased, and to accomplish that the surface of the loch must be raised very considerably above what has hitherto been proposed; and hence the greater reason for providing a water-tight foundation for whatever superstructure there may eventually be required. Doubtless compensation water might be stored, as has been proposed, by reservoirs on the Douglas and Altrieve water, but that would cost something very considerable, and it comes to be a question whether these reservoirs or the raising of the loch would be cheaper. It must, however, be understood that if there ever is to be a heightening of the loch, provision must be made for it at the commencement of any operations for making the loch more of a reservoir than it is already.

In these circumstances, the first consideration was, what was to be done with this awkward difference of opinion between the engineers, as to the necessity of raising the level of the loch. Plainly, it would never do to allow the public to know the full weight of the difficulty raised by Mr Leslie, which, as will be immediately seen, went far beyond the mere questions of sufficient storage and details of embankments; and so the device was fallen upon of holding, on 24th October 1870, a meeting of a Joint Committee of the Works Committee, and the Law and Finance Committee, comprising between them every member of the

trust, and which was, therefore, in truth just a meeting of the trust, but with this important difference, that being in name a meeting of Committee, the reporters for the press were not present; and in this Joint Committee the whole subject was discussed in secret, and the determination was come to of treating it as a light and trivial matter of the mere detail of an embankment, to be left as an open question, by the following resolutions, which were adopted unanimously, with the single exception of Convener Field, who recorded his dissent:—

(1.) That after considering the several reports, and in view of the whole circumstances, the Joint Committee recommend the trustees to adopt the St Mary's Loch scheme, and to authorise the requisite steps to be forthwith taken for going to Parliament in the ensuing Session, with a view to obtain additional supplies of water from that source; (2.) Having regard to the resolution now come to, recommending St Mary's Loch as a source of supply for Edinburgh, Leith, and Portobello, the Joint Committee further resolve to recommend to the trustees to adhere to the Parliamentary plans of 1868 in their general features, excepting minor details, and reserving, as an open question to be afterwards considered and determined, the propriety of going down to the rock in the construction of the embankment and weir at the outlet of St Mary's Loch.

Convener Field at once saw that the effect of this resolution to adhere to the parliamentary plans of 1868 in their general features, excepting minor details, was to decide against the raising of the level of the loch, reported by Mr Leslie to be necessary, because these plans were adapted for keeping the loch at its winter level only, and so his dissent was on the ground, as recorded, "that the parliamentary plans of 1868 were totally insufficient" to provide the compensation and estimated supply.

In this way the opinion of Mr Leslie, denouncing the contemplated works as insufficient to provide the storage requisite for the success of the scheme, was concealed from the citizens, and was secretly and quietly shelved.

2. The publication of Mr Leslie's report as to the necessity of raising the level of the loch would also have entirely destroyed one of the grounds, indeed the great ground, on which the trustees, in promoting their Bill, relied for its success. Hence the concealment of the report was to them a vital necessity. From the very first, the great advantage of St Mary's Loch as a source of supply was stated to be that it was a natural reservoir, with a clean stony and gravelly beach, free from earthy or vegetable matter, as contrasted with that of artificial lakes or embankments, necessarily composed of such matter. Thus, in the first report of Mr Stewart to the three Corporations, on 28th August 1868, he stated, in reference to all the other proposed sources of supply, which required the construction of artificial reservoirs: "Large artificial lakes are, however, objectionable, not only on account of the expense and risk connected with their construction and maintenance, but chiefly owing to the accumulation of vegetable or earthy matter, which a sudden flood or high wind stirs up, and renders the water stored in them (before it is filtered) unfit for domestic use;" while in reference to St Mary's Loch, he said "the

banks of the loch are faced with rough stones and gravel, upon which scarcely any sediment can be found; and this natural pitching prevents in high winds any earthy matter from being washed into the loch."

Mr Bateman, in his report to the three Corporations on 4th February 1869, took up the same subject. He said, "there is this great advantage in the St Mary's Loch scheme over the others, that you have to incur very small outlay to obtain the amount of storage required, and that the natural beach which the loch itself now possesses will preserve the water from all injury and discoloration which would attend it if stored in large artificial reservoirs, with clay or gravelly slopes, rising or falling according to the state of the weather, and exposing fresh surfaces for abrasion by the action of the wind."

Dr Frankland, too, in his report of the analyses of the St Mary's Loch and Talla waters, of 6th October 1870, spoke of these two sources of supply, thus: "From an inspection of the district, I believe that the Talla water owes a good deal of its superiority to filtration through a porous stratum, which would be submerged in the proposed reservoir, and would then cease to have any action upon the water. Moreover, the advantages of a natural loch with a pebbly beach over an artificial reservoir, are such that, supposing other things equal, I should prefer the St Mary's Loch to the Talla scheme for the supply of Edinburgh."

These reports of the two engineers were quoted with approbation in an interim report of the Works Committee of the Water Trustees of 20th October 1869; and again in the report of the same Committee of 26th October 1870, so frequently alluded to; so that it is evident that they attached great importance to the stony and gravelly beach of St Mary's Loch for maintaining purity in the naturally impounded water. But had they published what Mr Leslie had reported as to the absolute necessity of raising the level of the water in the loch, and so submerging this beach of so much importance to their scheme, their recommendation of the loch in preference to other sources, on account of the beach, would have been a ridiculous absurdity. The stony and gravelly beach had originally, like the banks above, consisted of earth intermixed with stones and organic matters, and the earth and organic matters had all been washed away in course of time, having only the stones for a beach. It is evident, however, that this denudation of earthy and organic matters would not extend above winter or flood level, and so an artificial raising of the surface of the loch, even to the moderate height of only four feet above the winter level, which is understood to be what Mr Leslie contemplated, would have submerged the beach to this depth, and, in the words of Mr Bateman, have exposed fresh surfaces of earth (of four feet in perpendicular height) for abrasion by the action of the wind. It is well known that the surface of water is acted on by wind only to an extent in depth below its natural level, equal to the height of waves raised above that level. In a loch of three miles in length, the

strongest wind that blows could never raise waves to the height of two feet above the natural level of the water, and so the whole action of the water caused by wind would be on the fresh earthy surface above the old beach. The loch would then, to the extent of these four feet, and as much higher as the wind could drive the waves, have been converted into an artificial reservoir, liable to every objection which Messrs Stewart and Bateman had urged against the use of such reservoirs.

That what the trustees professed to leave an open question had already been determined in their own minds against Mr Leslie's report, is evident from the scientific reports which they shortly afterwards obtained in reference to the quality of the water.

For instance, "A Physician" having in two letters published in the *Scotsman* of 11th and 16th November 1870, impugned the quality of the St Mary's Loch water, as being unsuitable for a town supply, and Dr Alexander Wood having been employed by the Water Trustees to refute the letters, that gentleman in a letter addressed to the City Clerk, and afterwards made public by him, mentioned the frequent yellow colour and loaded character of the Edinburgh water, and referred to a corroboration of this statement by Mr Leslie who, he said, had "explained the frequent pollution of our drinking water by the effect produced by wind or rain agitating the surface of the artificial ponds, and causing the contained water to act on the puddled banks." And he added, "This, to a large extent you will escape, by resorting to a natural rather than to an artificial reservoir for your supply. No proper comparison can therefore be made between the *spring* water of the Talla or the Heriot, and the *lake* water of St Mary's."

Dr Littlejohn followed in the same strain. Referring to St Mary's Loch, he said, "As engineers and chemists have again and again pointed out, it possesses as a natural reservoir, great advantages over all artificial collections of water secured by earthy embankments, such as are contemplated in all the other proposed schemes, and from the slight variations in the level of its surface in the driest seasons, it also contrasts favourably with natural reservoirs such as those of our present water supply, which have been empty for months, and exposed to the disintegrating action of the air and sun."

Dr Stevenson Macadam, too, added his mite of evidence on the same subject, in these terms: "I am of opinion that a community which can command, even at considerable expense, such a large supply of comparatively soft water, ought to consider itself extremely fortunate, especially when such water is stored naturally in an extensive loch, with a pebbly beach."

Thus the fact that Mr Leslie had reported the necessity of raising the level of the loch, and consequently of submerging and rendering of no avail the pebbly beach, in which consisted the great superiority which St Mary's Loch as a source of supply was alleged to possess over all the others, was suppressed; and a resolution was secretly though indirectly come to, to disregard Mr Leslie's report altogether.

3. Nowhere in the interim report are the amounts of Mr Stewart's and Mr Leslie's original and independent estimates given, though it is admitted that there was a material difference between them. In his report of 15th September 1870, Mr Stewart referred to his estimate of cost as formerly reported. This estimate to which he referred was in his report, dated 3rd February 1869, and was as follows: "I am confident that the whole works, including land and contingencies, will not exceed my former estimate of £365,000 for 10,000,000 gallons, or £400,000 for a supply equal to 15,000,000 gallons per day." Mr Leslie, on the other hand, reported "the cost of this work, making provision for 15,000,000 gallons a-day for compensation, and 15,000,000 for the use of the town, and providing storage accordingly by raising the loch, keeping as nearly as possible the same prices as to tunnels, conduits, pipes, &c., as in the other estimates, I reckon at £650,000; and I am certain it cannot be less." Plainly the one or the other was absolute nonsense; and it was equally plain that the public would be disposed to prefer the estimate of the experienced engineer, Mr Leslie, to that of the comparatively inexperienced Mr Stewart; and so it may reasonably be inferred that it was not considered desirable to allow matter so calculated to destroy faith in Mr Stewart's estimate to be published. The interim report of 26th October 1870, shows that the Works Committee fell upon the scheme of bringing the engineers together, along with a contractor selected by Mr Stewart or his prompters, and endeavouring, *in their own presence*, to make them agree in their estimates. That the purpose of the Works Committee in having this meeting was to beat down Mr Leslie to Mr Stewart's estimates was admitted by Mr Leslie in his examination before the Committee of the House of Commons, in answer to a question by a member of that Committee:—

"5250. By the COMMITTEE. Had the Committee dictated what the estimate was to be? *I was told that they would not approve of more than £500,000.*"

But while they failed to get the engineers to make their estimates agree, Mr Leslie having preferred his own experience to the opinion of any contractor, the Works Committee reported that they had managed to diminish the difference between them by about one half, but without explaining how this partial removal of the difference had been effected; and then, by adding to Mr Stewart's estimate a sum of £15,000 for what they called "the probable additional cost of treating the outlet of St Mary's Loch in the way recommended by Mr Leslie," as if it was a mere difference of detail to effect the same object, they brought out the respective estimates, in reference to the same works as follows:—

	Exclusive of Contingencies.	With Contingencies.
Mr Leslie, . . .	£520,328	£610,474
Mr Stewart, . . .	449,601	487,061
	<hr/>	<hr/>
Differences,	£70,727	£123,413

Thus these facts stand indisputable,—that Mr Leslie had reported that he was certain that the necessary works could not be executed for less than £650,000—that this was concealed from the citizens,—and that of course no explanation was given how Mr Leslie's first estimate, which fixed a minimum sum of cost in such positive terms, came to be reduced by no less a sum than £40,000.

To resume the narrative after this digression, the trustees forthwith gave the necessary newspaper notices; and Mr Leslie having refused to indorse the plans of Mr Stewart's scheme as sufficient for the purposes intended, and his estimate of the cost of the scheme, such as it was—and the trustees, following the lead of Bailie Lewis, as announced at his ward meeting, having decided that Mr Stewart was a preferable authority to Mr Leslie, they took the extraordinary step of passing over the consulting engineer whom they had elected only three months before, because he presumed to differ from themselves on a matter of engineering, and called in Mr Bateman in his place, who they knew from former experience, would make no difficulties in supporting the plans and estimates of Mr Stewart.

The plans having accordingly been deposited by the end of November, the engineer's estimate of expense fell to be deposited before the end of December. Mr Stewart had already, as reported by the Sub-Committee of the Works Committee on 12th October 1870, "agreed to increase his estimate in some particulars so as to cover certain alterations proposed by Mr Leslie," and in consequence had increased it, as explained by Councillor Wilson at his ward meeting, to £428,000, exclusive of the cost of increased pipeage. But in the estimate signed and deposited by him, which did not include the increased pipeage, the amount was run up to £480,000; and the estimate being a slump one without details of any kind, no means were afforded of ascertaining the cause of this extraordinary addition, amounting to nearly the half of the ultimate difference between him and Mr Leslie, of which no hint had been given to the Sub-committee, when they examined, and endeavoured to reconcile the estimates of Mr Stewart and Mr Leslie.

## 2. THE ORIGIN AND GROWTH OF THE OPPOSITION.

(1.) *Letters of a Physician.* In the meantime an ominous note of alarm was sounded, which, while it set the citizens to think of bestirring themselves to look after their own interests, carried apprehensions of danger into the councils of the Water Trustees. In the *Scotsman* of 11th November 1870, appeared a letter, under the signature of "A Physician" (Dr Charles Wilson, M.D. of Edinburgh, afterwards avowed himself the author of it, and subsequent letters published under the same name). Although an anonymous letter, its terms showed that it was really the production of a gentleman entitled to the degree he had assumed, or at least of one who had all the information on the subject which a physician should have. In that letter he challenged the wholesomeness of the water of St Mary's Loch, as being "mawkish, unaerated, of unstable temperature, and prone to be

loaded with rotten vegetable and animal organisms ;" and he ridiculed the analyses that had been published by the trustees in support of the design to introduce it. He complained that it was too soft for a city supply, being deficient in the salts of lime which are present in all good waters suited for drinking and dietetic uses ; and maintained that the absence of these salts made it unsuitable for the uses of nurses, and children in early life, on account of not furnishing the necessary substance for forming the skeleton. In another letter in the *Scotsman* of 16th November 1870, he attacked the reports of Dr Frankland, as recommending the worst of the different waters examined by him, and he especially objected to his recommending a water which, according to him, required the water fleas to be strained off.

Alarmed by these letters, the trustees forthwith instructed Drs Frankland, Alexander Wood, and Littlejohn to demolish them. It is not intended here to go into the details of the controversy, which ran to a considerable length. It is sufficient to say, that the Physician adhered to and maintained his views of the unwholesomeness of the water, and cited many authorities in support of them, while the others maintained the excellence of the water.

The letters attracted very considerable notice, and undoubtedly were the means of infusing life into a germ which soon assumed a condition of vigorous action. The trustees felt that a spirit of hostility was rising, which it was essential for them to check ; and to show the shifts to which they and their advisers were put to suppress the knowledge of every circumstance which might lead to support that feeling of hostility to their scheme, one incident connected with a report procured from Dr Littlejohn in answer to these letters, dated 26th November, may be mentioned. Dr Littlejohn sent in a letter or report to Mr Marwick, which contained some passages, not in reference to the quality of the water, which was the subject of the Physician's attack, but capable of being used to cast doubt on the necessity for such a large supply of water as was in contemplation, and so Mr Marwick sent it back to get that passage expunged. Dr Littlejohn did as he was desired, and re-copied the report ; and the report, cooked by the City Clerk, appeared as it had been Dr Littlejohn's original and independent production. The opposition, however, in the course of the contest, got information of this manipulation, and proved the terms of the suppressed passage, while Dr Littlejohn was under cross-examination as a witness for the trustees before the Lords' Committee (1684-1696) ; the following was the passage referred to :—

Again, as I have repeatedly pointed out, by a happy concurrence of circumstances in Edinburgh, when the supply of water in the summer months has gone on gradually diminishing, the general population has diminished in a corresponding rate ; the newer portions of the city are depopulated in the annual migration to country quarters, whilst the poor enjoy their harvest by betaking themselves to the country to be employed in field operations, the overcrowding that obtains in the winter disappearing ; and the population in the poorer districts may be regarded as normally housed during the summer. Thus the restricted water supply does not tell the speedy tale it would certainly do in an overcrowded population.

During all this time, as already mentioned, the feeling of dissatisfaction with the conduct of the trustees had been slowly but surely growing. Mutterings were heard from all classes of the citizens at the contemptuous way in which they were being treated by their representatives, and it soon became evident that all they required was an opportunity of meeting together, and forming a suitable organisation, in order to carry out a complete municipal revolution.

(2.) *Commencement and progress of the agitation against the scheme.*

—Mr Robert Johnston, the writer of this chapter of municipal history, and who afterwards became the Secretary of the Association which the ratepayers formed for opposing the Bill, was not altogether inexperienced in municipal contests; and he had been urged by several citizens, and particularly by two gentlemen, Bailie Miller and Mr R. A. F. A. Coyne, C.E., to call a meeting of gentlemen known to be inimical to the St Mary's Loch Scheme, and the mode of its promotion, with a view to an opposition being organised. All three were agreed that there was little doubt that were an opposition to the St Mary's Loch Bill announced by a few well known citizens, whose names would give a guarantee that it was a movement in earnest, and not a mere job, the City would respond to their call, and come forward in such numbers as would probably make the trustees feel it prudent to withdraw the Bill in the meantime, and to take the deliberate opinion of the ratepayers in reference to the source to be gone to for additional supplies. But Mr Johnston hesitated much about taking such a step himself, not because of any doubt as to the propriety of such a step in itself, but because he thought it desirable that the initiation of a movement of such consequence to the wellbeing of the city, and which, to be successful, must be under management which should inspire confidence to induce the large body of the ratepayers to come forward, should be taken up by a person of higher position and influence in the city than himself.

There had been formed in 1869, a ratepayers' Association, to which reference has already been made, for the purpose of looking after the interests of the citizens in regard to the financial operations of the municipal and other bodies as affecting taxation; and an expectation was entertained that that body would come forward and head the movement. It was ascertained, however, that it had sometime previously dissolved itself; and the middle of January having arrived, and Parliament being about to meet, it became evident to Mr Johnston that if he refrained from taking steps to call the citizens together, the Bill would pass unopposed into law, the evil consequences of which might become apparent when remedy was hopeless. He therefore, on 17th January 1870, issued printed circulars to 108 ratepayers understood to be opposed to the scheme, asking them to meet on the 19th inst., "for the purpose of considering the propriety of organizing an opposition, and petitioning against the Bill."

Curiously enough, on the very same day on which this circular was issued, an account appeared in the newspapers of a revolt in the trust

itself, the embers of which had been for some time slumbering, having broken out on the previous day, against the authority of the dominant promoters. Bailie Cousin had in 1869, and up to November 1870, been a most energetic supporter of the St Mary's Loch Scheme ; indeed he and Bailie Lewis had been the principal stump orators at the district meetings which had been got up in February 1869 in favour of the scheme of that year. But in November and December 1870, when Mr Leslie was shelved, and Mr Bateman was put in his place to support the plans and estimates of Mr Stewart, Bailie Cousin who was a member of the Works Committee, became, all of a sudden, very suspicious about the estimates which he had previously vigorously defended against all comers, and farther became troublesomely inquisitive about the report of Mr Leslie, as bearing on the estimates. Convener Robertson, too, who had just been elected a trustee in room of ex-Convener Field, demanded for his own information a perusal of Mr Leslie's report, which seems hitherto, though made to the trustees, to have been seized hold of by Bailie Lewis, and kept by him from the perusal of the general body of the trustees, and even of the members of the Works Committee, whom he expected to be satisfied with his account of its import. He was offered an inspection of Mr Leslie's report in the hands of the Clerk, on condition that he should not make known anything of its contents. He refused to look at it on that condition, as he considered its contents were proper matter for the ratepayers of Edinburgh to know, and he protested against the refusal. In consequence, at a subsequent meeting the Works Committee constituted themselves into a Sub-committee, excluding Bailie Cousin and himself, and from that time they conducted their proceedings in secrecy. A graphic account of these proceedings of the Works Committee, from which the above is condensed, was given by Convener Robertson in his examination as a witness before the Committee of the House of Lords (3857-3878).

Without some corroboration one would almost be inclined to disbelieve such an account of proceedings by a municipal body in the enlightened city of Edinburgh, in the 19th century, so resembling what might have been expected a hundred years ago. But Bailie Cousin and Convener Robertson gave substantially the same account of the matter in speeches by them in the Town Council on 30th May 1871, in presence of Bailie Lewis, and the other members of the Works Committee, not one of whom ventured to dispute it. The accuracy of the Convener's account of what took place in the Works Committee may therefore be held as admitted by all the members of it.

Treatment such as that described by Convener Robertson was not the most likely to allay the rising feeling of dissatisfaction exhibited by Bailie Cousin : and so, at a meeting of the Trust on 17th January 1871, a motion approving of the Bill, as amended, having been made by the Lord Provost, Bailie Cousin expressed his dissent in so far as the estimates were concerned, and moved a corresponding amendment. He praised the wisdom of the trustees in clearing up the question

raised by the "Physician," and said that the reports of Dr Frankland and the other scientific gentlemen employed, had satisfied him that the water of St Mary's Loch was most indisputably suitable for domestic requirements. But he did not believe that the estimates in the Bill would cover the cost, being now of opinion that in place of the £400,000 estimated by Mr Stewart, the works would cost £800,000. On a division, the motion for approval of the Bill was carried by a majority of 8 to 2, Councillor Methven having voted along with Bailie Cousin,—both of whom, from that day forward, took up a position of determined hostility to the Bill. Undoubtedly this action of Bailie Cousin and Councillor Methven in the Water Trust, whatever may have been their motives, tended to strengthen the movement which was then beginning.

The meeting called by Mr Johnston was held in Dowell's Rooms on 19th January, thirteen gentlemen having responded to the call. Some no doubt had come from curiosity, but others stated their readiness to join in an opposition, provided they should have the co-operation of the general public, not merely as petitioners, but as subscribing towards the necessary expenses of such an opposition. Among the gentlemen present, who continued to the last to take an active share in the opposition, were Mr Charles Cowan; Mr Henry Moffat of Eldin; Mr Alexander Gowans, George Street; Mr John Richardson, Alva Street; Mr R. B. Moore, Forres Street; Mr Laurence M'Garth, Leith; Mr Richard Wilson, C.A.; and Mr Coyne. With the view of ascertaining with certainty whether there was any general feeling against the scheme strong enough to justify embarking in an opposition, Mr Henry Moffat, the chairman of the meeting, Mr Richard Wilson, and Mr Johnston who was nominated secretary, were appointed "to frame a statement of the position of matters with regard to the proposed scheme, and on this being done the chairman and secretary were instructed to get it printed, with their names attached to it, on behalf of the meeting; and the secretary to transmit copies as circulars to those of the ratepayers who were understood to be unfavourable to the scheme, along with a blank form of concurrence and subscription, which they should be asked to sign, after filling in the amount they were willing to subscribe towards the expense of the opposition, and to return to the secretary for the information of an adjourned meeting."

A statement and circular, as directed at this meeting, were accordingly prepared and transmitted to each of a list of 183 gentlemen, made up from information obtained at the meeting, and otherwise. On account of the manner in which the Water Trustees had kept all details secret, even from members of their own body who would not pledge themselves not to divulge them to their constituents, it was impossible in the statement to make anything but an approximation to the fact. It embraced three subjects—the sources of supply, the qualities of the different waters, and the expenses of introduction. The substance of the statement, in a few words, was as follows:—

(1.) The Heriot water was estimated to yield 9,000,000 gallons daily, of water of the very best description, at an expense estimated by Mr Leslie of £280,000, and at an expense estimated by Messrs Bateman and Stewart, of £600,000.

(2.) St Mary's Loch was said to be capable of yielding 24,000,000 gallons daily, of soft water, impregnated with organic impurities, and swarming with animalculæ, at an expense varying from Mr Stewart's estimate, which was erroneously stated at £487,000, instead of £480,000, to Mr Leslie's estimate exceeding £600,000, and Bailie Cousin's estimate of £800,000.

(3.) The Talla and Lyne waters were estimated to yield together 19,000,000 gallons of water, equal to that of the Heriot, at an expense according to Mr Coyne of £308,000, according to Mr Leslie of £490,000, and according to Mr Stewart of £600,000.

The statement then made a guess at the probable expense of an opposition (which, it may be explained, was a very small figure, on the assumption that the trustees would endeavour fairly and cheaply to try the question with their own constituents,) and it concluded with a remark in reference to such expense, which, as it was afterwards seized upon as a pretext for withholding information, is now quoted: "But if an arrangement as to joint action could (as is not improbable) be made with the mill-owners and inhabitants of Selkirk, who, it is understood, are to oppose the scheme on various grounds, some of them applicable to themselves alone, and also, most probably, on the insufficiency of the estimates, the expense might be somewhat diminished."

In some way or other a copy of this statement found its way into the hands of Mr Marwick, probably from one of the persons to whom it had been sent, as no others went out of the secretary's hands. Evidently he did not like its look, and although it was a private document, not addressed to himself but to some one else, he immediately wrote a letter to Mr Moffat, whose name was at it as chairman of the meeting, for the evident purpose of making that gentleman distrustful of the grounds of opposition, and so preventing him, and those on whose behalf he had issued the circular, taking farther action in the matter. As the correspondence which ensued had, when published, a very considerable effect in forwarding the opposition, the first two letters of the series are here given at length:—

*Mr Marwick to Mr Moffat.*

CITY CHAMBERS,  
EDINBURGH, 24th January 1871.

MY DEAR SIR,—A printed statement, relative to the Edinburgh and District Water Bill, purporting to be signed by you as chairman of a Committee of gentlemen who are to oppose it in Parliament, has been sent to me.

Knowing the whole facts, as of course I do, I am concerned to find your name attached to such a document. There is scarcely a single statement in it which is accurate, and it would be difficult to compress in equal compass a larger amount of misrepresentation. Of course every man has a right to hold and express his own opinion on such a matter, but he is not entitled to misrepresent facts: and I am sure you would not consciously do so. Nothing can be easier than to expose the

whole affair at the proper time, as was done in 1869; but that will bring discredit with it, and I cannot allow myself to be placed in a position even of professional opposition to you in this matter, without communicating with you, as if our positions had been reversed I would have taken it kind in you to have done to me.—I am, &c.

*Mr Moffat to Mr Marwick.*

EDINBURGH, 25th January 1871.

MY DEAR SIR.—I beg to acknowledge receipt of your letter of yesterday, and to thank you for the kindly and courteous feeling therein expressed towards myself; but while doing so, allow me to say that the "Statement" you refer to is a correct one, so far as I and others who are outside the Water Trust know. We shall be glad, however, to be enlightened on the subject, and with that view I have handed your letter to me (as it was not marked private) to Mr Johnston, the secretary to the proposed opposition to the St Mary's Loch Water Bill, who will no doubt communicate with you on the subject. Permit me to say for myself, as an individual ratepayer, that I have all along considered the St Mary's Loch scheme a gigantic infliction upon the inhabitants of Edinburgh.—I remain, &c.

In consequence of these letters Mr Johnston wrote Mr Marwick asking for inspection of the scientific reports on the water, and an abstract of the estimates, and specially the report of Mr Leslie, for the purpose of correcting the alleged errors.

Two grounds were stated by Mr Marwick to Mr Johnston for refusing the information asked. The first ground was stated thus in a letter of 26th January, and its lofty air is extremely ludicrous when it is considered that it was addressed by the representative of a trust substantially elected by the ratepayers annually, to the representative of a portion of the ratepayers themselves, on whose behoof and at whose cost the trustees professed to be acting: "A professional man of your experience cannot surely be serious in expecting that I, or any other sane man, engaged in promoting such a measure in Parliament would be so utterly devoid of sense as to give you what you ask." This ground is stretched a little farther in Mr Marwick's letter of the following day, where he says: "I am not aware that either Mr Moffat or you applied for any information as to this Bill *before* you committed yourselves, not only to oppose the measure yourselves, but to statements intended to influence the public to follow your example." If this last passage means anything, it must be that if application had been made to him or the trust *before* the ratepayers had committed themselves to opposition (which, by the way, they had not yet done) they would have got the information they asked. Now, the ratepayers made no such application previously, because they well knew that they would get no information; and Mr Marwick must have had his nerves strung up to an unusual pitch when he ventured to insinuate that they would have got any explanation or information at all, seeing that he and his Works Committee had already refused to give such information even to members of that Committee, except under the pledge that they would not communicate it to the ratepayers, and had actually expelled two members from it upon whom they could not rely for keeping their information secret from these very ratepayers. The other ground for refusing to communicate information was, that it might be used by the inhabitants of Selkirk, who were threatening opposition.

In place of affording a reason for concealment from the ratepayers, this was the very strongest ground for communicating it to them, that they who were intended to pay the costs, should be enabled to form an opinion whether the scheme was worth the risk and the cost which must necessarily be incurred.

Whenever the correspondence was concluded it was published without comment, and there cannot be a doubt that the refusal, in such domineering terms, of all substantial information to correct alleged errors, greatly irritated the ratepayers, and gave a strong impetus to the yet feeble movement of opposition.

Another meeting of ratepayers, much more numerous attended than the former, was held on 1st February, when the subject of the contemplated opposition was resumed, along with the subscriptions which had been intimated in answer to the circular. The movement was gathering strength; but there still not being materials to enable the meeting to judge whether the ratepayers were likely to interest themselves to the effect of furnishing funds to carry out a substantial opposition, it was resolved that a short statement of Reasons why they should oppose the Bill should be prepared by Messrs Moffat, Wilson, James Tod, printer, and Johnston (the secretary), and that about 10,000 of them should be circulated by post among the ratepayers,—a short circular being prefixed to the Reasons, asking the ratepayers who should concur in the opposition to sign and return to the secretary by post an accompanying form of concurrence.

Next day the Reasons, circular, and form of concurrence were adjusted and printed; and as it has been said that the opposition was stirred up by all descriptions of exaggeration—and as these Reasons were the statements which actually did excite the opposition which soon became so strong and overwhelming, a copy of them is given here, that the readers may judge for themselves whether or not there was any exaggeration; and it may be remarked that nearly the whole of these reasons were actually proved in the Parliamentary Committees, and not a witness was brought by the trustees even to question the truth of those which it was found not to be necessary to prove:—

REASONS why the RATEPAYERS OF EDINBURGH should oppose the "ST MARY'S LOCH WATER BILL."

1. Because the water of St Mary's Loch is infested with animalculæ and insects, and more especially water fleas, which are unusually abundant there in the summer and autumn months.

2. Because gravel and sand filters, which are the only possible filtering apparatus in the circumstances, will not prevent the passage of these living animalculæ and insects and their eggs.

3. Because water which contains living animalculæ, visible to the eye, is not suitable for domestic use, and is calculated to produce diarrhoea, as attested by medical men.

4. Because the quality of the water of St Mary's Loch is so bad, that the inhabitants of the district will not use it for the purposes of drinking or cooking,

5. Because the waters of the Heriot and Moorfoot districts, and of the Talla and Lyne districts, being spring and running water, are comparatively, if not entirely, free from such animalculæ and insects.

6. Because, after supplying the necessary wants of the inhabitants and mill-owners in Selkirk, and on the stream flowing from St Mary's Loch, the quantity of water said to be required from the loch cannot be got.

7. Because the necessary works cannot be made for the sum of £500,000 proposed to be raised under the Bill for that purpose ;—Mr Leslie, the consulting engineer of the trust, having estimated that the cost must exceed £600,000, and may more reasonably be expected to be nearly £750,000. In consequence, the assessment must be raised from its present rate of 8d. to 1s. 6d. per £, *the power in the Bill to assess being unlimited.*

8. Because the superior waters of the other sources of supply can each be brought to Edinburgh at sums very considerably under the expense of bringing the water of St Mary's Loch, and within a much shorter period.

9. Because the expenditure necessary to bring in a supply of water from either of the other districts, sufficient in quantity for any probable increase of the population for the next sixty years, will not amount to anything like £500,000, and will not, in any circumstances, require a higher water rate than 1s. per £, on the data furnished by the trustees themselves.

10. Because the Water Trust have resolved to increase the assessment on shops, and the houses of the poorer classes, and also to assess charitable institutions and churches.

11. Because the promoters of the scheme have never called the ratepayers together, or in any way consulted them, with the view of ascertaining their views as to the proper sources of supply for the city, or communicated to them the necessary information to enable them to form and express an opinion on the subject.

These documents were circulated among the ratepayers during the first week of February. The mode adopted was to take the Post Office Directory, and a copy of each was sent by post to the inhabitants of all the principal streets in the Old and New Towns, many streets being specially selected because they were known to be inhabited principally by tradesmen and others dependent on labour for their daily bread. None of the forms of concurrence to be returned were stamped, except about ninety to the inhabitants of one street mainly of tradesmen, which were sent stamped, at the suggestion of Bailie Miller, as an experiment to see if there would be any difference in the proportion of returns from that street, as compared with others ; but after all the returns had come in no difference was observed in reference to that street. The actual number posted was about 9800. Several hundreds were returned undelivered, the persons to whom they were addressed having " gone and left no address," as well as for other stated reasons. The number sent out and not returned by the Post Office was not less than 9400.

There were sent back by post and otherwise 2473 signed returns of concurrence in the opposition. There was no canvass, or other means used to obtain these returns, except the circular and Reasons which accompanied the forms. They were all voluntarily returned, the persons sending them in paying the postage, or delivering them free, except in the case of those returned from the particular street referred to. Thus twenty-six per cent. of the persons to whom circulars were so sent promiscuously, voluntarily and at once returned themselves as concurring in the opposition.

Of course the promiscuous distribution of such a number of copies of the Reasons for opposing the Bill could not fail speedily to come under the notice of the trustees ; and the alarm which was created

among them induced them to resort to an attempt to check the effect of these Reasons by advertising in all the daily papers of 11th February, and placarding in all the streets in large posters, the following extraordinary notice:—

ST MARY'S LOCH SCHEME.

*To the Ratepayers of Edinburgh, Leith, and Portobello.*

We regret to learn that certain persons who are attempting to get up an opposition to this scheme, are endeavouring to create a prejudice against the water of St Mary's Loch by the circulation of reckless and utterly unfounded statements.

The trustees have satisfied themselves, by consultation with the highest chemical and medical authorities in the kingdom, that the water of St Mary's Loch is admirably adapted for purposes of town supply, and they will be able to lay before Parliament evidence on this subject which will be irresistible.

Other statements, equally misleading, are being industriously circulated; but these the trustees will have as little difficulty in refuting.

As the opponents of the Bill of 1869 leagued themselves with the Water Company against the three communities, the same parties are now seeking an alliance with the mill owners of Selkirk. Such coalitions can only operate adversely to the interests of the citizens.—We have the honour to be Your faithful Servants,

WILLIAM LAW, Lord Provost of Edinburgh.

JAMES WATT, Provost of Leith.

THOS. WOOD, Provost of Portobello.

EDINBURGH, 10th February 1871.

A more injudicious advertisement, and one less calculated to effect the object in view, it is hardly possible to conceive. The clerk and law agent of the trust had already said the same thing, though in more guarded and temperate language, and the opposing ratepayers had asked him for a perusal of the documents in his hands on which he said that he had made the charge of misrepresentation, that they might correct any errors they should have fallen into,—and he had, in terms barely civil to the ratepayers, refused their request. Now, the dignity of the offices of the three Provosts was dragged in to give weight to what was disregarded when it came from the clerk. It was a poor compliment to the clerk to say (for the advertisement meant nothing else) that the word of a Provost is more entitled to be regarded as true than his. And it was as poor a compliment to themselves to suppose that the addition of the words "Lord Provost" and "Provost" after their names, was necessary to make their individual statements more reliable, to say nothing of the prostitution of the offices by dragging them into a controversy in such a way. Nothing but a pig-headed partisanship, which rushes blindfold at every obstacle, can account for such behaviour. The ratepayers, according to them, who were to drink and pay for the water were to have no voice in the choice of it. It was enough, that the trustees should be satisfied that the water was, in their opinion, adapted for the use of the citizens, and like children, they must just take what their guardians thought suited for them, they being incapable of judging for themselves.

The Committee who had prepared the Reasons answered this singular publication by the following counter advertisement and placard:—

OPPOSITION TO ST MARY'S LOCH WATER BILL.

In answer to the advertisement in Saturday's papers of the Provosts of Edinburgh, Leith, and Portobello, the Committee conducting the opposition to this Bill have to

state that they have made no arrangement with the mill owners of Selkirk, and do not intend to make any ; neither are their grounds of opposition known to the Committee.

As to the charges against the Committee of misleading the ratepayers, the Committee shall only say that till the Water Trustees gave access to Mr Leslie's report, which the Committee have good reason to believe shows the utter impracticability of the present scheme at the estimated cost, the trustees ought to be silent about misleading the ratepayers.

The sole object of the Committee is to elicit the truth, and to call the attention of the ratepayers to a scheme which they believe to be reckless and uncalled for.

16 LONDON STREET, 12th February 1871.

When these two advertisements were placed side by side, any person who ran might read that the one was just a repetition of Mr Marwick's outcry about misrepresentation, without specifying what it was, while the other was just a repetition of the ratepayers demand for access to the concealed documents, both already noticed ; but, as if their advertisement contained something new and weighty, the trustees, in their alarm at the progress which the opposition movement was making, continued the insertion of it daily for some eight or ten days, while the opposition having once for all explained the position which they had taken up, did not think it worth their while to reinsert theirs. There is little doubt now that the Provosts by this step increased, instead of arresting the force of the movement.

(3.) *Organization and Promotion of the Opposition.*—In the meantime about 250 of the principal ratepayers who had signified their disapproval of the Bill had been invited to meet together. Their meeting was somewhat numerously attended, from fifty to sixty gentlemen being present. After carefully considering the whole matter, the meeting unanimously came to the resolution that the evidence of dissatisfaction with the Bill was so general that they would call a public meeting of the ratepayers, in order that they might resolve whether or not the Bill should be opposed in Parliament, and if they should so resolve that they should appoint a Committee for the purpose of promoting the opposition. Mr Charles Cowan, who was present, agreed to preside, and the meeting was appointed to be held in Queen Street Hall on 16th February 1871.

The meeting was duly advertised ; and, strangely enough, the notice calling it appeared in the same papers which contained the first manifesto of the three Provosts, accusing the party, who in contrast to themselves, were conducting their opposition publicly, of circulating (meaning, of course, in private) "reckless and utterly unfounded statements." At the meeting the body of the hall was filled, and the galleries were partially so, the number present being from 600 to 700.

Mr Charles Cowan was in the chair, and the following gentlemen took part in the proceedings, viz.—Mr Robert Lee, advocate, Councillor Wormald, Mr James Cowan, the Rev. Dr Hanna, Mr James Tod, Baillie Miller, Dr Winchester, Mr William Brown, Mr Henry Moffat and Mr E. R. Macdonell.

The meeting was absolutely unanimous in passing the following resolutions :—

1. That while it is desirable that everything should be done which is necessary to secure a sufficient supply of good water, the scheme proposed by the Edinburgh and District Water Trustees is unnecessary and extravagant, and opposed to the interest of the citizens. (1.) Because the cost of executing the necessary works, and procuring the water, will far exceed the sum of £500,000 specified in the Bill: (2.) Because the water of St Mary's Loch is insipid and unsuitable for drinking and cooking purposes: and (3.) Because an ample supply of water, of undoubtedly much superior quality, can be obtained at a much less cost to the citizens, and in a much shorter time, within the county of Edinburgh, or its immediate surroundings.

2. That were the Bill to be passed, and the water supply of Edinburgh and Leith to be brought from St Mary's Loch, the inhabitants would be saddled with a very high water rate for their houses (probably double what they now pay), for an inferior quality of water; particularly the poorer classes would suffer thereby, as they would be assessed upon their houses, through their landlords, whether they had water in or near their houses, or not. The trading classes, too, would be burdened with a heavier assessment on their shops than they even now pay, although they should have no water within their premises;—and, moreover, Edinburgh, as a place of residence for families coming for the education and health of their children, would be seriously injured.

3. That the Water Trustees, before incurring the heavy expense of going to Parliament with that or any other water scheme, ought to have convened simultaneous meetings of the inhabitants in every ward, and afterwards held a public general meeting, and fully explained the scheme, as well as the other sources of supply available, and taken the sense of said meetings thereupon; but this plain course of duty the Water Trustees have failed to adopt, and have even refused information when specially asked for it, whereby, in the opinion of this meeting, they have forfeited the confidence of the ratepayers.

4. That, under the circumstances set forth in the foregoing resolutions, this meeting protests against the Edinburgh and District Water Bill, commonly called the St Mary's Loch scheme, being farther prosecuted in Parliament; and respectfully calls on the Water Trustees at once to withdraw the Bill, so as to afford time to the inhabitants to satisfy themselves as to the most suitable source of supply, and instructs a copy of these resolutions, signed by the chairman, in name of this meeting, to be forwarded to the Water Trustees through their Clerk.

5. That a petition, signed by the chairman, in name of the meeting, and another signed by as many of the individual ratepayers as possible, be presented to Parliament against the Bill; and should the Water Trustees determine to prosecute the Bill farther, this meeting resolves to oppose the same in Parliament, and with this view appoints the following gentlemen (*therein named*) as a Committee to collect subscriptions towards defraying the expense, and to take all steps which they shall deem necessary, by petition or otherwise, for successfully opposing the Bill before Parliament, with power to add to their number, and to sub-commit.

A petition against the Bill, in terms of these resolutions, had been prepared in anticipation of the meeting, and it was commenced by the subscriptions of a few of the leading persons being adhibited before they left the room.

This was the only public meeting of ratepayers or citizens, or of anybody else, which had been held since the passing of the Act of 1869, for the special purpose of discussing the subject of the water supply of Edinburgh.

By this time the Bill had been read in the House of Commons a second time, and petitions against it, praying to be heard, required to be lodged in the Private Bill Office on Saturday the 25th. The 16th was a Thursday, and the following Friday and Saturday, and partially the next Monday were occupied in getting the machinery organised for procuring the signatures of the ratepayers. A door to door canvass was necessary, there being no time to wait the convenience of ratepayers in coming to subscribe the petition, and there being at the very utmost only five days of the week commencing on the 20th for

getting it signed. It was evident that unless the petition was very numerously signed, it would avail little against the Water Trustees, who from the mode of their appointment, would probably be held, in the first instance at least, to have the presumption in their favour of generally representing the opinions of the body of ratepayers. Some few signatures had been obtained at the meeting, and on the remaining two days of that week ; but on the morning of the 20th February, not more than 200 signatures had been obtained.

The city was divided into five districts, and each district was put in charge of a separate agent—a number of canvassers being sent from the central Committee rooms into portions of the city which did not lie convenient to the district agents. Leith was put in charge of an agent there, and trustworthy canvassers were also sent to Portobello. A great number of signatures were procured by gentlemen of the Committee and other ratepayers, who volunteered to go through districts specified by themselves,—many gentlemen of the highest social position having volunteered for this duty. Many ladies also volunteered their assistance, and brought in sheets filled with signatures procured by them.

A number of the principal shopkeepers in Edinburgh and Leith allowed the petition sheets to lie in their shops for signature, and many of them canvassed their neighbourhoods for signatures. These shops were advertised in the daily newspapers. Other shopkeepers volunteered to display the petition in their shops for signatures—and also canvassed their neighbourhoods, whose names were not reported in time to be advertised.

Mr Johnston took the charge of the petition. The canvassers wished at first to be paid at a specified rate for the numbers of signatures procured. He had had previous experience of this mode of payment, and had found it a premium for forgery. He therefore pointedly declined such a mode of payment, giving the above as his reason for this. He engaged them at specified rates for the time actually occupied, telling them that he wished nothing except *bona fide* signatures, and cautioning them that any fabricated ones would certainly injure the effect of the petition. He farther desired them to satisfy themselves by inquiry or otherwise, that the persons signing were, or represented themselves to be the tenants paying the rent, otherwise the signatures were not to be taken ; and they were directed that, in the case of any person not being able to write, such person should mark a cross, when the canvasser should fill in the name, referring to the cross as the mark of the subscriber.

The same course of procedure was mentioned to the district agents, for their guidance in reference to the canvassers employed by them.

In making up the petition, great care was taken to scrutinise the sheets with the view of ascertaining that they were genuine, before affixing them to the petition ; and several sheets which presented a suspicious appearance were cancelled. As ultimately made up and deposited the petition bore 14,113 signatures.

As it was known that there were still in the city a number of rate-payers opposed to the bill, who, from want of opportunity or otherwise, had not subscribed the petition praying to be heard against the bill, another petition praying simply for the rejection of the bill, was prepared with the view of making this farther proof of opposition known, and available as matter of evidence for Parliament. It was laid down for subscription in the same shops in which the other had lain, and some canvassers were employed as before. The signature sheets of this petition underwent the same scrutiny as the others, and the petition was then made up and deposited with 3627 signatures.

The first petition, as stated by the subscribers themselves, represented a rental of £447,038, 18s. 7d., there being 494 subscribers who had stated no rental. The second petition, according to the subscribers, represented a rental of £56,781, 11s. 7½d., there being besides 59 of those petitioners who had stated no rental.

Of petitioners who had stated rentals there were in the two petitions 16,827, representing a gross rental of £503,820, 10s. 2½. Taking those who did not state any rental (viz. 553) at the same average as those who did, being £29, 18s. 6d. per head, the gross rental represented by the whole petitioners in both petitions might be assumed at £520,369, 0s. 8d.

There were probably instances where owners of property inserted their tenants rentals at their signatures, while the tenants also inserted their rents. In this way there might have been to some extent a double enumeration of rental. A deduction of five per cent from the gross rental will probably fully compensate for such double enumeration. The actual rental represented by petitioners against the bill, after making this correction, may therefore be assumed at £477,802.

The valuation by the assessor, of Edinburgh is,	£1,220,037
Leith, . . . . .	225,204
Portobello, . . . . .	28,572
	<hr/>
	£1,473,813

The petitioners therefore represented 30 per cent of the whole assessable rental.

When the signatures were examined and classified as to rental, the result was as follows, there being an understatement of the actual numbers, owing no doubt to some of the sheets of the petition having been omitted to be copied, in the hurry of getting it ready for being deposited.

	No rent stated	Under £10.	£10 and under £25.	£25 and under £50.	£50 and under £100.	£100 and up- wards.
Original petition,	494	4176	4558	2207	1457	955
Supplementary petition	59	1743	1023	247	115	74
Total signatures,	553	5919	5581	2454	1572	1029
Distributing the persons signing who stated no rental, proportionally among the others, the result would be,		198	186	82	53	34
		6117	5767	2536	1625	1063

The rentals under £10 may be assumed to represent the purely labouring class; and the rentals from £10 to £25 may be assumed to represent the class of intelligent tradesmen and clerks, and the like. Putting these together as a class earning their living by daily work, but the majority of whom are fully alive to the blessings of cleanliness, it is found that they represent 63·6 per cent. of the whole petitioners. Those representing rentals of £50, and upwards, may be assumed to have been generally persons to whom an increase of water rates was of no great moment, and who therefore were not liable to the charge of being actuated by interested motives in supporting the opposition.

Allusion has already been made to the manifesto of the three Provosts (the three wise men of the East, as they were somewhat irreverently termed by a gentleman of Glasgow who happened to see that unique production,) as an unsuccessful attempt to arrest the progress of the movement; and this was no solitary attempt to throw discredit on the opposition. The moment it threatened to assume formidable dimensions, the members of the Town Council and Water Trust who supported the scheme endeavoured to stifle the opposition by throwing every contemptible reflection which they could conceive on the motives of the originators of it, those who signed the petition, and even on those who came forward with subscriptions of money to promote it.

A somewhat highly spiced specimen of this is to be found in the speech of Bailie Lewis in the Town Council on 21st February 1871. In discussing a question there, which virtually was approval or disapproval of the Bill which had been lodged, he characterised the opposition as unjust and heartless, and accused those promoting it of being mean enough when supplied with water themselves, to come forward and bolt the door against the masses vindicating their rights; that the objections to the water consisted of trumped up exaggerations by ignorant and unprincipled individuals; that another scheme proposed by Mr Charles Cowan would be a far greater benefit to him

than to the citizens of Edinburgh ; and that the opposition might be a lucrative concern for needy lawyers, speculative engineers, and mercenary witnesses. In reference to the first branch of the above invective, the precise words will be given, because it is the only instance in which he condescended to state any ground for making his assertions : " The present opposition appeared to him one of the most unjust and heartless that possibly could be conceived. It was very well for writers and professional men in the New Town, with storage for tons of water, to say they never wanted water, while working men, with cisterns containing only a few gallons, found their supply run off in a few hours. One of the most influential citizens in the New Town had told him that he had found the secret of getting abundance of water, and it was just to increase his storage by another cistern. The result was that the masses were literally robbed of the supply that belonged to them ; they were all charged upon their rental ; and yet there were men mean enough, when supplied with plenty of water for themselves, to come forward and bolt the door against the masses vindicating their rights, and pass resolutions censuring the representatives of the people." This statement appears to be (to adopt the style of the speaker for the nonce,) one of the most unjust and groundless that possibly could be conceived. By his own account of it, it was only a matter of cisterns. Every person who had a cistern of sufficient capacity had, according to him, plenty of water. A remedy then was at hand, viz., let cisterns be put into the houses of the masses, and they would get their share of the water along with the writers and professional men of the New Town, and, it may be added, along with the residents at the Grange who might not be writers or professional men, and who have never been heard to complain of want of water in their own houses. But, besides all this, the assertion was ineffably silly. The moment a cistern was filled, the drain into it from the main ceased, and the quantity in it was diminished only by what was drawn off for use ; and when the water was laid on, it was not the cistern which had to be filled again, but simply the quantity used which had to be replaced. The complaint of Bailie Lewis was therefore the merest claptrap, unless he had alleged, which he did not, that the command of a large quantity of water by these writers and professional men in the New Town led to its waste. He might as well have endeavoured to prove that gentlemen in Moray Place with well stocked cellars of wines and spirits were necessarily larger consumers of these articles because they had them at command, than drunken specimens of what Bailie Lewis calls the "lapsed masses," who fill themselves with drink whenever they have pence to spend, and are enforced teetotallers when they have none.

The Leith Town Council followed suit. At a meeting of that body on 7th March 1871, Councillor Archibald, who adopted in Leith the rôle of Bailie Lewis in Edinburgh, is reported to have said that "the cloven-foot came out beautifully in the wording of the petition which was being sent up against the Bill, and there was no doubt it was

being got up by a few landlords for interested motives. *It was the most gigantic public swindle he had ever seen !*"

Previously to this last meeting there had been a meeting of the Water Trustees on 25th February, when the resolutions of the ratepayers' meeting of 16th February against the St Mary's Loch scheme, and censuring the conduct of the trustees in promoting it without consulting the citizens, were laid before them. At this meeting various members of the trust alleged that the resolutions had been arrived at on false information, and that "the opposition had been fostered by circulating statements which were at variance with facts, and grossly misrepresenting and abusing the trustees;" and at last one of the trustees, (Councillor Cranston,) by way of shewing his contempt for the citizens' meeting (as he afterwards explained in withdrawing his senseless expression) "was inclined to move that the resolutions be laid under the table." Of course the resolutions of the meeting in Queen Street Hall were scouted by the trustees.

The whole object of these tirades was to frighten the ratepayers into a refusal to subscribe funds to carry on the opposition. The *Daily Review* was the avowed organ of the Water Trustees, and in a leading article in it on 3rd March 1871, where the formidable character of the opposition was admitted, the want of money was set forth as the weak point of the opponents, and it was stated to be extremely likely "that the opposition will, like an ill adjusted paper currency, collapse for want of a gold basis;" and in another leader in the same paper on 8th March, it was insinuated "that we fear we must hear a great deal more about the Heriot and South Esk schemes before the ratepayers will be satisfied so far as to put their hands in their breeches pockets."

To enable the position of this newspaper in the controversy, and the weight due to its leading articles, to be understood and appreciated, it is proper to explain that both it, and a weekly advanced radical, and latterly republican newspaper, called the *Reformer*, belonged to the same proprietor, Bailie Lewis being then the editor of the latter print. In this way he had free access to the columns of the *Daily Review*, and all the leading articles on the water question in that paper were, if not prepared, at least inspired by him. In his speech in the Town Council on 21st February 1871, before referred to, he had stigmatized the opposition as a lucrative concern for needy lawyers, speculative engineers, and mercenary witnesses. The leading articles just mentioned were evidently intended to follow up his own denunciation of the motives of those conducting the opposition, by the practical insinuation that the movement was not sincerely designed for any other purpose than as a job for themselves.

The citizens were, however, by this time rather broadly awake to the whole question, and indications were not wanting that they were disposed to apply to the motives of those who were thus profuse of insinuations of selfish jobbing, the old proverb that "the greatest rogue cries thief first." But the large Committee of ratepayers already appointed, in order to satisfy the citizens once for all that they had

engaged in a movement which they meant to carry out to a practical result, applied to the well known firm of Messrs Gibson-Craig, Dalziel and Brodies, W.S., who agreed to undertake the Edinburgh Parliamentary agency in conducting the opposition. The announcement in the newspapers that a firm of such high professional standing had undertaken the agency for the opposition at once checkmated Bailie Lewis in his contemptible insinuation of sordid personal motives in those originating and conducting the opposition; which insinuation was possibly, after all, only the reflection of the motives which influenced the conduct of at least some of the promoters of the St Mary's Loch scheme.

The general Committee which had been appointed at the ratepayers' meeting in Queen Street Hall, next appointed a law and finance Committee to conduct the opposition, and raise by public subscriptions the funds necessary for the purpose. The following gentlemen composed the Committee, and with the full approbation and confidence of the subscribers of funds, conducted the opposition henceforth to a successful issue, viz. :—

CHARLES COWAN of Logan House, *Chairman*.  
 HENRY BRUCE of Edderline, 18, Atholl Crescent.  
 JAMES COWAN, merchant, 38, W. Register Street.  
 JOHN CRABBIE, merchant, 22, Royal Terrace.  
 JAMES CREE, merchant, 34, Royal Terrace.  
 COLIN MACKENZIE, W.S., 28, Castle Street.  
 JOHN MENZIES, publisher, 12, Hanover Street.  
 HENRY MOFFAT of Eldin, 5, Mayfield Terrace.  
 A. T. NIVEN, C.A., 6, North St David Street.  
 JAMES TOD, printer, 3, St James' Square.  
 RICHARD WILSON, C.A., 28, Frederick Street, *Hon. Treasurer*.  
 ROBERT JOHNSTON, 16, London Street, *Secretary*.

(4.) *Demoralization of the City Officials*.—The next incident of the contest, viz. : the episode of Mr Robert Paterson, the City Assessor, and his antics with the valuation roll, is one of a somewhat curious description, and deserves some notice as an illustration of the demoralization that had affected the city officials at this time, induced no doubt by the example of the more prominent and noisy of the Councillors themselves.

That official had in 1869, on the employment of the promoters of the Bill of that year, spent 31 days in London, accompanied by one clerk during the whole time, and by another during 18 days of it, trying to pick holes in and discredit the petition of the citizens to the House of Lords against the Bill for the acquisition of the Water Works, for which he made and has been paid the following neat little charges :—

1869

June and July.—Attending in London examining ratepayers' petition, and preparing for the inquiry before the Committee		
of the Lords, 31 days,	. . . . .	£162 15 0
Travelling and other charges,	. . . . .	73 10 0
One Clerk engaged 31 days,	} . . . . .	102 18 0
Do. do. 18 days,		
Travelling Charges of Clerks,	. . . . .	8 0 0
		£347 3 0

Before leaving these charges it may be observed that Mr Paterson was bound by the terms of his appointment as City Assessor, to devote to the duties of that office his whole time from the 15th of May to the time of completion of the valuation and electoral rolls in the month of September or October ; and that, during that period in 1869, he was absent from Scotland for 31 days, during all which time he drew his salary, as if he had been occupied in the discharge of his proper duties in Edinburgh.

Mr Johnston had farther learned that to assist him in trying to discredit the petition, Mr Paterson had carried with him to London the valuation roll of the city, and had kept it there during the whole of that period. Now, by the Valuation Act for Scotland (1854), the valuation roll of the city, when completed in each year, is directed to be transmitted by the Assessor to the City Clerk, in whose office it is directed to be kept, open to the inspection of any ratepayer. Mr Paterson had, therefore, carried out of Scotland, in contravention of the statute, the current valuation roll of the city to serve purposes of his own, for which he had, as already stated, charged five guineas per day besides two guineas per day for his maintenance. He farther had a staff of clerks, kept up for him and paid by the city for the making up of the roll—and there is some reason to believe that he took two of these clerks from their duties ; and that while the city was paying for their services in Edinburgh, he was charging a guinea per day for each of them, for services to the city in London, as if they were his own clerks.

When, therefore, Mr Johnston saw, in the *Scotsman* of 7th March, little more than a week after the ratepayers' petition to the House of Commons against the Bill had been deposited, an announcement that "Bailie Lewis and Mr Marwick, with Mr Paterson, city assessor, are at present in London promoting the Bill," he at once came to the conclusion that Mr Paterson's game of 1869 was being repeated, and that the valuation roll of the city would then, as before, have been removed to London, in contravention of the statute, Bailie Lewis, the declared foe to jobbing, and Mr Marwick being participators in the offence, if indeed Mr Marwick was not the principal culprit, he being the statutory custodier of the roll. To test the truth of this surmise, as well as for the purpose of getting information as to rentals which had been left blank in the petition, Mr Johnston, under the instructions of the Committee, went on the morning of the 8th to the City Clerk's chambers in the Royal Exchange, and asked for an inspection of the valuation roll, which as a ratepayer, he was entitled to under

the Valuation Acts. He was told that it was not, and never had been kept there—that it had been found more convenient to keep it in the Assessor's Office, No. 10 Hanover Street—and that it could be seen there. Mr Johnston went there, and on asking for inspection of the roll, he was told by the chief clerk, Mr Laing, in a hesitating sort of way, that it was not there at present. Mr Laing then offered an inspection of a number of small books, which he called the Surveyors' books, from which he said the roll had been made up, and which would give all the information that was in the roll. Mr Johnston then asked when he could see it? He did not know. Where was it? No answer. Was it in London? No answer.

Mr Johnston then went to Mr Thomas Brodie, W.S., the member of his firm who, as Edinburgh agents, took charge of the opposition, and these two gentlemen went to the City Clerk's office, and saw Mr Harris, the chief clerk in Mr Marwick's absence. He did not appear to have had any communication from the Assessor's office, as he repeated the statement formerly made to Mr Johnston by a clerk in the office, that the roll had never since the passing of the Act been kept there—that to suit general convenience, it had been arranged to be kept at the Assessor's office—and that it could be seen there. On its being explained that the roll could not be seen there, he professed himself unable to explain the cause. Mr Harris then promised to Mr Brodie, as this was the statutory place for keeping the roll, that he would send and get it brought there for his inspection. On Mr Brodie's return in a short time, there was no roll; but instead of it he was offered a trayful of the Surveyors' books, which he declined to look at.

Mr Johnston then brought the matter before the Committee; and it was judged proper that letters demanding both an explanation of this occurrence, and access to the roll should be addressed by the chairman, Mr Charles Cowan, to the Lord Provost, the City Clerk, and the City Assessor. Accordingly, on the 9th March, letters were addressed by Mr Cowan—(1.) to Mr Marwick in reference to the statement that the valuation roll had never been transmitted to, and was not in his office, and requesting information where it was on the previous day, in whose custody, or for what purpose, and when and where access could be had to it; (2.) To Mr Paterson, mentioning that Mr Brodie, on applying at his office on the previous day for inspection of the roll, had been informed by Mr Laing, the clerk in charge there, that the roll had been removed by him from the office on the previous Saturday, and that Mr Laing declined to say what he had done with it, and demanding explanations similar to those asked from Mr Marwick; and (3.) To the Lord Provost, communicating for his information copies of these letters.

Apparently the Lord Provost's regret at this absence of the valuation roll from its statutory place of deposit was indescribable, for he never was able to answer Mr Cowan's letter.

Mr Marwick's only answer, evading the greater and more important part of the inquiry was,—“On learning from my assistant that appli-

cation had been made for the valuation roll, I requested him to arrange immediately for access being given to it, and if Mr Brodie or Mr Johnston applied on Thursday morning they would have got what they wanted."

Mr Paterson in his answer, dated from the Westminster Palace Hotel, London, attempted to treat the whole affair in a spirit of levity, arguing very ill for his sense of the duty imposed on him in his public capacity:—"I have only to state that the parties who applied at my office on the 8th, were at once offered any information they desired; but, because, *owing to a slight mistake*, the official roll was not accessible at the moment they wanted it, *they have chosen to make what I take leave to characterise as a very unnecessary fuss about it*, the more so that the roll was open to them next morning, and I understand they got notice to that effect." Such an impertinent answer to a serious charge requires no farther notice.

That Mr Johnston's surmise of the object of Mr Paterson's trip to London was correct, is verified by a piece of London news, telegraphed to the *Scotsman* on the evening of the 14th March, and published the following morning, doubtless furnished by Mr Paterson himself to show what he was about, and so to strike terror into the minds of the opposition, in the idea that he was to play as prominent a part in the history of the Bill of 1871, as he was permitted to play in reference to the Bill of 1869. The following is the paragraph referred to:—"London, Tuesday night. Mr Paterson, the City Assessor, is here making a scrutiny of the petition presented against the Edinburgh Water Bill."

Before proceeding with the detail of the parliamentary contest now about to commence, one other subject calls for notice. It has been already mentioned that the trustees thought they had the command of the public purse, that is, of all the water trust funds, for expenditure in promoting their scheme—while the purse of the opposition was a subscribed one, and was therefore very unlikely to be a heavy one. In the early stages of the opposition the trustees and their agents never could bring themselves to think that funds for a contest of such magnitude would ever be forthcoming; and they and all their friends and allies reckoned confidently on the collapse of the threatened movement for (as they phrased it) want of a gold basis. Of course funds could not be raised without exertions; and that all might have an opportunity of contributing, circulars were sent to all the inhabitants to their addresses in the Edinburgh Directory, requesting contributions; and for the purpose of showing that substantial subscriptions had already been intimated by citizens whose names were a guarantee that the opposition was a *bona fide* one, a page or two taken from the treasurer's list, of the intimated subscriptions, in the order in which they had been announced, had been printed, and were inclosed in each of the circulars. As these circulars were addressed to the inhabitants indiscriminately, the promoters of the Bill received copies with the other inhabitants, and it is reported that on some of the more ardent and active of the

promoters meeting immediately afterwards, and sitting down and summing up the printed list, in the belief that it comprised all the subscriptions, and finding that the amount was only £240 or thereby, they tossed up their hats in their extacy, regardless of the injury which that indispensable article of attire might sustain. But they were rudely disturbed in their fools' paradise on the morning of the 31st of March by the publication of the first list of detailed subscriptions, showing a fund of about £1400 already subscribed. It was evident then that a fight was inevitable ; but as "hope springs eternal in the human breast," a new hope sprang up, that provided the fight could be made long and expensive enough, the enemy might be starved out, and be compelled by sheer inanition to retire from the contest.

Doubtless the wish was father to the hope, and as a general rule, a wish is the preliminary to an endeavour. At all events there seems no other way of accounting for the incident now to be mentioned, except that the contest was to be conducted with the fixed purpose of making the opposition bleed at every pore. One of the points of opposition was that there was no necessity for going to such a distance as St Mary's Loch for an additional supply of water, as there was plenty of water of good quality to be got in the Pentland Hills to satisfy all the necessities of the inhabitants of Edinburgh. On this subject the ratepayers' Committee had ascertained and were prepared to prove that a large quantity of water escaped every year, from time to time, over the waste weir of Glencorse reservoir, which, were it impounded by additional storage being provided, would go far to supply any existing deficiency. It was known that there had been kept by the Water Company a register of this overflow, which had been handed over by them to the trustees, and from which the precise quantities of water thus run to waste could be calculated ; and it was understood that the register had been continued to be kept by the trustees. On the other hand, the trustees alleged that the Pentlands had been drained dry, and could afford no additional supplies sufficient for the wants of the inhabitants of Edinburgh and district. The contending parties were thus at variance on a matter of fact, very pertinent to the question at issue, and the precise state of which was capable of being ascertained, in so far as regarded the Glencorse Valley, from books in the hands of the trustees.

To make sure of having this evidence in London, and about a week before the day fixed for the sitting of the Commons' Committee in London, Mr Brodie the agent of the opposition, or his firm, wrote a letter to Mr Marwick as parliamentary agent for the bill, and clerk to the Water Trust, containing a formal requisition on the Trustees to produce before the Committee on the bill, the books of the Water Company and of the Trustees, containing, among other things, the records of this overflow. Before receipt of this letter, Mr Marwick had gone to London, and his assistant, Mr Harris, wrote in answer mentioning this fact, and inquiring if Mr Brodie was ready to pay the expense of a special messenger carrying the books to London, *and keeping them there.* It

was not directly said that the books would be sent if Mr Brodie agreed to pay this, nor was it said that the books would not be sent if he did not so agree. But as it appeared to him that a pretext was being sought to evade the demand for exhibition of the books, though of a thoroughly pettifogging nature, Mr Brodie answered by agreeing to pay the expense of a messenger taking the books to London, but saying nothing about agreeing to pay the expense of his remaining in London in charge of the books, Mr Marwick, who was then in London, being their proper custodier. The books were accordingly sent to London, and when they came to be called for, exhibition of them was first promised, then it was pretended that they had been exhibited, and then exhibition of them was absolutely refused, because the Trustees' Counsel "*considered it a mere waste of time*" to produce them. A full narrative of this discreditable piece of conduct is given afterwards. Such behaviour on the part of the Trustees was in perfect consistency with their previous conduct; but it must excite surprise that the Committee, on being applied to by the Counsel for the opposition, refused to order the production of the best evidence in the hands of the trustees, being apparently content to take the evidence of interested witnesses as to the contents of documents in the room but refused to be shewn. Had a Committee of the House of Lords sanctioned a proceeding so outrageously at variance with all principles of evidence, there would have been no end of vituperation of them. But as it was the proceeding of a Committee of the Peoples' House, of course the independent liberal trustees lauded it as the judgment of a quartett of Daniels.

But, passing from this for a moment, and referring to a period, like the incident just noticed, a little in advance of the general narrative, it has been mentioned to the author, on reliable authority, that after the contest in the Commons had extended into the second week, the subject of conversation every evening of the trustees and their friends in the Westminster Palace Hotel, where the main body of them was located, was whether the opposition funds were not exhausted yet, and as time passed on they were every morning hugging the idea that their enemy would not appear; but as day after day passed on, and still the enemy was at his post, the idea of collapse slowly faded away, and they saw the stern reality before them that they had no choice but to fight the battle out.

On the preamble of the bill passing the Committee, ominous symptoms of continued hostility were exhibited, the ratepayers' counsel and agents having withdrawn from the consideration of the clauses, taking part in which would have precluded them from offering opposition to the bill in the House of Lords. To cripple the opposition as much as possible by absorbing their funds, Mr Marwick immediately sent in an account of upwards of £28 for the expenses of a clerk taking up the books to London, and remaining in charge of them. The claim was so outrageous in regard to the expense of the clerk remaining in London, that no notice whatever was taken of it; and after the bill had been thrown

out in the House of Lords, and the ratepayers began to take the trustees sharply to account for their actings, and attempted appropriation of the public funds to their costs and expenses, both they and their law agent appear to have deemed it more prudent rather to drop the claim than to increase the indignation of the ratepayers which their conduct, without that last straw, had made heavy enough already.

### 3.—THE CONTEST IN THE COMMONS.

The Special Committee consisted of the following members, viz :—

Viscount Bury, (Berwick) *Chairman* ; Mr Waterhouse, (Pontefract) ; Colonel Stuart, (Cardiff) ; Mr Dowdeswell, (West Worcestershire).

The trustees were represented by Messrs Calvert, Denison, Clerk, and Pope, all Q.C.

The following parties appeared to oppose by their respective counsel, viz :—

The ratepayers of Edinburgh by Mr Rodwell, Q.C., and Mr Shiress Will, and afterwards also by Mr J. H. A. Macdonald of the Scotch bar.

William Brown and others, Selkirk, by Mr Sergeant Sargood and Mr Macdonald.

The Corporation and Police Commissioners of Selkirk, and others, by Mr Shiress Will.

Mrs Scott of Rodono, by Mr Mundell, Q.C.

As this publication is intended rather as a popular account of a great struggle, the most convenient mode of narrating it is to state in succession, in the order in which they naturally occur, the different grounds relied on by the parties respectively in support of their cases, the answers to these grounds, and the evidence on both sides bearing on each separate head. By treating the case in systematic detail in this way, a far more clear perception will be got of it than by attempting to condense and explain the evidence in the dislocated order in which it was given. To give any thing like the evidence in full is out of the question, the report of the evidence and speeches in the Commons extending to nearly 600 pages of the size of those of an ordinary blue book, and in the Lords to upwards of 460 similar pages.

The head and front of the trustees' case is contained, in the way in which they chose to present it, in the evidence of Bailie Lewis their first witness, who commenced with a long history, coloured in his own particular way, of the occurrences which preceded the passing of the Act of 1869. It does not appear to be necessary to take any notice of these occurrences farther than has been already done, because the trustees appointed under that Act professed to be unprejudiced in every way in the performance of the duties thereby imposed upon them, and, as already mentioned, had recognised the primary obligation of ascertaining, and of course of checking, the preventable waste, and also of ascertaining whether the complaints from particular localities of deficient supplies might not be remedied by a better method of distribution of the water which was then brought in. It was plain that these were essential matters to be ascertained before the

trustees could come to any determination as to whether or not the present supply was not perfectly sufficient if properly managed, and if not, what additional quantity required to be introduced. That the latter branch of this inquiry was really an essential one is evident from the great diversity of levels, even in the same districts of the city: Thus, in the New Town, the levels above the sea vary from 220 feet in George Street to 55 feet at Stockbridge; in the Old Town, from 330 feet at the houses on the Castlehill to 120 feet at Holyrood; and in the Southern Districts from 320 feet at Burghmuirhead to 200 feet at the south end of Minto Street. During the dry summer and autumn of 1870 the water was intermittently supplied to only one of these districts at a time, and it is easy to see that the difference of levels must have seriously interfered with the regularity of the general supply. Bailie Lewis could not say that the propriety of improving this state of matters had ever been under the consideration of his engineers, nor did they say so, their whole time having been occupied in looking for a new source of supply sufficient of itself to give an additional quantity of about 50 gallons per head per day. It had never entered their heads so to arrange the distribution pipes as to have the districts on or near the same levels all supplied from one set of mains, so that the pressure might be practically the same over the whole range of supply from each set.

Commencing then with the entry of the trustees to the works at 15th May 1870, they never ascertained either the preventable waste, or whether any of the complaints of defective supply could be remedied by improved distribution; but after what they considered a due time occupied in professing to inquire into the best sources of supply, they resolved to go to St Mary's Loch. To justify this, they had, however, several things to prove.

(1.) *The minimum quantity presently supplied.*—The trustees professed to have ascertained the minimum supply in the summer of 1870. Bailie Lewis stated (124-6) the actual fact to be that there was a minimum supply of  $13\frac{1}{2}$  gallons per head per day to a population of 250,000, which would leave for domestic supply, after deducting 14 per cent. for manufactories, and an allowance for waste, about 8 or 9 gallons per head. But in another statement made by him about two months previously in the Town Council, viz.: on 21st February 1871, (see *Scotsman*, 22nd February 1871,) he said that he "had gone into the whole returns during the last six years, and he found that, with the exception of six months, they never had from the present works 40 gallons per head. It was important to inquire when they were receiving 40 gallons per head. It was for the two months during which they were contending with the Water Company in the House of Commons, and when the company were sending in every drop that their pipes would carry, with the view of silencing the clamour of the citizens, and for the other four months, when the company, possessed by a spirit which he would not dare to characterise, were running the reservoirs empty previous to handing them over to the citizens." If his

statement of 21st February is to be believed, then the minimum supply described by him in the summer of 1870 was caused by malicious waste; but in the Commons' Committee he took it upon himself to insinuate that this was an untruth, for he represented the minimum supply of that summer to be the result of natural causes likely to occur again. The citizens will judge what reliance can be placed on the word of a man who thus plays fast and loose with statements of fact.

The inaccuracy of the evidence of Bailie Lewis, to use the very mildest possible word, as to the minimum supply derivable from the present sources, as affected by natural causes, was strikingly illustrated by the promoters' own witness, Mr James W. Stewart, C.E., who said in cross-examination:—

2901. Do I understand you that 28 gallons per head per day is what you can secure at present at Edinburgh? It is.

2902. That is the minimum? That is the average.

2903. What is the minimum? It fell last year to 375 cubic feet, that is, it fell to about 14 gallons a head.

2904. Do you suppose, if things were to go on as they are, you might rely upon 28? If well managed it would give 28.

Mr Bateman concurs in this estimate of what may be relied on as the amount of the present supply (3501).

It may then be assumed to be proved by the promoters themselves that the present works, if properly managed, are adequate to give all the year round a steady supply of 28 gallons per head per day.

(2.) *What supply per head per day is necessary?*—The first witness who came to details on this subject was Lord Provost Law, who maintained (767) that the Edinburgh people “wanted as much water as the Glasgow people” had, which was proved by Mr Carriek, master of works, Glasgow, to be about 50 gallons per head per day; and on being reminded that the 12,000,000 gallons proposed to be brought from St Mary's Loch would give 48 gallons per day to a population of 250,000, in addition to the existing supply of 28 gallons, he replied, with child-like simplicity, (789) “I go in for the greatest quantity I can get;” and he gave as a reason for wishing such a large supply, (758) “I have a large family!”

Councillor Archibald of Leith also made reference to the water supply of Glasgow as a measure for that of Edinburgh; but like the Provost, he laid out of view the existing supply.

Dr Littlejohn gave the most intelligible evidence as to the requirements of Edinburgh for a large supply of water; and as it stated what was really the strength of the promoters' case, the pith of it is now given verbatim. Referring to the houses in the Old Town of Edinburgh being divided into so many flats, without water-closets and other conveniences, he said:—

1480. Does that lead you to the conclusion, that, as regards the sewage arrangements, and cleansing away the effete matter, and things of that kind, Edinburgh specially requires an abundant supply of water? It does.

1481. Can that be judged, in your judgment, by the ordinary test of domestic supply for a community otherwise situated, or do you think something additional should

be provided? I have no hesitation in saying so, as compared with all English towns, and the large majority of Scotch towns.

1482. There has been a great tendency of late years in Edinburgh to insist upon the construction of water-closet accommodation for the poorer class of houses, as well as in the better class of houses? In all recent Acts the Corporation have taken power to introduce those conveniences.

1483. Has that matter come before your attention in connection with the water supply? It has specially.

1484. Is it a desirable thing to increase water-closets, unless at the same time there is an abundant supply of water? I say decidedly it is not. These conveniences become a source of not only inconvenience but disease; we have had to shut them up in a great many cases, and we could not go on introducing them into the houses of the poor until we had a superabundant supply of water.

1485. Then you, as sanitary officer, felt it necessary, in the exercise of your duty, to discourage the introduction of water-closets, until the water supply is properly arranged? Yes.

It may be observed, however, that all this evidence pointed rather to an improved method of distribution, by an arrangement to have all the houses on or near the same levels above the sea, supplied from the same mains, than to the necessity of an exceptionally large supply of water.

The next evidence was that of Mr Stewart, the engineer of the trust; and in fairness both to the trust and to himself what he said on the subject will be given, at the risk of being tedious:—

2909. What do you consider that you require for a city like Edinburgh? 50 gallons per head per day.

2910. Then your problem was to find a reservoir or supply which would enable you to give the citizens 50 gallons per head per day, making a total of that? Yes, and looking to the future also.

2911. What is the quantity that you think that you can get from St Mary's Loch by itself? Under the Bill, 24,000,000 gallons.

2912. How many gallons per head a-day is that? May I not take it in round numbers being itself a supply from St Mary's Loch at nearly 100 gallons per head per day? Yes.

2913. That would give you, in addition to the present supply, in round numbers again, 125 gallons per head per day for Edinburgh, which is 75 gallons per head per day more than you say they want? That is not the exact way to put it.

2914. But where is it wrong? *It requires 12½ millions just now to give the 50 gallons a head per day to the town.*

2915. By your present water-works you have got what we call 28 gallons a head per day? Yes.

2916. If you get the additional supply from St Mary's Loch I understand you get an addition of 95 gallons per head per day? That is so.

2917. Now if you add 95 and 28 together, it makes what? 123 gallons per day.

2918. That is in round numbers 75 gallons per head per day more than you want? That is, supposing the population to stand quite still.

2928. Now tell me, do you know of any city in England or Scotland which has at the present moment 30 gallons per day per head? Glasgow.

2929. With the exception of Glasgow? I believe Oxford has 110 gallons per day.

2930. Do you know the circumstances connected with Oxford? No, I am not acquainted with it.

2932. When you fixed upon 50 gallons per day as the sum per head that ought to be given to the citizens of Edinburgh, was that with reference to any peculiar feature in Edinburgh, or was it with reference to other places? With reference to Glasgow.

2933. Simply because Glasgow had it, you thought you ought to have it? Glasgow having 50 gallons it was quite evident that Edinburgh could not do with less, because Glasgow is much more easily supplied than Edinburgh, owing to the greater waste in Edinburgh.

2934. Are you aware whether there has been great waste in Edinburgh? There is great waste, but it be cannot be avoided.

2935. Do not you think that by a better system of plumbing the waste might be avoided? No, I do not.

2936. What is your reason for saying that? It is the carelessness of the people.

2937. But do not you think that by certain penalties, and so on, people might be made more careful? You might attempt to educate the people, but it is a very difficult thing; in Glasgow they tried it and failed.

2938. Are you aware that in other places they have diminished the rate to an extraordinary degree, and economised the water supply? I have heard of such cases.

2939. But you do not believe in it? No.

2940. There is no peculiarity in Edinburgh, but that they should be subject to the same process as other people? They are very fond of water.

Much of this evidence seems calculated rather to provoke a smile than to carry conviction with it; but such as it is it appears to mean that the citizens of Edinburgh require more water than those of Glasgow, because they are very fond of water, and waste more than in Glasgow. Mr John Carrick, however, a Glasgow witness already referred to, did not concur in this opinion, his evidence being as follows:—

1403. You do not mean to put Edinburgh on a par with Glasgow as regards the quantity of water required, do you? No; in certain circumstances they are different.

The following was Mr Bateman's estimate of the necessary supply for Edinburgh:—

3502. What have you taken as the number of gallons per head per day that should be looked for, considering the local circumstances and necessities, for a Scotch city like Edinburgh? We have to apply a very different rule to Scotch cities to what we do in England. You cannot make 30 gallons a head a day do in Scotland. In Glasgow it is 50 gallons a head a day. I may mention that the Commissioners used every means to bring it down, but they never could bring it down below 30 gallons a day; it always results back to about 50 gallons a head a day, as a normal quantity. A Bill has just been passed through for Dundee, of which I am the engineer, for 50 gallons a head a day. There is also a Bill in Yorkshire for 50 gallons. Halifax takes 40.

3503. You have spoken of Glasgow—does the 50 gallons which they consume depend upon large trade and consumption? No; the water for trade purposes, exclusive of those connected with domestic wants—I do not know exactly what it is now, but I think the last time I investigated it, it was only  $3\frac{1}{2}$  or 4 gallons a day. That reduced the actual consumption of water in Glasgow for domestic purposes to about 48 or 49 gallons per head per day.

3504. Applying that formula to the figures which you have given us of the deficiency and population, how does the matter stand; what is the present immediate deficiency? The present population of 250,000 at 50 gallons will require 12,500,000 gallons a day, and as they have only 7,000,000 gallons, there is a deficiency of 5,500,000 gallons.

Such was the case for the promoters in reference to the quantity of water necessary for each head of the population per day.

On the part of the Opposition, Mr Thomas Hawksley, C.E., London, gave the following evidence:—

4125. Assuming for a moment that the Committee were impressed with the views of the promoters—that more water is necessary for Edinburgh, you say that a sufficient supply can be obtained (may I say easily) from the Pentlands? Yes; there is an amphitheatre of hills round Edinburgh which will supply an immense quantity of water beyond what the Pentlands will supply.

4126. By the COMMITTEE.—What do you mean by a sufficient supply? A sufficient supply may be anything from that district from the proper quantity of 25 gallons per head, to the improper quantity of 150 gallons per head. There is any amount of water almost.

4127. From 25 gallons per head up to 150 gallons per head? Yes; but such a quantity as that, or anything approaching to it, would be absurd.

4325. My learned friend Mr Calvert asked you a question or two about Sheffield,

which suggests to me to ask you what is the consumption at Sheffield now? The consumption now is between 26 and 27 gallons per head.

4326. Is it not about as dirty a place as any in England? It does not depend upon that. The consumption a year ago was 40 gallons, and we were required to put on a constant supply; and we failed just as Edinburgh has failed, and with exactly the same number of population. We got rules and regulations made and approved for correcting the fittings, and thereby preventing the waste. We have already saved 13 gallons per head per diem, and we are only on the threshold of our business. By-and-by we shall get down, by the completion of our arrangements, to 20 gallons a-head certainly.

4327. That is what makes you so strong in your view that really in your judgment Edinburgh, with proper care, wants no farther supply than it has now? Yes; but that is not a solitary instance. I could give you almost off-hand 20 towns or more where the consumptions by the suppression of waste are kept considerably below 20 gallons per head per day.

Mr Hawksley's evidence was substantially corroborated by that of Mr Leslie, as follows:—

5190. Do you agree with that portion of Mr Hawksley's evidence in which he stated that if the distribution in Edinburgh itself was improved, the people could have a continuous supply of water with much fewer gallons less per head than they now make use of, or want? I think that 25 or 30 gallons a-head would be ample, if there was no waste in the domestic supplies. That is my opinion.

5191. From your knowledge of the character of the supply pipes in Edinburgh, do you believe that you could make such alterations as to prevent waste, according to Mr Hawksley's plan at Norwich? It might be done certainly.

Mr John Ayres, C.E. of Norwich, manager of the Norwich, the Sheffield, and the Great Yarmouth Water Works, spoke of the enormous waste which he saw on an inspection he made of a number of houses in Edinburgh in 1868, and of the way in which similar waste had been checked in Norwich and Yarmouth, and was being checked in Sheffield; and then went on:—

5340. If the waste was checked in a place like Edinburgh, how much water do you think would be ample and sufficient for the inhabitants? At Edinburgh they have a great many water closets, and a great many baths, and therefore I should give more to Edinburgh perhaps than to any other town that I know of. I know nearly all the water-works in England, and I think that 25 gallons a head would be a most abundant maximum supply, including trade and all purposes—most abundant. I do not believe they could use it.

The case presented to Parliament by the promoters on this head has been given in greater detail than its own merits deserve; but the detail is necessary to make intelligible a concealed and characteristic plot of the promoters which shall now be glanced at; but which will be more completely exposed afterwards in treating of the cost of the St Mary's Loch scheme, and the means of providing for any excess of the cost of execution over the sum of £500,000 proposed to be raised under the Bill.

What was proposed in the Bill was to bring in 12,000,000 gallons of water per day from St Mary's Loch. This, to a population of 250,000, would afford 48 gallons per head per day. Mr Stewart's estimate of the average yield of the present supplies was 28 gallons per head per day, so that had the St Mary's Loch water been introduced, there would have been a present supply of 76 gallons per head per day, with a farther power to go to St Mary's Loch whenever they required another instalment of 12,000,000 gallons per day.

Now, one and all of the trustees' witnesses fixed 50 gallons per head per day as the maximum supply required for the population, so that they would, on the introduction of the St Mary's Loch water, have had at their credit an excess of 26 gallons per head per day above their maximum, with a power of drawing 48 gallons per head per day additional when it was found to be required.

Keeping these circumstances in view, there was in the bill, when introduced into the Commons, this extraordinary clause:—

24. It shall be lawful for the trustees, and they are hereby authorised, after the introduction of the said supply of water from St Mary's Loch and the Loch of Lowes, under the provisions of this Act, to take up and remove from time to time such of the reservoirs, conduits, pipes, and works vested in the said trustees by the first recited Act as may not be required (excepting the compensation reservoirs constructed under the authority of the several Acts relating to the Edinburgh Water Company), and to sell and dispose thereof, and of such lands and property, and such materials and other things as shall be found unnecessary for the purposes of the first recited Act, and of this Act; and the trustees may apply the price thereof IN PAYMENT OF THE WORKS HEREBY AUTHORISED, or in extinction of any of the debts or obligations of the trustees.

Nobody except a mischievous schoolboy usually takes the trouble of cutting a stick, unless he has in view a use for it, and a mischievous boy, as a rule, is better without it than with it. There is no doubt, therefore, that this clause was not inserted without a pre-determined use for it, and when all the circumstances are considered, there can be as little doubt that it was intended to dispose of the existing works, so far as they were saleable. Why they were to be sold, and what was to become of the price, will be discussed when the cost of the St Mary's Loch scheme comes to be noticed.

Doubtless, however, reference will be made to the evidence of the Lord Provost to show that this was a mere power taken for the sake of convenience, in case of a contingency arising for its exercise, but not in contemplation to be put to use; for in his cross-examination he said, as if the subject had then been brought to his notice for the first time, that the proposal to sell the existing works was a mistake (793); that he thought the proposal to insert such a clause was a combined mistake of the trustees and the opposition (794); that to please the opposition he would drop the clause out of the Act (796); *that he was not consulted about the insertion of it* (797); and that he thought it ridiculous to propose to sell any of the works (798). In short, what grains of common sense can be got out of this bushel of chaff, seem to point to the idea that the insertion of the clause was a mistake, and that he had been made a tool of by more designing men in promoting a thing as to which the Chief Magistrate of the city was never consulted.

But the circumstance that he knew nothing about the intended operation of the clause is no proof that it was a mere form. This is not the only matter in which he was kept in the dark and his name used as a convenient cloak for a discreditable proceeding in this municipal contest, where provided he got an arena for small jokes, the interests of the citizens seem in his eyes to have been a very secondary consideration. To justify this remark it is only necessary to take his

own picture of himself, as painted before the Committee of the House of Lords, in reference to the concealment of Mr Leslie's report. He there stated that he was no party to its suppression (529) ; that he did not know of it (530) ; that he did not know on whose instructions it was suppressed (532) ; *and that he took no particular interest in it one way or the other !* (533). This is a pretty confession for a chief magistrate to make in regard to the business of a Trust of which he was the statutory chairman ; but all the same the report was suppressed, and doubtless had the powers of sale of the existing works been granted, the works would have been sold, although the Lord Provost should have taken no particular interest in the matter, and have delegated the power with which he was entrusted, to other schemers who did make it *their* particular interest to conduct this matter.

Coming back however to the subject which was under consideration, it may be fairly questionable if the trustees had proved that even the supply of 28 gallons per head, per day, was insufficient ; still, assuming this to have been the case, it appears plain that were the opposition able to make out that the five or six millions of gallons per day additional could be got at a moderate cost, in the neighbourhood of the present sources, the St Mary's Loch scheme involved a reckless expenditure of money.

(3.) *Preventable waste.*—This matter has already been alluded to in connection with the remit of the Water Trustees to their engineer on 8th September 1869, and repeatedly renewed since, made with the ostensible view of ascertaining, checking, and preventing waste. It is evident that this was an essential point of the promoters' case if it was an honest one. Mr Bateman and the promoters' witnesses generally maintained the necessity of having a supply equal to that of Glasgow. But, on the other hand, Mr Hawksley, Mr Leslie, and Mr Ayres, all considered from 25 to 30 gallons per head per day an abundant allowance, and Messrs Bateman and Stewart, the promoters own witnesses, admitted that the present supply afforded 28 gallons. Now this must have been the quantity delivered into the pipes in the country, and supposing all the statements made by the promoters to have been true as to the scarcity in town which caused such indescribable sufferings, there is no proof that the 28 gallons were insufficient, unless it were ascertained in some reliable manner that that quantity actually reached (at least without such waste as was preventable) the points of delivery, and was preserved from waste when delivered, by the cisterns and fittings being in proper order. Unless it was either ascertained by a proper examination that there was no preventable waste, or that such waste was prevented if ascertained, a mere short delivery in Edinburgh was no proof of an inadequate quantity sent from the fountain heads. But what was done in reference to this was absolutely nothing. Bailie Lewis no doubt boasted that everything that human ingenuity could devise had been done ; but he could specify nothing except the appointment of some inspectors—a number of domiciliary visits by them—and the issuing of a number of notices, with which the attempts

at checking waste seem to have terminated. The evidence of Mr Stewart on the same subject has also been already quoted in reference to what he considered the necessary quantity of water to be supplied per day to each head of the population,—the great waste,—and the impossibility, in his opinion, of preventing it, as an excuse it is presumed for his not having even attempted to prevent it,—which statements are crowned by the following extraordinary evidence by him as to the advantages of waste :—

2941. Do you consider that the waste of water is useful in a sanitary point of view? I do.

2942. That is to say that the trickling of the taps, and the water so finding its way into the sewers and drains, cleanses the drains? Yes; the aggregate of all these little tricklings soon becomes a considerable stream, and it then has a great effect upon the drains in keeping them clear. In fact it does keep them clear in many instances.

Mr Hawksley's evidence on the part of the opposition as to the waste in Edinburgh is too long for quotation (4121 to 4124); but the following sentences bearing more emphatically on the subject may be given :—

4121. The waste in Edinburgh is now to a very great extent repressible waste. I know of it myself; I have examined the houses, and looked at the apparatus, and I know well how the thing is managed, or rather not managed at all; and I know the proportion of water which actually does go to waste.

4122. In the town it is absolutely ruinous waste. I never saw so bad a system in all my life.

4123. Is it worse than Glasgow? Yes; it is worse than Glasgow, because in Glasgow, as a rule, they carry the water up to the tops of the houses, and then it is drawn down again. But here it goes sometimes down, sometimes up, sometimes sideways, sometimes it is throttled at the entrance of the service pipes, and, altogether, the system is such as to enable a man who lives in the lower part of the flats, by the misuse of his very bad apparatus, to run off all the water as it arrives at the premises, and prevent all the people above him from getting any. That is actually the cause of the complaint of want of water in Edinburgh.

In the next answer he explained how the waste was repressed in Norwich, and which could be as easily done in Edinburgh.

Mr Leslie's evidence in corroboration of Mr Hawksley's has already been quoted.

Mr Ayres described what he saw of waste in 1868, in an inspection which he made of houses selected at random by himself; and his account of it is so instructive that it is here given at length.

5332. You visited Edinburgh, I believe, in the year 1868? Yes.

5333. Did you look at the fittings there? I did.

5334. To what sort of houses did you go? Some of all classes.

5335. Did you select the houses yourself at random? I did. I had an official of the Water Works Company with me, for of course I was a comparative stranger, and he took me into the different districts, and I pointed out the houses that I should wish to visit.

5336. You chose the houses yourself? Undoubtedly.

5337. What did you find? I found in almost every case the taps leaking—the exception was to find one tight—and seeing a great many of what would be termed small leaks, which I thought the water works officer did not thoroughly appreciate, I sent to a public house and borrowed a gallon imperial measure, and we had a discussion with the inhabitants; one said it was not a leak, but we found that it was running at the rate of 110 gallons in 24 hours; it was not considered a leak by the inhabitants, or even by the water works officer; he considered it next to nothing.

5338. You said, I think, 110 gallons in 24 hours? Yes; I went into the basement of the same house, and I found another tap running at the rate of 207 gallons in the 24 hours; but there were many that would deliver 10 and 20 times that quantity in one hour at that time.

Then Mr Ramsay, who as manager of the late Water Company, knew more about the matter of waste than probably any other person, stated,—

5365. Will you be good enough to tell the Committee whether, in your judgment, there is any waste caused by the defective distribution in the city? Yes, enormous waste, in consequence of the defective fittings in the city; and immense waste in the country as well.

5366. Are you of opinion that the waste in the city is a preventable waste with better apparatus? I am decidedly of that opinion.

5367. Has that waste always gone on, more or less, during the period of your acquaintanceship with the works? During the whole of that period.

5368. I believe the Water Company made an ineffectual effort, did they not, on more than one occasion, to control that waste? Yes, they did in 1856 and 1863, when the Company had bills in Parliament; there was a proposal made to obtain the same powers to prevent waste that Parliament had given to many other towns, Norwich included, but that proposal was very strongly opposed by the Town Council, and the consequence was that the company were forced to give up the idea of obtaining anything in that way.

5372. Can you give the Committee any idea of the extent of the waste in the distribution of the city? No, not very accurately; it is a mere guess, but I put it always, and I think perhaps it is a little under the mark, at 33 per cent. of the whole quantity of water delivered in Edinburgh, that is uselessly wasted, or rather worse than uselessly wasted.

In answer to farther questions Mr Ramsay stated that there would be no difficulty whatever in carrying out those powers to control the waste, if the Water Trustees should apply to Parliament and obtain them, except in reference to the cost, which Mr Hawksley had estimated might amount to about £85,000; and that in that way the water supply would have been reduced probably to 25 gallons per head, and perhaps under that, leaving a large surplus.

Looking to the specific evidence of very great preventable waste given by the witnesses for the opposition, as contrasted with the mere theories of the trustees, and the want of all attempts on their part either to ascertain or grapple with the waste, it is not too much to assume that one third of the whole quantity of water sent to Edinburgh is wasted by absolute carelessness,—the prevention of which waste would be equivalent to the introduction of a new supply to the amount of, say two millions of gallons per day, added, not to the quantity sent into town, but to the quantity available in town for the supply of the inhabitants.

(4.) *The alleged approval of the scheme by the ratepayers of Edinburgh.*—What was done in point of fact by the Water Trustees and members of the Town Council in laying the St Mary's Loch scheme before the citizens has already been detailed at considerable length. But the facts underwent a strange distortion at the hands of Bailie Lewis, the solitary witness who ventured to present himself on this subject on behalf of the promoters before the Commons' Committee; and the reader is requested to compare the account formerly given, taken from the trustees' reports and the newspapers of the time, with the extracts from his evidence now given:—

214. Now then as to some of the allegations in the petition—that this matter has not been discussed by the public. As to the public discussion of the matter, you told me that in 1868 your municipal elections were postponed till December; did they take place at the usual time in 1870? They did.

215. Well now, by November last year, 1870, had the action of the trustees and their contemplated application to Parliament for the St Mary's Loch scheme been opened in the papers and fully discussed? Yes, it had.

216. Did it form, in fact, a prominent question in the discussions at the ward meetings prior to the elections of members of the Town Council? Yes; at most of them it did.

217. At your own, of course? Yes.

218. It would be a question naturally upon which you would enlarge considerably? I submitted once more, and finally, the whole details of the information, and the resolution of the trustees unanimously to go for the St Mary's Loch scheme with one exception.

219. And did you not only explain the scheme as a matter of water supply, but did you, as far as you were able, also discuss the financial part of it? To the extent of my ability I did.

220. To the extent of your ability and knowledge? Yes.

221. Were the meetings large? Yes, a very large meeting.

222. And as far as your own ward meeting was concerned, which you have already described, what was the public feeling in November with regard to the action of the trustees? There was but one feeling, as there has been all along, and that was one of unanimity in support of the scheme now before us.

223. Do you recollect whether the report of the trustees, when they had decided unanimously, with one exception, in favour of the St Mary's Loch scheme, was published in the Edinburgh newspapers? Yes; it was.

224. What date? On the 26th October, I think.

225. In order that the Committee may see the extent of the publicity, just tell me if that is a copy of the *Daily Review* of the 27th October? Yes; it contains a full report.

All this looked plausible enough by itself, when brought smoothly ought by the trustees' counsel, according to the lesson prepared and carefully conned; but in cross-examination the witness had to confront a rougher examiner who would not be put off with rounded generalities, and who forced him, while trying to parry the questions with opinions, to grapple with disagreeable facts rather more pertinent to the inquiry. Thus, the account of the ward meetings of 1870 took, under this manipulation, a considerably different form, and came a little nearer the fact, though still a long way from it.

421. When you spoke of ward meetings that were called in 1870, I believe this question of the St Mary's Loch scheme was discussed, and you consider that they were in a proper position to form an opinion without those reports? (*Meaning the reports of Messrs Leslie & Stewart*). Yes; I think they were.

422. Upon the question of estimates, for example! Yes.

423. The question of rates depends upon the question of estimates, does it not? Most certainly.

424. That is to say, the greater the estimate, the greater, of course, the rate will be! Yes; I think that is manifest.

425. And yet you did not consider it necessary to tell the public what the engineers had said the estimates would be? The public had got all that information before these ward meetings were held.

426. From whom had they got that information? They got it from one of the Water Trustees in addressing his constituents.

427. Do you mean the contents of those reports that I have referred to? Yes, distinctly.

428. What is the name of the gentleman you have just alluded to? Councillor John Wilson for Edinburgh, and Councillor Archibald for Leith.

429. You say that Councillor John Wilson informed the whole community of the contents of these reports? Yes, so far as regarded the estimates, and the consequent assessment.

By this time Councillor John Wilson had found out that he himself had been imposed upon in reference to the estimates, by the concealment from him of Mr Leslie's report, and in place of being a supporter of the Bill, he had now become its determined opponent. Had the trustees' case been a true one, he behoved to have been called to support Bailie Lewis. As it was not, and as he was certain to tell some inconvenient truths, the trustees durst not call him, and so, in the face of a petition by 14,000 ratepayers stating that their wishes had never been ascertained, or proper information given to them in reference to the proposed sources of supply, and cost of the necessary works, all the evidence that the trustees could offer to rebut these assertions were the unsupported statements of Bailie Lewis, contradicted by himself in cross-examination.

Then as to the alleged approval by the general public of the scheme, and in reference to the public meeting against the Bill held in the Queen Street Hall on 16th February 1871, the following evidence was elicited from Bailie Lewis, in cross-examination:—

316. Has there been any meeting of those working classes to approve of the Bill? As I said yesterday —

317. Has there been any meeting of the working classes, or any other class, to approve of the Bill? I say distinctly, yes.

318. When? I must understand here whether I am to be allowed to refer to the Bill when first introduced.

319. The Bill when first introduced contained another element, namely, the transfer of the water undertaking to the Town Council—let us confine ourselves to the present Bill? Confining ourselves to the present Bill in its present form, there was no special meeting of those who were in favour of the Bill, neither was there any special meeting for the purpose of considering the Bill, in addition to the ordinary ward meetings.

320. Has there been any petition in favour of the Bill in Parliament! I am sure there has not.

321. Would there have been any difficulty, if there had been that general feeling, to obtain a petition? I do not think there would. I think we could have got, instead of 14,000, had it been deemed expedient, a petition in favour of it signed by 40,000. I mean to say that my impression is, that instead of getting a petition extending over, or including 14,000, we could have got a petition in the same time subscribed by upwards of 40,000.

322. Can you doubt for a moment that a petition signed by 40,000 ratepayers in favour of your Bill would have had a material effect upon Parliament? I do not think that it would have had any additional effect to that of the trust, the properly constituted representatives, being unanimous, with one exception, in favour of the Bill. I may state here, that seeing that the Water Trustees were appointed by the three corporations, and that the 24 out of the 25 were in favour of the Bill, it was deemed a work of supererogation to entertain the idea of a petition under such circumstances.

323. At all events it was never attempted? It was never attempted.

Bailie Lewis, however, had not the candour to tell that by that time the minority in the Water Trust against the Bill, had risen from one to five.

The Lord Provost was examined immediately after Bailie Lewis, but as might have been anticipated, not a question was asked at him on the subject; and although at least seven other members of the corporation were there, not one of them ventured to step forward to corroborate Bailie Lewis, in the face of the cross-examination which they saw was awaiting them if they attempted it.

It may thus be assumed that the attempted proof by the trustees of the alleged approval of the scheme by any considerable body of the ratepayers, or, indeed by any section of them at all, was a complete failure.

(5.) *The evidence of a determined opposition.* The first palpable evidence given in the way of showing hostility to the proceedings of the trustees was the public meeting in Queen Street Hall on 16th February. In reference to it Bailie Lewis was compelled to admit (310) that there was in certain quarters a very decided feeling against the Bill; and (315) that the meeting was composed of a large body of very respectable citizens. He attempted, however, to qualify this latter admission by a statement that on account of the meeting having been held at two o'clock in the afternoon, none of the working classes could be there. This led to the questions and answers already quoted (317 to 323), showing that the working classes had not expressed, and that he had not thought it expedient to ask them to express, any feeling in favour of the Bill. He farther attempted to account for the opposition by alleging that it had been excited by misrepresentations of every kind, widely circulated in the newspapers, and by means of "fly-leaders and placards." As the trustees themselves resorted pretty freely to this mode of influencing the public, even pressing the official positions of the three provosts into the service, and as the opposition repeated in their petition, and went to issue before the Committees on the same statements which were thus challenged, the result of the contest may be left to determine who was right in this respect. Provost Watt attempted the same kind of evidence in regard to Leith.

Then came the petition against the Bill, which was the basis of the opposition, and the supplementary petition, representing altogether 16,827 ratepayers praying for the rejection of the Bill. This was a piece of real evidence upon which the trustees thought it very desirable to throw discredit; and they resorted to their old tool, Mr Robert Paterson, the City Assessor, or more probably, as a similar job had been a paying one in 1869, he volunteered, to damage as far as possible the character and *bona fides* of the petition. Mr Paterson appears to have proceeded to London on 4th March, along with Bailie Lewis and Mr Marwick, carrying with them the valuation roll, for the purpose of picking holes in the petition. On the 15th he was pompously announced, doubtless by himself, in the *Scotsman*, as being there scrutinising the petition, no doubt assisted by two of the city's paid clerks, as on the former occasion; and he is understood to have returned on the 20th, having thus occupied at least twelve working days in his scrutiny.

He was not so sure of his ground, however, on this occasion as he had been in 1869. Various letters had appeared in the newspapers, denouncing as an unjustifiable job in 1869, the employment of him, a city servant, to discredit a petition of the ratepayers, and repeating the same denunciation in reference to his scrutiny of the petition of 1871. The plan was therefore fallen upon of commencing the attack upon

the petition from Leith, with which he had no official connection, Provost Watt being made the instrument. This attack proved a complete failure, as Provost Watt could not challenge any one signature, all that he could do being to give the names of five persons who, as he said, had told him that they had been induced to sign on the statement that St Mary's Loch water was bad, and that the rates would be 2s. or 2s. 6d. per £; but that if they were assured that the water was of good quality, and that the rates would not exceed 1s. per £, they would sign a petition in favour of the Bill. Councillor Archibald of Leith, followed in the same strain, but he specified no names, though he mentioned one common stair in which lived four men, whose wives he said had signed for them, adding that the husbands had threatened to put this in the newspapers, *but did not*. Clearly all this was no evidence whatever, because by keeping back the parties who made the statements, the cross-examination, the test of truth, was evaded.

At the close of the evidence of Mr Archibald, upon the counsel for the trustees proposing to bring farther evidence against the petition, the Committee, evidently impressed by the paltry nature of that already given, intimated their desire to examine the allegations in the petitions against the Bill, and to hear no more of such evidence against the petition. The following is the record of the procedure (p. 79):—

Mr CALVERT stated that he desired to call two witnesses to prove that a fictitious petition had been presented from Leith, purporting to be signed by a number of people against the Bill. He hoped that the Committee would allow an inquiry into the facts of the signing and presentation of the petition, as it involved a question of breach of privilege of the House.

The CHAIRMAN—The decision to which the Committee has arrived is simply this: they do not want to interfere with the conduct of the case by the learned counsel; they merely say, for their own satisfaction, that all they want to do is to examine the allegations contained in the petitions. It would save time if you took one particular witness and examined him upon the point, and let him be cross-examined, and have done with the subject; but to cross-examine every witness as to whether the petition was properly got up is a waste of time, and the Committee do not want their time to be wasted.

Mr CALVERT stated that he would call two witnesses upon the point.

It was evident that Mr Robert Paterson was determined to shew that he had done something during the twelve days he had been scrutinising the petition.

Mr Paterson was accordingly examined two days afterwards. His attack upon the petition commenced with great vigour, thus:—

2590. Have you made an examination of the petition presented against this Bill? I have made an examination of the petition.

2591. Are you prepared to shew that a great number of the names are not genuine signatures? What can you tell us with regard to the state of the signatures to this petition? The petition pretends to be a petition by the ratepayers of Edinburgh; it contains the name, and the address, and the rental of property. I am prepared to say, as the result of my examination, that in very many instances upon whole sheets of the petition the names are written in the same handwriting, and are not the signatures of the parties. In other cases I am prepared to shew the Committee the name of a person with the address and the rent in one part of the petition, and in another part the name of the same person, written manifestly in a different handwriting, and repeating the rental again.

2592. That occurs in many instances, does it? Yes, in many instances; it runs throughout the whole petition. I have no hesitation in saying that, as evidence of

the state of feeling in Edinburgh in regard to any statements of the proportions of rentals, it is utterly worthless.

2593. One test probably, as to whether it was the signature of the real person or not, would be whether he knew what his rental was; are the rentals very inaccurately stated in this petition? Grossly exaggerated.

He then stated that he had not had time to make any abstract of the errors in rental, but that he was quite sure a great number of the signatures was false; and that after he had returned to Edinburgh from his examination of the petition he had found out five persons (out of 14,000) *with very small rentals*, to say that the signatures to the petition were not theirs. He then went the length of saying that a very large proportion of the signatures to the petition were evidently forgeries. At this time the petition was lying on the floor of the room, and the chairman asked him to draw the attention of the Committee to any particular signatures which he had in view. Mr Paterson then, after a long search pointed out several names, all about one place, which he alleged to be forgeries. After the Committee had examined these names, and the petition generally, the official report bears:—

The CHAIRMAN stated that the Committee were of opinion from the general appearance of the petition, that it was genuine, and they would not express any opinion whatever as to how far it might be otherwise.

This report, however, merely gives the result of the Committee's opinion, and not the precise words which the chairman used. As the words used strongly express the Committee's disapprobation of the attack on the petition, the following full report of what was actually said is taken from the *Scotsman* of 2nd May:—

The CHAIRMAN—The Committee wish to stop this. They have come to the decision that it is possible there may be some false signatures to the petition; but they will not trouble the learned counsel to disprove the allegations as to the alleged falsity. The Committee consider that there is a sufficient residuum of genuineness in the petition to make it necessary to rely simply upon rebutting the allegations which it contains, without going into a question of the falsity.

Mr CLERK—No doubt, in a petition purporting to be from so large a body there is a residuum of genuine signatures, but there is a great proportion of them false.

The CHAIRMAN—I wish to say that I was not commissioned by the Committee to say any thing about the residuum. That was, perhaps, a wrong word for me to use; but the Committee think that the general appearance of the petition is a genuine appearance, and they express no opinion whatever as to what extent it may be erroneous.

As the Committee were thus satisfied that the appearance of the petition, on which alone Mr Paterson's evidence was mainly founded, did not warrant that evidence, and the inquiry was in consequence stopped by the Committee themselves, it must not be supposed that the other statements about the repetitions of rental, as to which there was no opportunity of either cross-examination or counter-evidence, are to be taken as correct. The presumption is that the witness had as little authority for his attack on them as on the genuineness of the signatures. In fact, the stoppage of the case by the Committee applied to this branch of the objections as well as to the other.

The result of all the proof on this head was that there was no public expression of opinion, and no petition from any section of the rate-

payers in favour of the Bill; and that there were the resolutions of a public meeting of a large body of very respectable citizens, and a petition of 14,000 ratepayers, to all effects and purposes a genuine petition, against the Bill.

The merits, or the demerits of the St Mary's Loch scheme, would here naturally present themselves for examination. But the course taken by the Committee after the case for the opposition had been opened, makes it expedient at this stage of the narrative, to postpone consideration of that scheme, and to go into an examination of the capabilities of the Pentland Hills.

After the promoters' case was closed, Mr Rodwell opened the case of the opposition, in which, among other things, he set forth the capabilities of the Pentlands, in the following terms (p. 43):—

We believe that from the south side of the Pentlands, in connection with the existing reservoir, and in connection with the existing establishment of the Water Company, we can supply quite sufficient water. We propose to get the water from the Pentland Hills, in the neighbourhood of Glencorse. We shall supplement the existing supply by available water of which nobody complains; and then by a small outlay in these storage reservoirs—small as compared with the enormous outlay for the St Mary's Loch works, we shall have there our own existing works under the control of the establishment, and, as it were, all in one place, and we have there an ample supply for the inhabitants of Edinburgh. That is one of the schemes which we propose. At all events, the main feature in this case is that the scheme for going to St Mary's Loch is uncalled for, and it will saddle the ratepayers of Edinburgh with an expense which they ought not to bear.

In consequence of this statement, the chairman of the Committee interposed at the close of the speech, and the following procedure took place (p. 45):—

The CHAIRMAN—Are the Committee to understand that you intend to insist upon the sufficiency of the supply obtainable from the South Pentlands?

Mr RODWELL—That is one of the things.

The CHAIRMAN—In reference to that, would it be possible for you to direct your attention to that in the first instance, and so separate it somewhat from the sanitary question?

Mr RODWELL—Yes.

The CHAIRMAN—We get a little confused by going from one point to another, and if you will direct your attention to one point at a time it will be desirable.

Mr RODWELL—I was thinking how I could do that.

The CHAIRMAN—I think you might examine Mr Ramsay, and get at the question of waste.

Mr RODWELL—I quite see what your Lordship means. If I could make out a case with regard to the South Pentland Hills, the water there being clearly good, because it is a water now used by Edinburgh, the sanitary question would not arise upon that part of the case.

The CHAIRMAN—Obviously it is the water that they are now using.

Mr RODWELL—I will come to that as soon as I can; but before I do that there are some witnesses that I must trouble you with.

In consequence of this suggestion of the Committee, the consideration of the St Mary's Loch scheme was laid aside in the first instance, and the proof for the opposition was confined to shewing that the south side of the Pentlands, by an extension of the existing works, was capable of furnishing an additional supply of water, sufficient for all the wants of Edinburgh and its district. The next subject, therefore, to be considered is

(6.) *The capabilities of the Pentland Hills.*—It must strike any one who has given the least attention to the matter, that reliable evidence as to the capabilities of a district can be derived only from observed facts, and from witnesses who have made the subject of water supply their study. As an illustration of this, it is only necessary to refer to the exhibition which these amateur engineers, Bailie Lewis and the Lord Provost, made of themselves, when they professed to instruct the public and the Commons' Committee as to the enormous quantity of spring water derivable from St Mary's Loch and district, and which will be noticed in its proper place. All the claptrap, therefore, uttered by Town Councillors about dribblets from sheep drains and the like, will be laid aside as not worth notice, and the subject discussed on the evidence of recorded facts, and of the engineers and scientific gentlemen competent to speak on such a subject.

In approaching this head of the inquiry, the first thing that attracts notice is the disgraceful way in which the trustees withheld from the opposition and the Committee the best and proper evidence on several points under proof, and endeavoured to substitute for it improper and unreliable evidence, and in which they made deliberate promises as to the production of evidence, and then dishonestly and insolently broke them; and what attracts notice more forcibly is how a Committee, professing a desire to arrive at the truth, would be satisfied with such garbled and unreliable evidence as to the contents of reports, minutes and books, when these documents themselves were lying on the table before the trustees' counsel, and were refused to be produced, as if there were matters in them requiring to be concealed. The remark is not a pleasant one to make, but it will be found to be fully warranted by the narrative now to be given.

The first of the trustees' witnesses who spoke to the capabilities of the Pentlands was Mr Stewart, their resident engineer, who, in cross-examination gave the following evidence :—

3051. Have you ever reported upon or considered the capabilities of the Pentland Hills? It was the first thing that I did in considering this matter to look at the capabilities of the Pentland Hills; but I was really well aware of their capabilities, having been for a long time connected with water works.

3052. Did you abandon them in consequence of thinking that they were not capable of yielding the supply which you wanted? Yes.

3053. What was the additional amount of the yield that you thought you could get from the Pentland Hills? The additional amount was very small indeed, probably about four gallons a head.

3054. What was the watershed that you took to calculate upon there? The only part of the Pentland Hills which is not exhausted is that in Glencorse valley; there are about  $5\frac{1}{2}$  square miles of drainage.

3055. You have a book I think which will enable you to tell us the quantity of water which now escapes over the weir or the reservoir? Yes, there is a large book.

To understand the bearing of this last question it is necessary to go back to the evidence of Mr Cameron, the treasurer of the trustees, the close of whose examination is in the following terms, being a cross-examination :—

2816. Mr WILL—Can you tell us how much water runs to waste each year from your existing reservoirs? There was none run to waste at all last year.

2817. Then the year before? Your books show that, do they not? It shows what it runs over, so many inches; but the engineer will tell you that calculation. I am not competent for that.

2818. Your books record that? They record that, and you can get it from the books.

2819. *Have you the books here?* Yes.

2820. Will you see how much water runs to waste each year from your existing reservoirs? Sometimes an inch, and sometimes half an inch, and sometimes not at all. The books only give what it runs over the weirs, so many inches.

2821. This is recorded in the books? You will get it from the engineer.

2822. This is a record in the books kept by you? The books will be put before the engineer, with all that information in them.

2823. *Will you produce the books?*

Mr CALVERT—*No; but you shall have that information.*

Mr WILL inquired whether Mr Calvert would allow one of his (*Mr Will's*) witnesses to see the books, in order to ascertain the fact.

Mr CALVERT stated that he could not consent to that, but that Mr Will might ask this witness what he knew.

The WITNESS—I do not know the quantity that runs over these weirs; it is put in in inches.

Mr WILL—The particular book that I want is a book kept called the Water Register.

2824. Mr CALVERT—Is there such a book? There is such a book kept as the Water Register.

2825. Mr WILL—These books are kept under your supervision? Yes.

2826. Will you look at your Water Register and tell the Committee what is the quantity of water? It is in London, but it is not in the room. I did not expect to be put in the box to-day,

Mr CALVERT stated that when the engineer came he should give this information.

The WITNESS—The engineer knows the book as well as I do.

Mr Sergeant SARGOOD asked the chairman to intimate to the promoters that they were expected to produce the books.

The CHAIRMAN stated that the Committee were of opinion that they could not order the books to be produced; but that if the opponents desired it this witness should be re-called to-morrow, when the books would be here, to be cross-examined.

Mr Sergeant SARGOOD stated that he would avail himself of that right.

This will explain the allusion to the book in question 3055 put to Mr Stewart. His cross-examination was continued thus in reference to this book:—

3056. Have you got it here? I believe it is here.

Mr CLERK—Mr Cameron, I think, produced it.

(Had Mr Clerk taken the trouble to look at his minutes of evidence, he would have known that in place of Mr Cameron producing the book, Mr Calvert, the promoters' counsel, had positively refused, not only to produce it, but even to allow it to be seen by one of the opposition witnesses, in order to ascertain the fact of what were the terms of the entries in it.)

Mr RODWELL—Let me have it now; I want to put a question upon it. Mr Cameron has been called.

(Notwithstanding of Mr Clerk's statement as to Mr Cameron's having produced the book, neither Mr Cameron nor the book was forthcoming.)

3057. You have seen that book? I have seen the book.

3058. It is with reference to the waste? Yes.

3059. What is the escape over the weir now? I will give it you for the last three years. The escape over the weir in 1868, which was a very wet year, was 219,000,000 cubic feet; in 1869 it was 157,000,000 cubic feet; and last year nothing escaped: the reservoirs were never filled up; we were short of something like 44,000,000 gallons of the quantity that we wanted.

The termination of this discreditable and pettifogging affair was in complete harmony with its previous progress, as appears from the following extract from the official minutes of evidence of 3rd May 1871, (p. 254):—

Mr CALVERT stated that that concluded the case on behalf of the promoters of the Bill.

Mr RODWELL applied to Mr Calvert for the books relating to the daily waste of water which he had promised to produce by Mr Cameron to the Committee.

Mr CALVERT stated that he declined to produce them. He stated that the evidence relating to this point had already been given by Mr Stewart.

Mr RODWELL stated that he would take the opinion of the Committee upon that point, alleging that the books were necessary in order to put the Committee in possession of the facts.

Mr CALVERT stated that he would call Mr Cameron if Mr Rodwell desired it, but that he considered it would be a waste of time.

Mr RODWELL stated that what he wanted was the books.

*[The Committee deliberated.]*

The CHAIRMAN stated that the Committee adhered to their former decision, that Mr Cameron might be recalled with the books in his hand if the promoters chose to do so, but they did not order the books to be produced.

Mr CALVERT stated that he considered it was a mere waste of time, and that he therefore would not call Mr Cameron.

The next witness for the promoters was Mr Leslie. They twice over undertook to call him as their witness, and thereby induced the counsel for the opposition to shape their case in reliance on this, and then, in flagrant and dishonourable breach of their promises refused to call him. In this way they forced the opposition, either to dislocate their case altogether, or to make Mr Leslie in form their witness.

This charge is such a serious one, that unless it is clearly proved, scarcely any person can be expected to believe it. The following proof of it is therefore given from the official minutes of evidence.

During the cross-examination of Bailie Lewis on the first day of the inquiry, (25th April 1871,) after the reports of Mr Leslie and Mr Stewart had been referred to, the following procedure took place (p. 32):—

Mr WILL stated that he must now call for the production of the reports of Mr Leslie and Mr Stewart.

Mr POPE stated that his learned friend was not entitled to the reports, and that he should decline to produce them.

Mr WILL was heard in support of his right to have the reports he had asked for produced, as they were the reports upon which the promoters had acted, upon which the expediency, engineering details, and estimates for the works rested, and submitted that the promoters were not justified in concealing them from the ratepayers and the Committee.

Mr POPE stated that his learned friend was not entitled to say that the reports referred to were concealed from the Committee, because, for any thing his learned friend knew, they might be laid before the Committee before the close of the promoters' case; at all events, he declined, at the present moment, to produce them for the inspection of his learned friend.

Mr WILL was heard in reply.

The CHAIRMAN stated that the only object the Committee had in view was to elicit the truth, and, in order to save the time of all parties, the Committee would suggest to Mr Pope whether it would not be advisable to produce the reports, although they did not feel called upon to insist upon their production.

Mr POPE stated that the promoters would consider the matter, and by to-morrow morning determine what course they should pursue; but he would distinctly pledge himself to call Mr Leslie.

In this way Bailie Lewis got rid of a cross-examination as to Mr Leslie's estimates for the St Mary's Loch scheme, and the differences between him and Mr Stewart.

Again, during the cross-examination of Provost Watt next day, this took place :—

955. Do you know what the estimate is for the construction of the works? Yes; £480,000.

956. Do you also know that your engineer, Mr Leslie, put the estimate for the works at £750,000 at one time? Yes; but his estimate was lowered from that.

957. You pressed him to lower it, did you not? I do not know that Mr Leslie is a man who would be pressed by any body.

958. Do you mean to say that there were not remits to Mr Leslie to consult with Mr Stewart, to re-consider the matter? Yes, there were; but they were works that Mr Leslie had introduced in taking the water out of the loch, and I believe that on more careful consideration he thought that, taking 12,000,000 of gallons for the town, 15,000,000 of gallons for the millers would not be necessary, and that lessened his estimate.

959. Then, as I understand, his estimate is not for taking 24,000,000 of gallons out of the loch?

Mr CLERK—*We shall call Mr Leslie.*

After some discussion as to what had taken place on the previous day when the reports were called for, the minutes proceed :—

Mr CLERK—I was not present, and I really do not know what took place, *but Mr Leslie will be called, and will explain everything.* I understand that we can get the reports in a few minutes, and my learned friend shall have them; we do not desire to keep any thing back.

By this pledge the promoters induced the counsel for the opposition to refrain from asking any farther explanation from Mr Watt as to the difference between the estimates of Mr Leslie and Mr Stewart.

And on 1st May 1871, the following cool and insolent proceeding took place in presence of the Committee, who, to the astonishment of more than one member of the opposition, did not express the least disapproval of, or even surprise at, such behaviour (p. 181) :—

In reply to Mr Rodwell,

Mr DENISON stated that he did not intend to call Mr Leslie as his witness, BUT THAT MR RODWELL MIGHT HIMSELF CALL HIM.

By this trick the promoters, who knew that Mr Leslie's leanings were unfavourable to the Pentlands, as compared with the Southesk scheme, as a source of additional supply, got an opportunity of throwing doubt on the Pentlands from the mouth of one whom they represented as an opposition witness. The smartness of the trick, however, cannot alter the fact that early in the inquiry the promoters had once and again adopted Mr Leslie as their witness; and though the notice of his evidence is passed over now, this is done only because the turn which his examination took in the hands of the Committee, renders it necessary to advert to it rather at the close of the case for the opposition.

Their other engineer, Mr Bateman, was not examined as to the Pentlands in the course of the promoters' case. But as the Committee allowed him to be thrust in among the opposition witnesses in a very anomalous way, to give evidence as to the capabilities of the Pentlands,

his evidence will be noticed at the close of the case for the opposition in reference to the Pentlands.

The first scientific witness for the opposition was Mr Thomas Hawksley, C.E. of London, who (4117) described the overflow at Glencorse waste weir for seven years ending 1869, by a table which was afterwards proved by Mr Ramsay, to average 1,515,609,438 gallons a year, or 4,152,354 gallons per day, equal to 16·6 gallons per head per day to a population of 250,000 persons.

(There was no overflow in 1870. Throwing off the overflow in 1863, and taking the average for the seven years including 1870, it amounts to 1,239,718,637 gallons a year, or 3,396,490 gallons per day, equal to 13·5 gallons per head per day to a population of 250,000.)

Mr Hawksley then proceeded to give his opinion of the capabilities of the Pentlands generally as follows :—

4118. That brings me to the question of what is the quantity of water that might be stored there, supposing you were able to store the whole of it : what is the watershed there? The watershed of the Pentlands above 800 feet contour. I mention the 800 feet contour, because that is the practical limit of cultivation in this part of the country, especially in the northern part of it, and even in Devonshire it does not rise higher than 900 feet. Taking that contour, there are 36,000 odd acres in the Pentland Hills capable of producing, not upon the average, but upon the average of three consecutive dry years, no less than 45,000,000 gallons per diem, of which, supposing it were all to be utilised (and that quantity would be wholly unnecessary for a place of so comparatively small a size as the city of Edinburgh is) one-third would be the proper apportionment to the mills, being 15,000,000 gallons, leaving 30,000,000 gallons available for the supply of Edinburgh. But no such quantity is or ever can be wanted for Edinburgh.

4139. What will it cost, in your judgment, to construct reservoirs, which would give altogether something like 50 gallons per head per day? That would only require about £100,000. I have not calculated it except in my mind just at the present moment. I dare say you will have some evidence on that subject. I should state that I have been called upon suddenly to give evidence without being prepared with any papers.

4145. By the COMMITTEE.—In all your answers you have used the term “a sufficient supply;” if we know what amount you consider to be a sufficient supply, whether we agree with you or not, it would be a datum to go upon? A sufficient supply is 25 gallons per head; an easily obtainable supply is 50 gallons per head; so that it can be taken either way, according to the views of the gentlemen who are informing the Committee.

4146. Mr RODWELL—You will not depart from your view, that 25 gallons per head is sufficient; but assuming that 50 gallons per head were required, would there be any difficulty in obtaining that quantity? None whatever.

4147. Assuming that 50 gallons per head were considered sufficient and desirable, from your knowledge of the district you say that there would be no difficulty in taking that quantity from the Pentland Hills? None whatever.

Mr James Glaisher, superintendent of the meteorological department of Greenwich Observatory, gave the following evidence :—

4362. Have you visited the gathering grounds of the Edinburgh District water-works? I have.

4365. Have you heard Mr Hawksley's evidence as to the large district which is here, namely, the Pentland Hills, as to its watershed? Do you mean the 36,000 acres?

4366. Yes? I heard it for the first time last evening, and I took a six-inch ordnance map, and as well as I could trace it down, there does seem to me to be as large an area as that above that contour line.

4366.\* Did you make a calculation of the available rainfall in the Pentland district? I did.

4367. What have you taken as the gathering ground? The gathering ground as shewn upon that map is 14,060 acres.

4638. Did you find that to be correct? Yes.

4639. Have you in your calculation taken the average of the gathering ground of 6327 acres and 8230 acres, making a total of 14,457 acres? Yes.

These questions and answers were followed by others in which were given statements of the rainfall as ascertained by the rain gauges at different places in the Pentlands range—from which the witness deduced the calculation that the average rainfall was  $40\frac{4}{10}$  inches. In order to ascertain the average rainfall for the three driest consecutive years, that is, years coming together, he deducted one-sixth, making the average for these driest years  $33\frac{3}{7}$  inches, which after deducting an allowance of 13 inches for evaporation and absorption, left an available rainfall of  $20\frac{7}{10}$  inches for the driest season. The application of this rainfall to the 14,457 acres spoken to by him then proceeded:—

4374. Now, taking the average at the amount I have named, 14,457 acres, what is the available water on this acreage? In water it is 6,810,000,000 gallons or  $18\frac{1}{2}$  million gallons per day.

4375. That would be for 180 days; it would give you 3,300,000,000 gallons? Yes.

4376. That is the amount of storage required? Yes; that is what it ought to be, so as to secure that there should be no inconvenience from a year like the last.

4377. What is the actual storage? In gallons it is 1,821,000,000.

4378. Does that represent more than one-half of the necessary storage? A little more than half.

4379. The available quantity of water per day would be about 18,500,000 gallons? Yes, for all purposes; if you reduce that by one-third, it would leave very nearly  $12\frac{1}{2}$  millions, a short  $12\frac{1}{2}$  million gallons.

4380. That works out to just about 50,000,000 gallons a-day? No; 50 gallons a head per day for 250,000 persons.

4381. Then if Mr Hawksley has dealt with a larger amount of acreage than you have, that could be increased, of course, from time to time if necessary, by fresh storage means? Yes, undoubtedly, that follows as a matter of course.

Professor Geikie spoke to the quality of the gathering ground of the 36,000 acres specified by Mr Hawksley, which is entirely pastoral, excepting some little places in the valleys where oats or turnips are cultivated. Of this area only about 700 acres, or one-fiftieth part, is peat.

This being the whole evidence for the opposition on the separate part of the case which referred to the Pentlands, the counsel for the promoters applied to the Committee to be allowed to recal Mr Bateman, upon the ground that he had not been asked any question with regard to the Pentlands. After a discussion the Committee made the following statement through their chairman (p. 307).

The CHAIRMAN stated that the Committee did not wish to depart from the ordinary practice of not allowing witnesses to be recalled after the case was closed, but at the same time the only option of the Committee being to arrive at the truth, there were certain points upon which they wished for further information; therefore the Committee, for the purpose of satisfying their own minds upon those points, would allow Mr Bateman to be recalled, but the questions must be understood as being put through the Committee.

Mr Bateman stated that there could be no question that the Pentlands would afford an additional supply of water, but at a much greater expense than from the South Esk, Heriot, or St Mary's Loch, adding, "So much more expensive was the Pentland Hills district, when I

came to make my estimate of cost, that I rejected all further consideration of it." He did not dispute that the quantity of water stated by Mr Hawksley was to be got ; but in reference to it he stated "I very much doubt the statement that for £100,000, or twice £100,000 or three times £100,000, they would be able to supply a sufficient quantity for the next 20 years from the Pentland Hills."

The room was then cleared, and the Committee went into deliberation whether they would, without proceeding farther with the case of the opposition in the meantime, call upon the counsel for the promoters to reply in reference to the Pentlands as a source of sufficient supply. Had they called for a reply it would evidently have been upon an almost foregone conclusion that there was no occasion to go beyond the Pentlands. That at least a portion of the Committee was inclined to this course may be fairly presumed from a deliberation of three-quarters of an hour having taken place after the room was cleared, before they resolved to go on with the inquiry to its end in the usual way.

On parties being re-admitted—

The CHAIRMAN stated that the Committee had decided that they would not ask Mr Clerk to reply now upon the part of the promoters, but would ask him to reserve his reply until the whole case was complete, and that therefore the counsel on behalf of the ratepayers might proceed with their evidence.

The case having been resumed, it is proper, before leaving the question of the capabilities of the Pentlands, to refer to some farther evidence on the same subject, which came out incidentally before the close of the case.

Thus, on the subject of the water flowing over the waste weir at Glencorse reservoir, Mr Ramsay, late manager of the Water Company, proved the accuracy of the table spoken of by Mr Hawksley, and described how the quantities had been calculated and entered in the water register referred to by Messrs Cameron and Stewart, but never produced, his description being as follows :—

5392. The average was taken while you were manager, down to 1870, and the average was taken, was it not, at a fixed hour every day? Yes.

5393. It was taken that way at a fixed hour every day throughout the year, was it not? Yes.

5394. In your judgment is that a full and fair way of estimating the average! It cannot be quite accurate, but it is just as likely to be wrong on the one side as on the other, on which side the error may lie no mortal man can tell.

Then as to the utilisation of this waste he stated :—

5402. Now as to this table of the waste at Glencorse, will you tell the Committee whether, in your judgment, that waste could be saved by increased reservoir accommodation? It is the want of that accommodation that causes the waste ; if we had the means of storing it up the water would not be wasted.

5403. In your opinion that water could be saved? Yes, if it was stored up by making a reservoir for the purpose.

5404. Does the water run to waste there? I suppose it follows from what you have said that it runs to waste day and night? No ; there are months when not a drop of waste is running ; it is only when it overflows that there is waste, the overflow during wet seasons, not continuously.

5405. When the reservoir is full? Yes, it runs over like other vessels.

Then came the evidence of Mr Leslie, who, for the reasons already stated, must be treated as a witness for the promoters. The opposition simply examined him as to the practicability of the South Esk scheme, and the quantity of water to be got there; and of course the promoters seized the opportunity of trying to throw discredit on the Pentlands, thus,—

5129. We had not the opportunity of seeing you when the Pentland scheme was inquired into. I will therefore ask you something about that. You have never recommended the Pentland scheme, have you? Not to that extent. I have recommended the Pentland scheme.

5130. We will leave it there with the answer that you have given, *and for which I am very much obliged to you.*

In re-examination he admitted Mr Hawksleys 36,000 acres of supply above 800 feet level; he could not say whether a sufficient supply could be got from it for £100,000; there might be a dispute with the millers, and a new pipe would be required; and then he said,—

5158. Are there any engineering difficulties in the way of getting a good supply in the Pentland district? No.

5159. At moderate cost? You could make it sufficient for all these purposes. I proposed one once above the present Glencorse reservoir. That was to give additional storage.

After the witness had cast some doubts on the quantity of water stated to have been run over the waste weir at Glencorse reservoir, the Committee took him into their own hands, and on adjourning for the day the chairman asked him to do one of the most unprecedented things ever directed to be done by a committee professing to act impartially between two parties, as follows,—

5179. Be good enough to read over Mr Hawksley's evidence, *and, to-morrow probably, the Committee will ask you to give them your opinion upon it.*

The position into which the Committee thus put Mr Leslie was a very anomalous one. Apparently they had taken up the idea that he was a thoroughly unbiassed witness, because the one party had deliberately pledged themselves to call him, and then had refused to do so, as if he had not been a partizan of theirs, while the other party, although they had called him, had apparently done so only for form's sake, to enable the Committee to get from him any information they might desire; in a word, they probably thought that both parties were chary of examining him. Had the Committee simply availed themselves of the opportunity thus afforded of getting all the information they could from Mr Leslie as a witness, no one could have made the slightest reflection on the perfect propriety of the proceeding. But they went far beyond this, and substantially remitted to Mr Leslie, as if he had been selected by themselves as a neutral person, and unconnected with either disputant, to report upon the reliability of the evidence given by Mr Hawksley. In short, they virtually made him referee or arbitrator on the merits of the Pentlands scheme; and there cannot be a doubt that the evidence now to be noticed, given by him under this remit or instruction, was one of the main causes of the Committee passing the Bill.

Next day accordingly (9th May) Mr Leslie appeared and was examined by the Committee. The following questions and answers shew what had been all along the bias of his mind against the Pentlands :—

5214. In the instructions you received from the Water Trustees to make your report, were there any restrictions as to the area over which you should extend your inquiries? No; I was told to report generally upon the whole of the different schemes that had been brought forward, and I reported upon six or seven different schemes.

5215. At that time you did not think that there was anything in the Pentland district that was worthy of your consideration? No; I did not advise the going there, more than when I reported to the Water Company long before this report to the Water Trust. I did not think of going there.

5216. It was, in your judgment, unwise to go to that district and to depend upon it for an increased supply of water to Edinburgh? Yes; for a considerable increase I think it would have been so. You might get a little increase. If you go to the far part of that district it is very distant. Some parts of the Pentlands are more than 16 miles from Edinburgh.

5217. In that case the relative cost of a supply from that source would be quite as great as going to a greater distance? I should think it might be as much, and probably more. You might shut off the north side altogether; you cannot get anything there; it is the south side that all runs into Edinburgh, and you would have to give great compensation to go there.

Keeping in view this bias against the Pentlands as unconsciously influencing his evidence, Mr Leslie's opinion of Mr Hawksley's scheme, as given to the Committee, now comes to be considered. He said—

5181. Will you state to the Committee generally your impression as to that evidence (Mr Hawksley's), and whether you agree with it or not? With all deference to Mr Hawksley, and with great respect to his opinions, although I concur to some extent with him, upon the whole I do not. I differ very materially from him. I believe that the 36,000 acres are correct, but I do not see that he can get the water off that he speaks of getting. There are some of his data which I do not think are correct. As to the quantity of the escape from Glencorse reservoir, I do not know where he got that from. I cannot find out anything for it.

He afterwards (5199) stated that he did not think that nearly one half of the quantity stated by Mr Hawksley could be got.

He then challenged the register of waste which was kept at Glencorse, because it gives only one height of water on each day, while the flow might have varied greatly during the day. (Mr Ramsay however explained as already mentioned, that taken over the whole year, this mode must give a sufficiently near approximation to the actual quantity.)

Then he said (5184) that Mr Hawksley's calculation of waste requires "an available rainfall of 33 inches, which is a great deal more than that district would ever be supposed to yield." And he afterwards stated in reference to the table on which that calculation is brought out (5196), "I say that I am sure it cannot be correct. If you take that table to be correct it would require 33 inches of water to run off that district, and that is a great deal more than it is ever understood that it gives. We take just now 16 inches; so that if you allow a rainfall of 20 inches, there would be 4 to come and go upon. If we take 16, that means 17, and in fact it is more than all the water that is taken both by the town and for compensation together." (This is at direct variance with the observation of Mr Glaisher, who ascertained

by an examination of the rain gauges, the actual proved rainfall to average on a course of years  $40\frac{4}{10}$  inches.)

He next stated (5186) that the present pipes from Crawley cistern to Edinburgh would not carry more than 250 cubic feet per minute, inferring of course that if the supply from Glencorse was to be increased, a new pipe would have to be laid.

And he finally indicated an opinion that in the event of new reservoirs being constructed in the Glencorse valley, the trustees might have to fight the millers on the stream for more compensation to them. But he seems to have completely forgotten the 70th section of the Water Company's Act of 1847, which specified the quantity of 220 cubic feet per minute to be sent by the Company into the stream "as a full compensation for the right thereby conferred on the Company to stop, dam up, store, and use the whole of the waters draining by the said Glencorse burn and its tributaries above the said Crawley cistern."

The result of this evidence appears to be that both Messrs Hawksley and Bateman agreed that there is a drainage area in the Pentland Hills, above the limits of cultivation, capable of supplying all the possible wants of Edinburgh; but that they were at issue as to the cost, Mr Hawksley maintaining that the present wants of the city could be supplied at a cost of £100,000 or thereby, while Mr Bateman doubted whether it could be done for three times that amount, his contention being that a large quantity of water, that is 12,000,000 gallons, being 48 gallons per head per day additional to the present supply, could be procured from St Mary's Loch at a less rate per thousand gallons than that at which the same quantity could be got from the Pentlands; the aggregate supply of 76 gallons per head per day being very largely in excess of the necessary wants of the citizens for many years to come.

Mr Stewart seems never to have given the subject any serious consideration at all, though in his report to the trustees of 15th September 1870, he admitted that the mean of the rainfall of two dry years in the Pentlands was 32 inches, to that extent contradicting Mr Leslie; while Mr Leslie doubted everything advanced by every person else, without having formed any distinct opinion of his own.

(7.) *St Mary's Loch scheme.* (1) *Quantity.*—There is no doubt that the district of St Mary's Loch would afford the supply of water which the trustees proposed ultimately to introduce into Edinburgh, viz., 24 millions of gallons per day, after providing 17 millions of gallons per day to be sent down the stream, the latter quantity having been increased from 15 millions of gallons as originally proposed. But it was matter of dispute and inquiry whether the works proposed by the trustees would secure that quantity. This question is entirely for engineers and scientific men, and therefore to that evidence alone will attention be directed.

Reference must now be made to the suppressed reports of Messrs Stewart and Leslie on this subject; but before proceeding to analyse them, it is proper to notice the reasons or excuses stated in Committee

for withholding them, and the manner in which they were at last literally forced out of the hands of the trustees, who resisted, till farther resistance became dangerous to the progress of the bill.

At the risk of being tedious, but the subject is of too much importance to the citizens to permit its being slurred over, Bailie Lewis' account of the reasons for withholding these reports will be given in his own words in cross-examination, on 25th April:—

408. You told the Committee that all the reports you had obtained had been published in the newspapers, except two? I did.

410. The reports which have not been published are the reports, are they not, of Mr Leslie and Mr Stewart? They are.

411. Why have these reports not been published? They have not been published upon the advice of the solicitor of the Water Trustees, who was charged with the prosecution of this Bill.

412. Did you not consider, and do you not now consider, that they are material for the purpose of enabling the ratepayers to judge as to the expediency, and the cost, and the efficiency of the scheme? I do not.

413. As to the cost of the scheme? These reports, in so far as the cost of the scheme goes, have been published, and are all contained in the report which was submitted by the Water Trustees.

414. But there was a report by Mr Stewart, and another one by Mr Leslie, and then you had another one by Mr Bateman? Yes, distinctly; we had.

415. You know, do you not, that the ratepayers have repeatedly asked to be allowed to see these reports? Yes, I do.

416. And you know that they have been refused up to this moment? Yes, I do.

417. Has that been with your sanction and approval? Yes; it has.

418. You think that it is in the interest of the ratepayers that they should not see them? I think that after we had positive evidence that the applicants for those documents had made overtures to the parties opposing this Bill, whose interests were altogether foreign to the interests of the citizens, we were justified in acting upon the advice of our solicitor.

419. Do you consider yourselves justified now in refusing the information when you are before Parliament? It is for the Committee to say. Personally, I have no objection; but I would not have taken the responsibility of moving that these documents should be published, in opposition to the advice of the solicitor charged with the Bill.

Then followed this discussion:—

Mr WILL stated that he must now call for the production of the reports of Mr Leslie and Mr Stewart.

Mr POPE stated that his learned friend was not entitled to the reports, and he should decline to produce them.

Mr WILL was heard in support of his right to have the reports, as they were the reports upon which the promoters had acted, upon which the expediency, engineering details, and estimates for the works rested, and submitted that the promoters were not justified in concealing them from the ratepayers and the Committee.

Mr POPE stated that his learned friend was not entitled to say that the reports referred to were concealed from the Committee, *because, for any thing his learned friend knew, they MIGHT be laid before the Committee before the close of the promoters' case*; at all events he declined, at the present moment, to produce them for the inspection of his learned friend.

Mr WILL was heard in reply.

The CHAIRMAN stated that the only object the Committee had in view was to elicit the truth, and in order to save the time of all parties, the Committee would suggest to Mr Pope whether it would not be advisable to produce the reports, although they did not feel called upon to insist upon their production.

Mr POPE stated that the promoters would consider the matter, and by to-morrow morning determine what course they should pursue, but he would distinctly pledge himself to call Mr Leslie.

A considerable portion of next day having passed without any notice being taken by the trustees' counsel of Mr Pope's undertaking to announce their determination as to whether or not they were to

produce the reports, and Mr Pope not being present, Mr Will, one of the counsel for the opposition, on a reference having been made to Mr Leslie, interposed thus in regard to the reports (p. 64):—

Mr WILL—This is a good opportunity, I think, to remind my learned friend that the reports made by Mr Leslie and Mr Stewart were to be produced.

Mr CLERK—*They are here.*

The CHAIRMAN—What passed with regard to the production of the reports I will read: “The Chairman stated that the only object the Committee had in view was to elicit the truth, and in order to save the time of all parties, the Committee would suggest to Mr Pope whether it would not be advisable to produce the reports, although they did not feel called upon to insist upon their production.”

Mr WILL—We will put it in this way, that if my learned friend did not produce the reports, we should cross-examine the witnesses on the subject.

Mr CLERK—I was not present; and I really do not know what took place, but Mr Leslie will be called, and will explain everything. *I understand that we can get the reports in a few minutes, and my learned friend shall have them; WE DO NOT DESIRE TO KEEP ANY THING BACK (!).*

Notwithstanding of this distinct promise, to prevent the keeping of which to the very letter there was now confessedly no cause whatever, the reports still had not been furnished when the Committee rose. At rising, however, the Chairman intimated that they would sit next day as usual, and that they would not sit on Friday, but would adjourn till the following Monday,—Committees, except under special circumstances, never sitting on Saturdays. It was at once conjectured by those in charge of the opposition that the reports would be withheld till the Monday, because if they were furnished on the Thursday the engineers for the opposition would have two days, free of attendance at the Committee, to go over and master them, and to prepare for the cross-examination of Mr Stewart, as well as to prepare themselves to give counter evidence, or to make use of the reports in support of their own case, as the circumstances admitted. The result proved the accuracy of these conjectures, for the Thursday passed over, and yet the reports were not furnished; and although their counsel had stated that the reports were ready for delivery, they were withheld till during Monday’s sitting, and only given after Mr Stewart’s examination had commenced. Doubtless the trustees thought that they had done a smart thing in preventing Mr Hawksley and the other engineers having the opportunity of examining the reports at leisure on the Friday and Saturday, and they certainly enabled Mr Stewart to run the gauntlet of cross-examination better than he would have done, had the reports been furnished earlier; but, as it was, the trick availed the trustees little, for the course taken by the Committee of confining the inquiry to the Pentlands in the first instance, enabled the opposition engineers, after all, to master the reports before they were called upon to give their evidence as to the St Mary’s Loch scheme.

The report of Mr Stewart gave little detailed information as to any of the schemes of water supply. The Pentlands were not even taken into account, and were only incidentally mentioned as furnishing data in reference to ascertaining the rainfall and expense of reservoirs in reference to the South Esk and other schemes. All the information given as to the St Mary’s Loch scheme was that the total quantity of

water that might be collected in the district in a dry year was 3,893,175,000 cubic feet ; "on the Yarrow, St Mary's Loch renders any artificial reservoir unnecessary for the quantity proposed to be drawn from it, a weir across the outlet being sufficient for this purpose ;" and that 10,000,000 gallons per day could be got for a cost of £370,000,—15,000,000 gallons per day for a cost of £400,000,—and 30,000,000 gallons per day for a cost of £600,000.

His proposal therefore was simply, by a mere surface embankment across the valley, and by raising the bed of the stream a few feet, to prevent the loch by natural outflow, from falling below its present flood or winter level ; and he farther proposed (2897-9) to construct a tunnel through the bed of earth or gravel, or whatever it might be, lying across the valley and forming the loch, to admit of the loch being run off to a depth of 18 feet, the uppermost 18 feet in depth being thus to be converted into a store reservoir, estimated by him to contain 511,000,000 cubic feet, which added to the average flow of the stream for 120 days would give a storage of nearly 800,000,000 cubic feet.

Mr Leslie, however, took an entirely different view of the adequacy of the proposed works for the purposes intended. As the passage of his report on this subject has already been quoted (p. 60), it is sufficient here to refer to it. Shortly, stated, his opinion was that the proposed storage was altogether insufficient—that the surface of the loch must be very considerably raised—and that means should be taken to render watertight the great bed of gravel which forms the mouth of the loch,—on account of the increased pressure which the raising of the surface of the water would create on that natural barrier. This of course meant excavating a trench from side to side of the valley across this barrier, down to the solid rock or impervious clay, to be filled up with clay puddle so as to make a watertight dyke in order to preserve the natural barrier or embankment, the destruction of which would make an end of the loch. The depth to which it would be necessary to excavate this trench was ascertained at four places, varying from 20 to 48 feet in depth.

Mr Leslie and Mr Stewart were thus in direct opposition to each other as to the sufficiency of the contemplated works to supply even the first instalment to be taken to Edinburgh. After the preamble was held proved in the Commons' Committee, the trustees increased the compensation to the owners and occupiers on the stream to 17 millions of gallons per day, in place of 15 millions as it originally stood in the Bill ; and adding to this the first instalment of 12 millions of gallons per day to Edinburgh, the amount is 29 millions. Now, Mr Leslie in his report estimated that a flow of 30 millions per day would exhaust the storage in 90 days—and if so, a flow of 29 millions would enable the storage to last only three days longer, or 93 days in all. Mr Stewart admitted (2900) that 120 days storage was the lowest quantity that he knew of having been taken—and Mr Bateman also admitted afterwards (3521) that 120 days was the proper allowance

for this district. Mr Leslie, however, maintained that 180 days storage was necessary. But, even taking the smaller quantity, Mr Leslie's opinion was decided that the works proposed by the trustees were not adequate to ensure the supply to Edinburgh in a dry year, of even the first instalment of 12 millions of gallons.

Mr Bateman's views come now to be considered, and though the majority of his answers, in strong contrast to every other witness examined, consisted of long, and often argumentative speeches, it is considered proper to give his evidence on this subject in his own words, especially as the substance of it can be got in three questions and answers.

After he had stated his estimate of the yield of the district, based on the rainfall as registered in certain rain-gauges which had been put down by the trustees, to be 62 millions of gallons per day—and that the 15 millions of gallons then proposed to be given to the stream, and the 24 millions of gallons ultimately to be taken to Edinburgh—39 millions of gallons in all—took less than two-thirds of the gross produce, the following questions were put, and answers given :

3521. Well now, under these circumstances has storage to be provided? Storage has to be provided. Under such a mode of treatment you have to provide storage for the longest drought. If you go for the whole water you would have to provide a great amount of storage. Here you do not require to do that, because so much would run to waste. All that you have to measure your requirements by is the length of drought, during that drought; the streams are constantly producing something. I believe it is a full allowance to consider that this district, through a drought of 120 days, which is quite as long as we might take in this region—that the produce of the stream during that period will be about 12,000,000 gallons a-day. They will fall to 5,000,000 gallons in extreme drought, and they will vary from 5,000,000 gallons to 15,000,000 gallons, or rather more, but during the 120 days it will be 12,000,000 gallons a-day. If we give 15,000,000 gallons a-day, there is a deficiency of 3,000,000 gallons a-day, which must be provided for by impounding flood water. If we give 24,000,000 gallons we have a deficiency of 27,000,000 gallons, which must be provided entirely by stored water in heavy rains.

3522. One hundred and twenty days you mention as the period of drought? Yes.

3523. From your experience in similar mountain districts in Scotland, do you think that a long enough period to provide for? Yes, the longest drought in Scotland—it depends so much on what you call a drought. A drought is longer where you tax the whole country for the full quantity of water it will give. If you measure it by the period of time betwixt when rain ceases to fall and falls again, it may be a much shorter period. The length of drought depends entirely upon the amount of water you take. Here you take less than two-thirds of the whole quantity, therefore 120 days is the greatest length. In Loch Katrine the drought in 1869 was 189 days, and we could have delivered the full quantity of water for 180 days, though that was a very much larger quantity than is taken away here. One hundred and twenty days would, at 27,000,000 gallons a-day, exhaust almost the reservoir. I believe the capacity of the loch is 533,000,000 of cubic feet, and the quantity of water drawn in 120 days of drought is 510,000,000. There is a little margin.

Mr Hawkshaw, C.E., gave a general concurrence in Mr Bateman's views.

It thus appears, upon the evidence of three of the trustees' engineers that the storage capacity of St Mary's Loch was estimated at (taking Mr Bateman's estimate) cubic feet, 533,000,000 and by Mr Leslie the remaining engineer, at 436,000,000

Difference,	97,000,000
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Mr Bateman, whose knowledge of the rainfall of the district is derived entirely from the readings of four rain gauges, admitted that 180 days storage is the normal amount of storage required when the whole water is taken, but stated that as less than two-thirds are taken here, two-thirds of the normal amount of storage is sufficient, because the third which runs to waste in wet weather, is utilised in drought. It is evident that the value of Mr Bateman's evidence depends entirely on the accuracy of his estimate of rainfall, and unless the gauges were so placed as to give a reliable general average, they would be valueless.

Mr Leslie, who knows the district, attached little weight to the deductions which Mr Bateman drew from these gauges, and estimated the necessary storage at the normal allowance of 180 days.

There was therefore direct variance in the evidence of the trustees' engineers as to whether or not the parliamentary plans provided adequate storage. A superficial mode of reconciling this difference was suggested in this way, that the limits of perpendicular deviation permitted in the execution of works would allow the proposed embankment to be raised five feet above the level shown on the plans. But those who made the suggestion had not taken into account that the raising the level of the loch for four feet would according to Mr Leslie (and as to this there is no contradiction by the others), necessitate the construction of the puddle trench and dyke—and would raise a still more fatal objection, that by the raising of the level, a great extent of land would be submerged far beyond the limits of lateral deviation. The idea may therefore be dismissed as chimerical.

Let it be assumed, however, that Messrs Bateman, Hawkshaw, and Stewart's estimate of the number of days storage is correct, then supposing the emergency to occur for which storage was provided, their calculation was so nice that at the end of the 120 days there would not be a day's supply remaining in the reservoir. But long before that the town supply must have been entirely shut off. Mr Bateman himself stated (3585), "The parties entitled to compensation have a prior claim upon the water supplied to a city; they are to be first supplied." These parties with a primary right to the water would have nothing to do with the calculation of 120 days storage, but, when their supplies were drawn from the storage, they would be entitled to demand that the process of drawing off for the town supply should cease the moment that the quantity left was not sufficient to give them their full supply for the remainder, not of the 120, but of the normal amount of 180 days storage, to which they were by usage primarily entitled. Thus the town supply would be entirely stopped long before the lapse of the 120 days.

Matters would have been still worse had Mr Leslie's estimate of the storage capacity been correct, even taking the same premises for exhaustion as Mr Bateman took; for instead of the storage lasting for 120 days, it would have been exhausted in 94 days, and therefore

the stoppage of supplies by those primarily entitled to the water would come so much the sooner.

(7.) *St Mary's Loch Scheme continued.* (2.) *Cost.*—Mr Stewart's parliamentary estimate for the scheme as deposited was £480,000. In evidence for the trustees he stated (2885-6), that this sum included about £23,000 in addition to his detailed estimate of about £457,000 (2881). Although the trustees refused to allow this estimate to be put in evidence, Mr Rodwell, before any discussion arose about this, and probably before the trustees' counsel had been instructed to withhold it, got access to it for a few minutes, when an opportunity was taken of making the following copy of it in the Committee room, during the short time he had it,—it being instantly demanded back when it was seen that a copy was being made, not however before sufficient notes had been taken to enable the writer to complete the copy now given:—

	Cost per running yard.	Sums.
1. Works at Loch, . . . . .		£26,591
2. Aqueduct from loch to first tunnel, including bridges and compensation outlet, . . . . .	£6 12 0	37,645
3. Mount Benger tunnel, . . . . .	12 0 0	75,216
4. Covered Aqueduct, north end of tunnel, . . . . .	8 4 0	21,373
5. Inverted syphon pipes across valley of Tweed, including bridges, &c. . . . .	4 12 0	60,612
6. Aqueduct from Peebles northward, including syphons and bridges, &c., . . . . .	7 2 0	57,077
7. Inverted syphon to beginning of aqueduct, . . . . .	3 18 10	17,352
8. Aqueduct south end of Leadburn tunnel, covered, . . . . .	8 15 0	7,012
9. Leadburn tunnel, . . . . .	10 1 8	71,886
10. Aqueduct northward of do. . . . .	9 1 0	6,033
11. Pipe and conduit to Straiton reservoir, including bridges, &c. . . . .	2 15 0	30,309
12. Straiton reservoir, . . . . .		9,048
13. Pipe from reservoir to Minto Street, . . . . .	3 0 0	17,171
14. Land, way leave and water, . . . . .		20,000
		£457,325*

As in cross-examination neither Mr Stewart nor Mr Bateman disputed any of the items of this estimate, there was no occasion during the course of the trustees' evidence to call for exhibition of it. But when, during the examination of Mr Hawksley on the part of the opposition, reference was made to Mr Stewart's detailed estimate to show that it contained no provision for filters, Mr Denison immediately took the objection that the opposition were not entitled to assume anything whatever of the contents of Mr Stewart's estimate, except that it amounted to the sum of £480,000 contained in the parliamentary deposit.

Mr Will immediately (p. 440) called for the estimate which had been formerly shewn, in order to continue his re-examination of Mr Hawksley, when Mr Denison enacted the following characteristic and striking commentary on the declaration which his colleague Mr Clerk

\* Compare this estimate with that volunteered by Councillor Romans, in February 1869. *Supra*, p. 33.

had made on 26th April, that "*we do not desire to keep anything back.*" (*Supra*, 115.) :—

MR WILL—I now call for that estimate in detail.

MR DENISON—I shall give you nothing; you may call for what you like.

MR WILL—Am I not entitled to demand from the promoters the production of their detailed estimate?

MR DENISON—You are entitled to the parliamentary documents, which, no doubt, you have got already from the office.

The CHAIRMAN—That very point has been argued before.

MR WILL—The production of the detailed estimate you mean?

The CHAIRMAN—Yes, and we said you might as well ask for an architect's drawings. That has been decided by the Committee.

It appears from the Works Committee's report of 26th October 1870, so often alluded to, that Mr Stewart's first estimate was £400,000, and from Mr Leslie's report that his estimate was £650,000. It appears farther from the Works Committee's report that after the Meeting of Messrs Stewart and Leslie to endeavour to come to a joint estimate, Mr Stewart had increased his estimate, including for contingencies, ten per cent. on works, and five per cent. on pipes, to £472,061, while Mr Leslie had reduced his estimate, including for contingencies, twenty per cent. on works, and ten per cent. on pipes, to £595,474; both engineers being, according to this report, (which, however, was not the fact) agreed that if the outlet of the Loch was to be treated in the way recommended by Mr Leslie, a sum of £15,000, including contingencies, must be added to their respective estimates. It is presumed that the above sum of £472,061 above mentioned, was arrived at by Mr Stewart, by adding his per centages on works and pipes to the detailed estimate already given, and that he brought it up to the round sum of £480,000 in the parliamentary estimate by adding a farther sum of £7,937 to cover farther contingencies.

Reference has already been made to Mr Leslie's report where he said, "the cost of this work I reckon at £650,000, and I am certain it cannot be less." When under examination by the Committee, he stated as follows :—

5168. By the COMMITTEE—Is your estimate of £650,000 for the same scheme, or substantially for the same scheme? Substantially the same, but I have made provisions for a great many things that I had thought would be required, but which they did not think would be required; not for the parliamentary plan. We had a considerable difference as to the mouth of the Loch. It consists of a very deep bed of gravel. I wanted to have bores put down, but that never was done. I see considerable difficulties in approaching the Loch through the bed of gravel. I thought that provision would be required to be made for filters, and for a larger town reservoir, and for various things altogether; that made my estimate very large.

5236. Will you explain to the Committee upon what points you differed from the trustees, especially as I rather gather from you that it was a question as to completing the work within the time, and at the expense? I differed from them because I thought it would cost more than they thought, and they preferred other people's opinions to mine.

5237. The Committee wish very much to have your opinion? My opinion is given in the report, and I see no means of changing it. I do not think that the expense would be much less.

5246. Generally, do you consider that the estimates are not sufficient, looking to the plan submitted to you? That is my opinion.

5247. I think you put the cost at £650,000, and you said "I am certain it cannot be less." Do you adhere to that now? It may be a little less. I came down to a

certain standard, nearly as low as £600,000. The £650,000 was to bring in 15,000,000 of gallons a-day to Edinburgh. I was told afterwards to reduce the quantity to 10,000,000, and that brought down the estimate somewhat. I came down to about £600,000.

5248. MR DENISON.—Was it not £570,000? Perhaps it was thereabouts. I was told that the Committee would not approve of an estimate above £500,000. I would not sign that estimate, and there our connection ceased.

5249. Was not the figure £568,743? I daresay it was somewhere thereabouts.

5250. By the COMMITTEE—Had the Committee dictated what the estimate was to be? I was told that they would not approve of more than £500,000.

After a number of other questions and answers in reference to the differences, the examination proceeded thus :—

5274. So that the difference mainly is that you allowed a larger sum for contingencies apparently than Mr Stewart did? Yes; I thought there ought to be a larger sum for contingencies, because there were a number of things which were evidently not included, and it was necessary to make some provision for those.

5275. On what things did you allow for larger contingencies than usual? There was no provision large enough to settle the town reservoir, and I thought in all probability filters would be required before we were done with that; and then I wanted a double outlet at the Loch, one for the mill water, and to level the flood water in winter, and the other for the town water.

5276. Those were rather in the nature of additional things; you differed from Mr Stewart as to definite things? It was just this, I thought that these things were indispensable, and he thought that they were not.

Before going into an examination of the things which Mr Leslie thought indispensable, and which Mr Stewart did not, and therefore omitted from his estimate, it will be convenient to notice the other evidence as to the insufficiency of the parliamentary estimate.

Mr James R. Forman, C.E., Glasgow, and engineer of the Greenock Water Works, gave this evidence :—

6176. Have you visited the St Mary's Loch district and estimated the amount of works to be done to carry out the scheme which is now promoted? Yes, I have. I went over the St Mary's Loch line, and conduit, and tunnels, and estimated from the parliamentary plans the cost of the works.

6177. Have you been over the whole matter so as to be able to form a fair estimate of what the works will cost? Yes, I made an estimate, but I thought I would be within the mark, and I have given as favourable a view as possible. I had some difficulty in estimating the cost of the works at the outlet, from not knowing exactly what they were, as they are not shewn on the parliamentary plan. I thought that it was better to take Mr Bateman's estimate of £32,000 as the cost of those works, and assuming that the cost was £32,000 at the outlet, my estimate for the works is £665,000, to bring 12,000,000 of gallons of water into Edinburgh.

6178. Taking Mr Bateman's estimate of the outlet works at £32,000 as being correct, and taking all the other matters into account as you have inquired into them, your estimate is £665,000 for the works to be done to bring in 12,000,000 gallons into Edinburgh—they proposing to take that first? Yes; I may also state that I have taken the distributing reservoir, so far as I could make it out, from the plans—that is the reservoir near Edinburgh, which only holds about one day's consumption in Edinburgh—and it appears to be very small. I have estimated it upon the ground that that was the whole size of the reservoir in the neighbourhood of Edinburgh.

6179. You put down a small sum for that, it being a distributing reservoir for one day's supply? Yes.

6180. Does your estimate include filters? Yes I have included them in the estimate.

Mr Hawksley's opinion of the estimate was this :—

6485. Now, to come to the St Mary's Loch scheme. You have been to the locality, have you not? Yes; several times.

6486. And you have examined the parliamentary plans, have you not? Yes.

6487. You have seen Mr Stewart's estimate of £480,000, have you not? No. I have not seen Mr Stewart's estimate.

6488. But you know that is the estimate deposited, do you not? No doubt I heard that.

6489. I want to know whether, in your judgment, that estimate is a proper estimate for bringing in the supply contemplated from St Mary's Loch? It does not include what I consider to be the contingencies of the undertaking, nor the great cost which is to follow upon the introduction of that Bill. The estimate, as is usual with parliamentary estimates for works, stops where the standing orders stop. Now the estimate does not include the immense expenditure to be incurred in the distribution of the water, in filter beds, nor a good many other things which of course would go to perfect the distribution of that supply. The water is utterly unfit without filtration for distribution any where.

The details of the difference between Mr Leslie and Mr Stewart, so far as they are separable into distinct heads, will now be noticed.

(a.) *The necessity for a stronger embankment at the outlet of the loch, and its cost.*—Notice has already been directed to the opinion of Mr Leslie as to the inadequate storage provided by the parliamentary plans, and the consequent necessity for the operations suggested by him at the outlet of the loch for making watertight the bed of gravel which dams up its waters, and raising the embankment several feet higher than was contemplated. Mr Bateman's attention, when he was under examination as a witness for the trustees, was never directed by them to this matter, a circumstance which is somewhat significant, for doubtless he would have been asked to demolish Mr Leslie's inconvenient objection had he been able to do so. The attention of Messrs Hawksley and Forman was directed solely to the estimates, and the objections apparent on the plans, and as they of course knew nothing of what the material confining the waters of the loch consisted, they could say nothing, and from the withholding of his report had had no opportunity of inquiring, about the necessity of Mr Leslie's suggestions. It is, however, not disputed by Mr Stewart that this natural mound is a great bed of gravel, and in Edinburgh at least few people will hesitate to prefer the opinion of Mr Leslie on this subject to that of Mr Stewart.

Mr Stewart's account of his proposed embankment at the outlet of the loch was as follows:—

3029. What is the depth of the embankment, or the height of it at St Mary's Loch where you propose to impound the water? It is simply a weir, it can scarcely be called an embankment, from seven to nine feet in height below the water.

3030. What is the soil there? Gravel.

3031. Would you have any difficulty in putting your embankment on that gravelly soil? None at all in constructing a waste weir across a gravelly soil; it is simply a dam-dyke or weir which is constructed in every river in Scotland.

Mr Stewart's estimate for this waste weir as he terms it, and the sluices and works for discharging the water, is the first item of his detailed estimate before given, £26,591.

Mr Bateman, when asked about these works, took the opportunity of making a long speech on the subject which seems to have turned the heads of the trustees, viz.: the Loch Katrine works, as recommending the adoption of the St Mary's Loch scheme. Divested of its verbiage and irrelevancy he came out with the admission, which was

judiciously enveloped in a cloud of words, that he had made no detailed estimate of these works at the outlet of the loch, but had arrived at a sum by a process of rule of three, two of the elements being the respective drainage areas of Lochs Venachar and St Mary's, and the third element being the actual cost of the works at the outlet of Loch Venachar. The question which Mr Bateman put for solution may be stated thus: As the drainage area of Loch Venachar (48,000 acres) is to the cost of the works at its outlet, so is the drainage area of St Mary's Loch (27,250 acres) to the necessary cost of the works at its outlet. If such a mode of estimating had been propounded by a man of less mark as an engineer it would have been simply laughed at. As it is, it is enough to say that such evidence was worthy of the trustees and their case.

In their report of 6th October 1870, the trustees stated, in terms of their sub-committees report embodied in it, that Mr Stewart and Mr Leslie "had a consultation as to the probable additional cost of treating the outlet of St Mary's Loch in the way recommended by Mr Leslie, when they fixed upon the sum of £15,000, including contingencies, and £12,500, exclusive of contingencies." This appears to have been a pure invention for the purpose of misleading the ratepayers, for Mr Stewart in his evidence gave the following very different account of the cost of the works as proposed by Mr Leslie:—

3355. Now to come to that which I apprehend is the great issue between yourself and Mr Leslie, which is as to whether there is sufficient storage in St Mary's Loch to give the supply which you require for compensation. The water which was measured flowing from the Yarrow, is half the measurement of the minimum flow? It was the lowest measurement that I ever got, but I could not tell whether it was spent or not.

3356. But it was partly impounded water by reason of that which had been done by the mill owners, was it not? Yes, it was.

3357. Now, then, as I understand, what Mr Leslie desires is this: that there should be a much larger artificial embankment raised at the end of St Mary's Loch? Yes; Mr Leslie treats this district as he would treat a district where there is very little rainfall, and where the streams in summer almost dry up.

3358. And therefore Mr Leslie, treating it like an ordinary artificial reservoir, considers that there ought to be a large strong embankment raised in place of the present natural embankment? Yes.

3359. Now, if that were done, it would require you to go deeply down through the beds of gravel, in order to get to the solid rock? Yes.

3360. And would that be an expensive thing to do? Yes; it would be a very costly work.

3361. And that is the way, is it not, that Mr Leslie makes out that additional cost? Yes.

3362. Coming up to £660,000? Yes; that small embankment is something like £80,000 or £100,000.

Assuming Mr Leslie to be right, therefore, the difference between Mr Stewart's estimate of £26,591 for his embankment, &c., and £100,000, being £73,409, falls to be added to Mr Stewart's detailed estimate.

(b.) *The necessity of filters, and their cost.*—This question of filtration is now dealt with on the supposition that the water has in it only some impurities held in suspension, and capable of being removed by filtration. Such impurities differ from those existing in the water in

solution, and incapable of being removed by any filter. The latter class of impurities will be considered in treating of the quality of the water, supposing it to have been filtered.

Mr Stewart in cross-examination gave this evidence as to filters :—

3019. Have you made any allowance for filtration in your estimate? No.

3020. What would the filtration of St Mary's Loch water cost? From £18,000 to £20,000.

3021. Where would you have the filtering bed? At the Straiton reservoir.

3022. That is £20,000 which you have not anticipated? No.

3023. Would that be an addition to the estimate? To £457,000.

The trustees' counsel brought out of him this explanation on re-examination :—

3368. Now you have been asked this question with regard to filtration ; supposing the alarm shall have been brought to such an extent as to cause alarm with regard to the animalculæ in the water, have you room enough to expend £18,000 or £20,000 in the making of a filtering reservoir? Yes.

3369. And to cover it over if necessary, at a further expense of from £3,000 to £4,000? Yes.

3370. Now, were you authorised by the trustees to make provision for a filtration reservoir? Yes ; to make it if necessary ; but I did not consider it necessary, and I do not now consider it necessary.

3371. But, at all events, you had the means of constructing such a reservoir within your estimate? Yes ; I have included within this estimate strainers to strain off any small matters which may be held in suspension in the water.

3372. And where would these be placed? They would be placed at the Straiton reservoir.

3373. This will now go into the Straiton reservoir will it? No ; into the new reservoir.

Dr Frankland, after admitting the existence of water fleas in the water of St Mary's Loch, with a statement that in his opinion they were perfectly harmless, recommended the filtration of the water, in these terms :—

3416. Now let me ask you, would you recommend to the trustees to filter this water? Yes.

3417. And, *ceteris paribus*, if you could get water without the insects, you would prefer it, would you not? Oh ! certainly.

Dr Alexander Wood also speaks to the necessity of filtration, thus :—

1870. The water which is proposed to be taken from St Mary's Loch will be delivered to the inhabitants of Edinburgh without filtration ; were you aware of that? No, I was not ; I should certainly filter it myself before I drank it.

1871. By the COMMITTEE—Do you know whether the water will be filtered or not? I was not aware that the Bill did not contain a clause to filter it. I supposed that it would be filtered.

Dr Stevenson Macadam's evidence for the trustees may be left to characterise itself. The following is a portion of it as given in cross-examination :—

2052. Now with regard to this water, I understand that you recommend that this water from St Mary's Loch should be filtered for use? Well, it may be filtered.

2053. I know that ; but do you recommend it? I do not think it necessary.

2054. You do not agree with the last witness (Dr Wood), because he said if he had to drink it himself he should take care that it was filtered? I have seen St Mary's Loch under what we may call the disadvantages in connection with collecting water—a high wind, and the waves dashing against the pebbly beach. I know that water collected with the full swing of the breeze (and the loch is three miles long), the full swing of the wind beating the water into waves, and lashing it against the pebbly beach, did not communicate to it a quantity of flocculent matter. If you take

any impounded reservoir, no matter whether on the Pentland Hills, and if anything like a high wind was blowing, you would have the water highly coloured with earthy matter, and it would not be in a proper condition to be sent into the town. I know it is so sent into the town just now, but we cannot help ourselves.

2055. Do you recommend the trustees of the Water Company to filter their water? I could not express an opinion upon that matter.

2056. Have you no opinion upon that matter? I have no doubt it is unnecessary.

2057. Have you a doubt upon it? I have no doubt it is unnecessary.

2058. When you say you have no doubt, which way are you positive—that it should be filtered, or that it should not be filtered? I do not consider it necessary.

2059. Would you recommend them not to do it, as being unnecessary? They have not consulted me in the matter.

2060. Then, if they have not consulted you in the matter, I will do so. Would you or would you not recommend them to filter their water? I would state to the trustees—

2061. I will trouble you to answer this question; it is a fair question to put to a gentleman of your position. I ask you would you recommend them or not to filter their water? I would state to the trustees—

2062. Never mind what you would state to the trustees? I would recommend to the trustees—

2063. Do you say that you would recommend it? No; I would recommend to the trustees that in the introduction of such a water as St Mary's Loch, there was no necessity for filtration; but in considering the unnecessary alarm that had been created in the town by wild statements made by a few parties in opposition to the scheme, it might be advisable that filters should be constructed to allay the fears of those people.

2064. You would filter the water in order to pacify the people? Yes.

2305. Do you mean to say that you would seriously give that advice? Yes.

Comment on evidence so given is needless. It is enough to say that after Dr Macadam had given twelve separate evasive answers characterised by the strongest spirit of partizanship, his persistent examiner compelled him at last to give a direct answer to the first and only inquiry put—viz., that he *does* recommend the filtration of the water of St Mary's Loch before being introduced for domestic use.

Professor Douglas Maclagan likewise recommended the filtration of water which is known to contain animalculæ (2437-8-9, 2450).

It is needless to pursue this farther. All the trustees' witnesses, with the exception of Mr Stewart, whose evidence on such a question is certainly not entitled to the most weight, agreed that the water must be filtered; so the expense of a filtering reservoir, estimated by Mr Stewart to cost £20,000, and of a roof to it, estimated to cost £4000 more, must farther be added to his estimate of £457,325.

(c.) *Expense of roofing distributing reservoir at Straiton.*—The following is Mr Stewart's evidence on this subject:—

3025. Were any of the reservoirs to be roofed? The reservoir is to be an open reservoir—this reservoir near Edinburgh—unless it is found that the smoke injures the water.

3026. What would be the expense of roofing that reservoir? £3000 or £4000 for a light tiled roof.

3027. What shall you roof the reservoirs with? Tiles; the large reservoir at Dundee is roofed in that way.

While Mr Stewart did not include this expense in his estimate, he expressed a suspicion that the reservoir must be roofed after all. Laying his reason for doing so out of view, any one who knows the locality, an exposed situation in the neighbourhood of trees and farm buildings,

must perceive at once that in late autumn when the leaves are falling, the boisterous winds of that season would soon fill the reservoir with leaves and straw, which would not merely pollute the water, but would choke the pipes. It may therefore be assumed that this reservoir must have been roofed, and that Mr Stewart's estimate of the cost, being £4000, must be added likewise to the £457,325.

(*d.*) *Expense of additional distribution pipes.*—This is a subject as to which there is very little information. That it is necessary, if a very much larger quantity of water shall come to be used, may be inferred from the fact that the Water Company were by their Act of 1863 authorised to borrow £50,000, to be expended for that purpose, in view of the introduction of a much smaller quantity. Mr Stewart did not insert anything in his estimate for this item; and for the obvious reason that the addition of all these contingencies would have swelled up his estimate beyond the hard and fast limit of £500,000 fixed by the trustees, and spoken to by Mr Leslie. But while he admitted the omission (3061-3) he did not venture to say that additional piping to the extent of £50,000, which was in his view when he made his answers, was not necessary. Mr Leslie went farther, for when asked if he had in 1869 given evidence as to the propriety of having power to enforce improved fittings, he answered thus:—

5289. Did you give evidence upon that? I do not recollect; my evidence, I think, went to the laying down of new pipes. The town was not well piped before that time.

It seems, therefore, plain that a considerable sum must inevitably have been expended in additional pipes, if such a large increase was to be made to the quantity of water to be distributed and used. The sum which the Water Company were authorised to raise for a smaller distribution cannot be assumed to be unreasonable, and therefore the sum of £50,000 falls farther to be added to the estimate.

Bringing all these different items together, the cost of the scheme would have stood thus:—

Amount of Mr Stewart's detailed estimate, . . . . .	£457,325
Additional items, above specified—	
(a.) Stronger embankment at outlet of loch, . . . . .	£73,409
(b.) Filtering reservoir and roofing, . . . . .	24,000
(c.) Roofing for distributing reservoir, . . . . .	4,000
	<hr/>
	101,409
	<hr/>
	£558,734

The whole sum which was authorised to be raised under the Bill would thus have been far more than exhausted by necessary works at the amounts estimated in detail by Mr Stewart, leaving out of view altogether the expense, estimated above (*d.*) at £50,000, for laying down new distribution pipes, and also the probable increase in the cost of execution above the detailed estimate, as was almost certain to have been the case to a large extent, according to the evidence of Messrs Leslie, Forman, and Hawksley. It is of no moment that Mr Stewart was supported by Messrs Bateman and Hawkshaw, because, even in the most favourable view for the trustees, the one set of engineering

evidence neutralized the other; and, therefore, they failed to prove that the works and necessary contingencies could have been executed for the sum of £500,000 stated in the Bill. According to Messrs Leslie and Forman, the works would not have cost less than £650,000.

It cannot be believed that the trustees and their engineers were not aware of the circumstance that the cost of the execution of the works would exceed the parliamentary estimate, and sum proposed to be raised; and reference has been already made to what was understood to be the mode in which they contemplated to make up the deficiency, without resorting to the dangerous expedient of going back to Parliament for power to burden the citizens with additional rates to enable them to raise more money. The powers which they proposed to take to sell the existing works have already been alluded to, and there is little doubt that they looked to the price of at least some portions of these works, to make up the inevitable deficiency. Nor was this idea such a chimerical one as it at first sight appeared. The inhabitants of Musselburgh and Dalkeith, or at least some of them, had gone to Parliament in the same Session of 1871, and had got powers to bring in supplies of water from the South Esk. There was, however, anything but a good understanding between the inhabitants of the two places, and the people of Dalkeith showed strong symptoms of repudiating the scheme altogether, and, in point of fact, were prospecting for water for themselves in the estate of Crichton, six or seven miles to the southward. The Glencorse and Crawley works were far more suitable for the supply of Musselburgh and Dalkeith than either of the South Esk or Crichton schemes, and there is little doubt that the Edinburgh and District Water trustees could easily have made a bargain for the transference of their works to the Musselburgh and Dalkeith people at a fair price. Again, the Crosswood and Colzium Springs lie at a height above the sea of upwards of 800 feet, almost on the watershed draining to the Clyde, and with comparatively light works their waters could be carried to Lanark; and it is reported that communications were going on in 1870 or 1871 between some of the active promoters of the St Mary's Loch scheme and the authorities of Lanark, or some person or persons in their behalf, with a view to the sale of these springs and relative works to the authorities of Lanark. Here then were the two sources from which funds were contemplated to be got to make up the deficiency caused by the excess of cost over estimate, without laying additional rates on the inhabitants, but at the sacrifice of a very great portion of the fine spring water which is presently supplied to Edinburgh, in order to defray the expense of bringing in the far inferior and dangerous water of St Mary's Loch, to which attention is now to be directed. The ugly exposure, however, of the trickery and concealment, even among themselves, in defiance of the old adage, which came out in the cross-examination of the Lord Provost, led to the abandonment of the scandalous projects alluded to, by the withdrawal before going to the House of Lords, of the clause containing the power to sell the existing works.

(7.) *St Mary's Loch Scheme continued.* (3.) *Quality of the water.*—The distinction between hard and soft water is the presence or absence of lime salts and other saline matters. Spring water in its percolation through the earth and rocks to its point of discharge at the spring, dissolves and absorbs a variety of different salts, and therefore is always more or less hard. Rain water, on the other hand, which in its fall can absorb only such salts as exist in a gaseous form in the air through which it passes to the earth from the cloud which is its origin, is almost entirely free from any salt whatever; while surface water collected and retained in ponds and lakes is intermediate between the two, consisting originally of rain water which has collected some salts in its transit along or near the surface from its place of deposit to where it is collected. Spring water is therefore, in a greater or less degree the type of hard water, while rain water is the type of soft water. It is necessary to keep this distinction in view in order to understand the absurdity with which the trustees commenced their case, and to which they clung until Mr Bateman was compelled to knock it on the head.

The main ground on which, previous to the introduction of the Bill, the trustees had recommended it to the public was the excessive softness of the water of St Mary's Loch. Dr Frankland in his reports of 6th October and 21st November 1870, preferred it because it was very soft; Dr Littlejohn for that very reason preferred it to the present supply (1590-1);—and in the earlier stages of the agitation, Bailie Cousin, echoing the sentiments of nearly all the other promoters, was most eloquent in setting forth the great saving which its introduction would effect in the article of soap alone in families of limited income. The great recommendation was that this soft water was admirably suited for cooking, washing, and manufacturing purposes—while the want of mineral salts was to be proved not to unfit it for drinking purposes. In short, its great merit was that it differed entirely in its quality from spring water.

But with singular inconsistency the trustees at the same time represented, and afterwards endeavoured to prove that notwithstanding of that difference it was yet, in point of fact, spring water. If it had, according to them, few or none of the qualities of spring water, the object of this attempt (which, to anticipate, signally failed), was simply to draw attention away from the bad quality of the water, by representing it as spring water. This attempt was characterised by such an amount of ignorance, or dishonesty, or both combined, that it requires some special notice.

(a.) *Attempt to prove the water of St Mary's Loch to be spring water.* This spring theory was first broached, as has been mentioned in an earlier part of this narrative, by the Lord Provost (then Dean of Guild) Law. But it was taken up and enlarged upon by Bailie Lewis at a meeting of the Town Council, held on 21st February 1871, in the following inflated terms:—"Ten or twelve years ago he travelled for weeks and months upon the hillsides from St Mary's Loch

to six or seven miles back. He knew every corrie in the glens, and when he remembered that he had seen the crystal stream gurgling from the grassy slopes, and rushing from clefts in the rocks, he asked any one to look at that, and tell him that the water was incapable of being drunk. The trustees had an opportunity, a few weeks ago, of testing the water, such as had not been afforded during the last quarter of a century. They had the loch frozen over so strong that one might not only walk across it, but drive a carriage across it; and in walking across the ice, did they find a stagnant loch? Verily no. They found an immensity of springs—springs from the size of a tumbler to infinitely wider dimensions; they sounded the water, and notwithstanding the immense depth, there were surging springs, which in innumerable cases had resisted the frost for six weeks, although the ice was frozen six to ten inches thick all round. He believed there was not a loch in broad Scotland where there was a greater amount of spring water than St Mary's Loch, and yet men would say that it was unfit for domestic use."

Councillor Gowans too, who ought to have known better, maintained at the same meeting of Council (adjourned to 22d February), that—

St Mary's Loch must get credit for its being a natural lake, requiring no maintenance, causing no risk, and having an unlimited supply, full of springs;

\* \* \* The springs to which he had alluded, and of which Bailie Lewis had spoken on Tuesday were so powerful as to make a man throw to the winds the talk which had been made about the loch being stagnant water. Those who were at the loch on Friday last made inquiry on this point; and found that during the severe frost there were big holes and little holes in the ice, caused by the springs having, by their own power, forced their way up from great depths through the still water.

When Bailie Lewis however came to be examined as a witness before the Committee, this pretentious statement of his shrank considerably in its dimensions. Conscious that what he had said about "the crystal stream gurgling from the grassy slopes, and rushing from clefts in the rocks" was an entire fiction, he very wisely said nothing about it in evidence, and confined himself to what he had said about the springs in the loch, because he had the holes in the ice, which he mistook for the effect of springs, as a sort of countenance, though probably a most unexpected one, for his statement. The following is what he said in answer to the questions of the trustees' counsel:—

242. Now, you have visited the loch during the last winter also, I believe? I did.

243. And were you able to ascertain from its then condition whether that loch was supplied by springs? Yes; I was satisfied that there were hundreds of very, very strong springs to be found in that loch.

In cross-examination, he gave this farther information:—

494. Was it in the winter time that you were there? Yes, as well as summer.

495. Were you ever there in the winter time? Yes; last winter.

496. When there, did you ascertain whether there were any springs or not? Yes.

497. Did you break the ice? I did not require to do that. The loch was frozen entirely over, and I went and crossed the loch, and I found that after six weeks of protracted frost there were springs in hundreds, where the ice was six and eight and ten inches thick, which had resisted the action of the frost during that long period of six weeks.

498. Were these places where the ice had been broken? No.

499. Or cracks? No, there were no cracks. I went right up the loch where it had never been approached by a human being until I went there. I visited it in conjunction with the Lord Provost of Edinburgh, and several others.

The Lord Provost's account of the same affair, given in answer to his own counsel, is as under:—

690. You went (to St Mary's Loch) during the frost in February, did you not? Yes.

691. In frost you might expect the loch to be entirely covered with ice; was it covered with ice; Yes, except some small holes here and there.

692. And in these holes what was found? Springs coming up from the bottom, 30, 40, and 50 feet deep, coming up regularly from the bottom, and preventing the ice upon the surface from freezing.

693. I believe that in consequence of those springs and other things it is only in very hard frost the loch is frozen at all? It had never been frozen so completely for forty years back.

The cross-examination of this gentleman is a thing not to be soon forgotten by those who witnessed it. The description given by him of the air holes in the ice, which he mistook for the effect of springs,—of the courage of Bailie Lewis and himself in examining them,—of the water bubbling up from the depth of 50 feet,—of its temperature of 40 degrees as ascertained by his finger and thumb, the only thermometer he had,—of trying its taste with whisky and without it,—and his volunteered statement that they were all sober on the ice, made such a collection of elements of the ludicrous, that the usual gravity of a parliamentary Committee was completely upset, and Committee, counsel, parties, and audience fairly roared with laughter, while the Provost himself sat with the immovable gravity with which he occupies his chair in the Council, after having delivered himself of some appropriate, or possibly inappropriate joke, as if he had achieved some great feat.

It is needless to go over this ridiculous exhibition of amateur engineering: for when Mr Bateman came to be examined and to be led over that ground, he had no choice, even had he been otherwise inclined, but absolutely to negative the possibility of there being springs in the lake. Were there not tunnels to drive? and if it were admitted that it was a spring producing country, what would have become of the estimates, which made no provision for pumping the shafts dry during the driving of these tunnels? He must have had his mind made up upon that subject when he made his estimates. Therefore the following was his evidence:—

3678. In the Glasgow district I think you said that you had no springs to help you; have you taken into consideration the effect of springs in this district at all? There is a very small amount of spring water in this geological district; this district does not yield much spring water. I have gone over the whole of it, and a drier district I scarcely ever saw for its extent; it is totally different from a spring-producing country.

3679. Did you go over it last year in that drouthy summer? No; not at all last year. I was there in November 1868, and I was there in March of this year.

3680. November 1868 was drier than ever, was it not? No; November 1868 was very wet; the drought of that year broke, in some parts of the country in September, and in other parts early in October; and in November, in the early parts, we had a great deal of rain. This is not a spring producing district; the rocks are so dense that a little below the surface you get no water at all.

3681. Somebody spoke I think of a number of springs in the loch itself? I think they were deceived; the springs do not bubble up from a depth of 30 to 40 feet.

3682. One gentleman who favoured us with evidence on behalf of the promoters said that he believed he saw springs; but you differ from him? Yes; there are springs no doubt, which issue in lakes; but I should doubt their meeting in a sheet of water with springs from 30 to 40 feet deep.

3683. By the COMMITTEE—I suppose the holes in the ice were mere air holes? Most likely; there are always air holes upon large sheets of water covered with ice.

As might have been expected, after this nothing more was heard about the alleged springs in the loch; and it may therefore be assumed that there are no springs in the loch, at least to such an extent as to affect in any appreciable degree the quantity of water collected there, and derived from other sources.

(b.) *The peaty origin of the water.*—Mr Bateman's evidence just quoted went far beyond negating the existence of springs in the loch, for it equally negated the existence, to any great extent, of springs in all the district, which could be the sources of the streams running into the loch. If the rainfall does not get into the strata below the surface, there can be no springs, and the water falling as rain will run off from the surface almost as fast as it falls, for if there is no great depth of soil, there is nothing to retain the water. Mr Bateman's statement that "the rocks are so dense that a little below the surface" (that is of the ground, not of the rocks) "you can get no water at all," is conclusive of this. Where, then, does the water of the streams come from?

Professor Geikie, director of the Geological Survey of Scotland, furnished the materials to answer that question, in the following evidence:—

4501. You have examined the hilly district round St Mary's Loch? I have.

4502. Will you be good enough to state to the Committee as regards peat and otherwise, in what condition it is? If you take the whole area of St Mary's Loch district at 28,000 acres, the area of peat embraced within that basin amounts to more than 7,000 acres, that is to say, one fourth of the whole catchment basin.

4503. Is it a thick coating of peat? In some places it must be 10, 12, and 15 feet thick.

4504. Take as an example the Megget Water, which we have heard is one of the principal feeders of St Mary's Loch? There are some very large peat mosses at the source of the Megget.

4505. And I believe also about Winterhope and the Black Burns, which are also tributaries of the Megget? There is Winterhope Moss, which is a large expanse of black peat.

4506. In what condition is this peat; is it living vegetable matter? No; like the other peat moss in Scotland it is almost wholly dead. It is decaying peat.

4507. In a state of decomposition? Yes; the condition of climate by which the peat mosses of this country were formed no longer exists; the climate is changed, and the peat no longer lives; it is decomposing. It is being constantly, year by year, removed.

4508. The peat when dead cracks up into what we have been calling these moss-haggs? It does.

4509. In windy weather may it be seen blowing about? In windy weather in summer time the peat dries, and it is blown about sometimes in clouds of brown dust.

4510. When the rain comes, what is the consequence? When the rain comes, of course this dust is carried away in the form of fine mud, and the rain still further acts upon the broken decayed surface of the peat, cutting it up into runnels, and carrying a solution of peat and dust in mechanical suspension down into the streams, from which it is borne to the lower grounds.

4511. Cracks form in the surface of the moss haggs, forming conduits or runnels for the water? Yes.

4512. So by the continual cracking of the peat in the summer, and its being blown about in the form of dust, and the rain of the wet season, these moss haggs are perpetually being removed towards the loch? They are.

4513. And carried into the water of the loch gradually? Yes; I may mention that St Mary's Loch lies, so to speak, at the foot of a great hill. It is the most peaty tract that I know of in the whole of the south of Scotland. It receives the drainage of a very large extent of black decaying peat; consequently the water is always more or less coloured. That it is not a mere local or temporary accident is shewn by the fact that the stones along the margin of the water are always more or less brown or coloured.

The evidence of the trustees' witness, Mr Bateman, and of the witness for the opposition, Professor Geikie, taken together, leave no doubt as to what are the sources from which the Megget water and its feeders derive their waters, namely, large black and decaying peat-mosses, from ten to fifteen feet in thickness. Every person familiar with hill scenery knows that a mass of dead peat is simply an immense sponge lying on the surface of the ground, greedily absorbing rain water, and slowly parting with it. There being few or no springs, the surface water where not retained by the peat will be run off in a few days, and then the only source from which the streams can derive their supplies is the peat. When the peat is saturated with rain, and therefore parts with it somewhat freely, the water comes off darkly coloured; but when it gets drier, the water comes from it more and more slowly, and of course the percolation being very gradual, the water as gradually becomes clearer and clearer, so that after a continued drought there may be at the outlet of the stream little or no colour in the water to indicate its peaty origin.

Attention has been already directed to the highly-coloured assertions made by Bailie Lewis in the Town Council on 21st February 1871, as to the crystal springs gurgling from the grassy slopes, and rushing from clefts in the rocks to feed the streams, and to his having shrunk from repeating this in evidence; but another person was found to attempt to do that which he could not do himself;—and so the trustees, before the evidence of Mr Bateman, and evidently not anticipating what he was going to say on this subject, adduced a farmer in the district, Robert Mitchell, to prove that the feeders of the Loch derived their supply principally from springs. No doubt he said so; but he also said that all the flat hill tops from which the water principally flowed were covered with moss, though the slopes were certainly not. It is pretty evident that, if Mr Bateman's account of the geological condition of the country is correct, and the trustees at least cannot dispute it, all the water of these streams must be derived from the flat hill tops; and no person will hesitate to prefer to the evidence of this farmer that of Mr Bateman, who went to look for springs and could not find them, corroborated as he is by the real evidence afforded by the shrinking of Bailie Lewis from repeating in evidence what he had previously asserted as to having seen springs of fabulous beauty and abundance.

(c.) *The absence of the necessary saline constituents of good water; otherwise, its undue softness.*—This objection to the water applies entirely to its use for dietary purposes. The note of alarm on this subject was sounded by Charles Wilson, M.D., in the series of letters which

he published in the *Scotsman*, under the signature of "A Physician," commencing on 11th November 1870. It is not intended here to go into any detail of the grounds of his arguments, or the authorities which he cited in their support, because to do them justice would require more space than this narrative can afford; but as the publication of these letters undoubtedly aroused the citizens to a sense of the great risk they were incurring, by allowing without remonstrance the introduction of such a water for domestic use, the following extract is given of the general conclusions which he stated, in a letter in the *Scotsman* of 16th February 1871, that he held to have been substantiated during their progress:—

1. The human body needs for its structure and maintenance the supply of certain salts, among which are the carbonate and phosphate of lime, these being in a special manner required to give stability to the bones, but having also their further uses in the living economy.

2. The phosphate of lime is supplied to us in our ordinary animal and vegetable food, but is not presented to us in water.

3. The carbonate of lime, on the contrary, is not primarily presented to us in sufficient quantity in our solid food, but is contained in variable and more fitting proportions in spring and river waters.

4. It is from the carbonate of lime brought down by rivers into the sea that all marine animals derive the denser parts of their construction, the remains of which, during the progress of geological periods, have been and continue to be aggregated into huge expanses of limestone rock.

5. What has sufficed for the wants of these lower animals has sufficed also for those of the higher organizations, of which man is the head.

6. Positively, this is proved and confirmed by the fact that it is in the limestone districts, where the waters are more or less hard, that man has been shown to have reached his most vigorous average physical development.

7. Negatively, this is proved also by its having been found that the mortality of our principal towns increases, on a calculation of averages, in the proportion that the hardness of the waters is diminished.

8. A water containing about six grains of carbonate of lime in a gallon is nowhere held to be a hard water, but is fitted for every use of domestic economy or manufacture.

9. Such a water, whether as a drink, or as combined with our food, presents to us in the most regular and constant of forms, and in its most simple, natural, and easily appropriated state, the carbonate of lime required for the healthy maintenance of the living system; while it is otherwise naturally preferable, because imbued with more agreeable qualities, and with higher refreshing and invigorating powers.

10. A lake water, independent of the consideration of its low impregnation with carbonate of lime, is further objectionable from its deficiency of air and carbonic acid; its extreme coldness in winter, and tepidness in summer; its combination with peaty and other matters; the abundant presence of living animal and vegetable organisms; and its general want of sapidity and agreeableness, and consequently its lower refreshing powers.

11. These views, so obviously concordant in fact and reason, are consistent with the natural tastes and instincts of all peoples in all ages, have been maintained by the mass of scientific men in all countries, and have been publicly ratified through the results of repeated Government inquiries.

12. Therefore, wherever a community has a choice between a water immediately derived from springs, and thus moderately impregnated with carbonate of lime, the excellence of which no one questions, and a lake water, the defective qualities of which are denounced by many, it ought unquestionably to prefer the former, on every probable consideration of comfort, health, convenience, and in the end, were it on no other grounds than these, of the truest economy.

In order to see the practical application of these conclusions to the water of St Mary's Loch, the first thing to do is to ascertain what quantities of these respective salts it contains.

Dr Frankland, in his report of 6th October 1870 to the water trustees, gave the total solid impurity in the water issuing from the foot of the loch at 4.74 parts in 100,000; but of what that solid impurity consisted, he gave no explanation. As the gallon consists of 10 lbs. avoirdupois, the total solid impurity, whatever that may consist of, in a gallon of this water is 3.318 grains.

Dr Stevenson Macadam's analysis was a little more specific; but it did not harmonize with Dr Frankland's. By the way, the water which he analysed was not proved to have been taken from St Mary's Loch. He stated it to have been furnished to him by Mr Robert Paterson, who, however, when examined as a witness, was not asked a single question on the subject. Strictly speaking, therefore, this analysis was worth nothing in evidence. Such as it was, however, it is now given from the minutes of evidence (1893.):—

	Grains.
Saline matter, principally Carbonate of Lime (chalk), Sulphate of Lime (stucco), and Chloride of Sodium (common salt),	2.27
Organic matter of vegetable origin,	0.61
Total saline and organic matter dissolved in imperial gallon,	2.88
Hardness,	1½

The saline matter and organic matter together amounted to only 2.88 grains per gallon, as against Dr Frankland's 3.318 grains of solid impurities; but whether these two quantities referred to the same thing, there was no explanation. Then, again, Dr Macadam lumped all his saline constituents together, so that there are no means whatever of arriving at the fact of how much carbonate of lime, or sulphate of lime, and chloride of sodium are respectively dissolved in the water.

Both of these gentlemen gave very decided opinions as to the wholesome character and excellent quality of the water for general and domestic use. They may be very great authorities in reference to the constituent elements of water, the application of it to washing purposes, and its powers in extracting the nutritive qualities of food in cooking; but as they are both simply chemists, and not physicians, and are therefore of no authority in reference to the effect of water on the human frame, their evidence on that subject may be laid aside as of no greater value than that of any other unprofessional person.

Before going into the medical question of the suitability of this water for domestic use, the opinion of non-professional persons as to its actual use and palatability may be noticed.

Bailie Lewis (237-244, 493,) stated his personal experience of St Mary's Loch, by a residence in Mrs Richardson's (Tibbie Shields') house, on its banks, for a month, ten or twelve years ago, during which time he, and Mrs Richardson's household used nothing else for drinking and other purposes than the water of the loch, and that, while the district is not a populous one, the whole people where he lived used no other water. Had he rested contented with the evidence of his own use of the water, no person would have challenged it; but when he attempted to prove its exclusive use by Tibbie Shields he brought himself into collision with his witness, Mr Robert Mitchell, brought to prove

the springs of the feeders of the loch, who contradicted him flatly on this point.

In cross-examination it was extorted from this last witness after stating that he used the water of a spring himself, that (2212) Tibbie Shields has a spring also, but does not use it; that (2213) almost all the water she uses is carried from the loch; but (2214-6) that she brings two pitchers a-day from the spring, in warm summers for drinking purposes, the loch water being used for all other purposes. It required some pressure to bring the admission out of this witness; but that made it the more telling when got.

Dr Charles Bell of Edinburgh was often at Mrs Richardson's house, and gave evidence of her recent statement to him (5557-63) that she never in the summer drank the water of the loch, and that what she used was got from a spring.

Mr Thomas Field, on a visit to the same house in his character of a Water Trustee, actually had the spring water brought to him for luncheon, without asking for it, and quite as a matter of course (5658).

After this, the evidence of Bailie Lewis as to the use of the water, if not indeed as to every thing else, may be entirely disregarded.

The next witness was the Lord Provost, whose evidence as to the tasting of the water was as unique as his evidence about the springs: the water was first rate (696); it was beautiful (748); oh! it was delightful (750); it was tried both with and without whisky (751); and the taste was merely different, and that Bailie Lewis would say that the whisky made it abominable (752); but they were quite sober when they tasted the whisky and water on the ice (753).

Mr Chambers, the late Lord Provost, who is a landed proprietor in Peeblesshire, and knows the loch well, said that he had often tasted the water, and always found it clear and pleasant to the taste; he never found anything offensive about it (1230-6.)

Then came two farmers from the neighbourhood, who, for all they said, might have as well remained at home.

One of these, the Mr Robert Mitchell already mentioned, said that, *according to his experience*, the St Mary's Loch water was very good for drinking and other purposes; that it was used by all the inhabitants upon the margin of the lake; and that he never heard any complaint of it (2157-60). But in cross-examination it turned out that this witness did not use the loch water at all, nor even that of the Kirkstead burn, a feeder of the Loch, which flowed past his door. What he used was the water of a spring led into his house from the hill (2209-11).

The other dweller on the banks of the Loch, Mr Robert Laidlaw, said that he had resided forty seven years at Bowerhope, on the Loch, and that he never heard of people living at the Loch being unable to drink the water. When, however, the question was put to himself whether he always used the water, he would give nothing but the qualified answer "many times" (2279).

It seems to be an odd circumstance that while witnesses were brought

to speak to the general use of the water by the inhabitants, whenever a specific person was inquired about, that person was sure not to use it. Tibbie Shields did not use it for drinking; Robert Mitchell did not use it at all; and Robert Laidlaw did not seem to use it generally, for when asked if he always used it, he took care to give a very qualified answer, "many times," excluding the idea of general use. In short, it seems to be that the inhabitants of the district wont use it when they can get any other water.

This may be said to be all the non-professional evidence on the subject; and the medical evidence comes now to be examined, in reference to the softness of the water.

Dr Littlejohn said—

1558. Have you had plenty of opportunities of seeing St Mary's Loch under all conditions of weather and water? Yes, I have.

1559. What do you say about this water generally? A better water I do not know.

1560. Have you drunk it? Yes, again and again.

1564. As far as your own personal uses of the water is concerned, you have always found it wholesome and palatable? Yes.

1565. Is it flat to the taste? No; it is brisk and pleasant to the taste.

Dr Littlejohn then referred to a pamphlet containing his report to the Water Trustees in answer to some of the earlier letters of "A Physician," to which he adhered as his evidence. It is far too long to reproduce here; but the burden of it was, that as the inhabitants of Glasgow had experienced no inconvenience or injury from the use of the softer water of Loch Katrine, there was no reason to apprehend inconvenience or injury from the use of the water of St Mary's Loch. In illustration of the advantages to be derived by the community from the use of soft water, he quoted with approval some passages from Professor Mapother's Lectures on public health, the following being the passages. He stated that Dr Mapother says (p. 99), that "the water with which Dublin will be supplied from the Vartry will be so much softer than that now used, that the daily quantity distributed to the inhabitants will contain ten tons less of lime salts. This will lead to a great economy of soap, for it is calculated that the interest of the cost of the Glasgow waterworks is repaid by the saving in this particular, and each Dublin citizen will save one penny per week in washing, and something more in the economy of tea, when the supply of soft Vartry water is accomplished;" and he adds (p. 95), "The advantages of a soft water are briefly, that it is more economical, by the saving of water and soap in ablution and washing of clothes, and it saves fuel by boiling at a lower temperature, and by forming no crust, which must weaken the heating power of the fire. Much labour is required for removing this incrustation. Soft water is more suited for most culinary purposes." It is obvious on perusing these extracts, that they take a merely chemical, and not a medical view of the question, and are therefore of little value; for if a water is not suitable for drinking purposes in the estimation of a physician, it is not fit for introduction into a city for domestic use. Besides, Professor Ma-

pothor's views are entirely speculative, for it is not the experience of the use of the Dublin water which he states, but his anticipation of the results to be derived from it in the future. And, finally, the report from which the extracts are taken is the cooked one already noticed (p. 66), from which everything was struck capable of being used as an argument against the scheme.

Going on with his evidence, Dr Littlejohn said in cross-examination :—

1590. Do you mean to suggest to the Committee that the St Mary's Loch water is better than the water you get at present? *I think so.*

1591. For what reason? *It is softer.*

1592. Then you are an advocate for soft water. Are you aware that there is a difference of opinion among scientific men upon that subject? *I am.*

1593. Your only ground for preferring it is this matter of softness? And also a most important element which is quantity.

The evidence of Dr Alexander Wood on this head is now given :—

1805. I will now go to the question of the quality of the water, to which as a physician, I believe you have directed your attention? *Yes.*

1806. I am alluding to the water from St Mary's Loch? I have seen the reports of chemists, and the analyses of that water, and I have considered the character of the water, and I judge it to be good water for the city, founded upon those reports.

1807. Looking to the analyses which have been made of the water of St Mary's Loch, in your opinion, as a physician, is it well fitted for the domestic supply of a city like Edinburgh? Judging from the analyses of the chemists, I should consider it very well calculated indeed for the supply of a large city with water.

1808. It is very pure water, is it not, and well adapted both for detergent and cooking purposes? It is particularly well adapted for cooking purposes, and it is fairly adapted for drinking purposes.

1809. By fairly adapted do you mean that it is not so sparkling a water as some other waters are? *Yes*; some waters that are exceedingly injurious are more palatable to drink than wholesome water. I do not think that the water of St Mary's Loch will be quite so pleasant to the taste as water which might not be so good for the constitution.

1810. There are many waters, I believe, which contain nitrates, which are very injurious to health, but which are by reason of the presence of those salts particularly sparkling and agreeable to the taste? *Yes.*

1811. In the water of St Mary's Loch do you find all those qualities, judging from the analyses which you have seen, which make it a good and useful water, and sufficiently pleasant for domestic use? I consider that it is a water very well adapted for domestic use.

1812. The presence of carbonic acid gas, in the presence of other salts, makes the water more sparkling, does it not? *Yes*; just as soda water to most palates is more pleasant to drink than common water. If you have carbonic acid gas in a less degree, it makes the water more pleasant to drink, it is more sparkling.

1819. A good deal has been, I believe, said and discussed in Edinburgh, with regard to the presence of lime in the St Mary's Loch water—that has been one topic of discussion—has it not? There was an attempt made to excite the inhabitants to believe that they would lose all consistency in their bones if they drank this water, because there was not enough lime to supply the bones of the body.

1820. As a physician, what do you consider that objection to amount to? I think it is simply ridiculous, and I wonder that sane men could be found to listen to such a thing.

1821. I believe that that very question had been discussed before the Duke of Richmond's Commission on the Water Supply of London in the year 1869? It was.

1822. Of course the introduction of lime into the human body is essential in order to keep the human organism perfect? It is absolutely necessary.

1823. But I believe that the lime which is supplied to keep up the human organism is supplied, both from the vegetable and animal food which is consumed? There is more lime in a plate of porridge, which is the ordinary food of the lower classes in Edinburgh, than in all the water they would drink in the course of twenty-four hours.

1824. Is it not also the fact that almost all vegetable substances contain a sufficient quantity of lime to support the human system? Yes; in a report that I furnished, at the request of the Town Council, I gave a table which I think is of especial value, because it was prepared, not in reference to this inquiry, but it was prepared by Dr Golding Bird, a well known physician in London, with reference to an inquiry as to diseases of the kidneys, and that table shews the proportions of lime in most of the foods which we usually consume. You will find that table in my report.

The following is the TABLE referred to:—

Articles of Food.	Phosphates in one ounce.	Authority.
Pease ( <i>Pisum sativum</i> ) . . . . .	9.26 gr.	Braconnot.
Maise ( <i>Zea Mais</i> ) . . . . .	7.2 „	Gorham.
French Bean ( <i>Phaseolus vulgaris</i> ) . . . . .	4.7 „	Braconnot.
Wheat ( <i>Triticum hybernum</i> ) . . . . .	4.7 „	Liebig.
Beans ( <i>Vicia faba</i> ) . . . . .	4.7 „	Einhoff.
Potatoes ( <i>Solanum tuberosum</i> ) . . . . .	2.35 „	Liebig.
Rice ( <i>Oryza sativa</i> ) . . . . .	1.92 „	Braconnot.
Milk . . . . .	1.2 „	Liebig.
Artichoke ( <i>Helianthus tuberosus</i> ) . . . . .	0.96 „	Payer and Braconnot.
Vetchling ( <i>Lathyrus tuberosus</i> ) . . . . .	0.756 „	Do. do.
Beef . . . . .	0.33 „	Liebig.

1832. As a matter of fact, the water of St Mary's Loch is not by any means destitute of lime? No, it contains some lime.

1833. More, I believe, than the water of Loch Katrine? Yes, it does.

1834. I believe there are whole districts in Scotland, in the mountains, composed of rocks of the primary formation, where the water contains no lime whatever? Yes.

1835. Is Inverness one of these places? Yes; there is not much lime in the water of Inverness.

1836. What places should you refer to as indicating that peculiarity, so that we might judge of the character of the water? Generally speaking, places supplied with water from the large hills in the north of Scotland.

1837. Where there is a very small quantity of lime? A very small quantity.

1838. There is always some, I believe? Yes.

1839. As far as your experience has gone, have you found that the people in those districts have a softer osseous structure, and are a more puny race than where they drink harder waters? No; the Highlanders are generally not thought to be of a gelatinous nature.

1840. I believe, I may say, as far as your experience goes, there is nothing to be feared from the absence of lime in this water as affecting the future history of the inhabitants of Edinburgh? I should not think so.

The next medical witness was Professor Douglas Maclagan. On this subject he said:—

2324. Your attention, I believe, like every body else's, was drawn to the letters of "A Physician" in Edinburgh? Yes.

2325. You are aware, therefore of the objections made in those letters, which created a good deal of alarm as to the quality of the water? Yes.

2326. With regard to that to which a good deal of importance was attached, viz., the small quantity of lime in the water, what do you say as to that? I know of no facts known to science which substantiate the proposition that the fact of water being of soft quality interferes with the nutrition of the human body, bones, or otherwise.

2328. The relative values of hard and soft water, you doubtless know, have been undergoing a great deal of consideration for some time past? Yes.

2329. As a Professor of Medical Jurisprudence, can any objection, in your judgment, be attached to there being no greater a quantity of lime in a water for domestic consumption than is to be found in the water of St Mary's Loch? No.

2357. You were at St Mary's Loch, I believe, on the 15th of last month (15th April)? Yes.

2369. I believe the water was of a pleasant taste, and thoroughly wholesome? It was.

2375. I may take it, that upon your general knowledge of the water, and what you have seen of the analysis made by Dr Stevenson Macadam, you are of opinion that the water is one which is well adapted to supply the deficiency in Edinburgh? Yes.

Dr Henry Letheby of London, the leading witness on this subject on the part of the opposition, while he is Professor of Chemistry at the Medical College of the London Hospital, is also Medical Officer of Health for the City of London. His evidence, therefore, is available in a double character, both as a chemist, and as a physician.

He was supplied with samples of water for analysis from St Mary's Loch, Gladhouse Burn in the Moorfoot district, the Heriot, and the present Edinburgh supply; and he had also had occasion to analyse the South Esk Water in reference to the Musselburgh and Dalkeith Water Bill. He and Dr Voelcker, Professor of Chemistry to the Royal Agricultural Society of England, prepared and gave in evidence a report and table of their joint analysis; but before giving this report and table, Dr Letheby's evidence, of which it gives the substance, may be more conveniently noticed in the first instance, as explaining what it means.

After an examination as to organic impurities, to be noticed afterwards, Dr Letheby's evidence proceeded:—

4695. With regard to saline matter, in what proportion is that? That is less in quantity in St Mary's Loch water. It amounts in a gallon to 3.17 grains, and in the Gladhouse Burn, and the Heriot Water, which are very closely alike, the proportion is about 5½ grains. In the present supply to Edinburgh it is 9½ grains. In the South Esk it is rather more than 9½ grains; and in the New River Company's water, of which you see a sample on the table, it 19 grains—that is, for the present month. I am speaking of the analysis of that sample.

4696. With regard to the St Mary's Loch, what opinion do you deduce from that result as to the saline matter? I have a very strong opinion upon that subject, and it is this: that a certain proportion of saline matter in water is necessary; and it is not merely my own opinion, but it is the result of inquiries which have been made by Royal Commissions, or what may be termed Royal Commissions, in this country, in Paris, and in Vienna; and they all agree that water for the supply of a large city should be bright and clear, and contain a certain proportion of saline matter. At least a certain proportion of saline matter is necessary to water having those conditions.

4700. With regard to hardness or softness, how does St Mary's Loch water compare with the other waters which you have examined? It is very soft indeed; the degree of hardness is 1.3° before boiling, and after boiling 1°, whereas in the Gladhouse Burn it is rather more than 3½° before boiling, and ditto in the Heriot, and 2½° after boiling; whereas in the present supply to Edinburgh, it is nearly 7° before boiling, and 4° after boiling. In the South Esk it is nearly 3.6° after boiling, and in the New River water it is 14° hardness, or 14.4°.

4701. Then even as regards the lowest with which you can compare the St Mary's Loch water, it is less than one-half? Yes, it is.

4702. By the COMMITTEE—Do you know how the New River water compares with Loch Katrine water at Glasgow? \* \* \*

4704. \* \* \* The New River water contains 18.73 grains of saline matter per gallon, whereas the St Mary's Loch water contains less than two grains—1.92, and Loch Katrine contains 1.8—that is, about a tenth, or not a tenth, of a grain less than the St Mary's Loch water.

4711. MR MACDONALD—Have you made researches into the mortality of towns in reference to the hardness or softness of the water supplied to them? Yes: that has been a matter of inquiry with me for some years. I have on several occasions reported upon the subject; and it is a remarkable fact, that in the case of the very towns given by the Registrar-General in his weekly returns, his returns bear out the results of my own inquiries. In the first place, the Registrar-General puts down

19 towns of England and Scotland every week, and gives the mortality. I take the mortality for the whole of the year 1870.

4712. This table is for the year 1870? Yes; the first table. There are two in this, and it is the first. In the case of the hard water with an average hardness of about 15 degrees, the mortality is 23·7 in 1000; these are all large towns. With soft water, having from 4 to 5 degrees of hardness, the mortality is 28 in 1000. That accords with the observations made by French physicians at the time when they inquired into the mortality in the districts which were supplied with hard and soft water, and which led them to choose hard water. I have carried the tables still farther; the next table extends over a period of five years. I took twenty-four English and Scotch towns, and these numbers have been furnished to me from the Registrar-General's office; with regard to the death rate, therefore, I presume that they are quite accurate. It will be seen that the hard-water towns have an average mortality of 22 in 1000, whereas the soft-water towns have an average of 28 in 1000; many of these towns are very comparable.

4734. Generally, what is your opinion as to the advisability of introducing the water of St Mary's Loch into Edinburgh? My opinion is this, that unless they were driven to the necessity of using that water—unless they could not get any other water—I should say that it is not a proper water for the supply of such a city as Edinburgh. There are no manufacturing operations of any importance there demanding soft water; there are large brewing operations going on, which want hard water. I am perfectly certain that the appearance of that water would give rise to great dissatisfaction, in the first place; and that, in the next place, it is a dangerous water. It might be used for years without producing any mischief, and then all at once there might be an action on lead, for, as I said before, it is a capricious water; and it contains so large a quantity of peat, that it should not be used for Edinburgh, except they were driven to it as a matter of absolute necessity.

[*Note.*—The latter half of this answer has reference to other objections to the water, not yet noticed. But it is thought proper to give the whole answer here, to which a reference can be made when necessary, in noticing these other objections.]

4735. In short if there was any other source of supply which would give them water, you would advise them to adopt that in preference to St Mary's Loch? Yes, I know that there is the Heriot water, and I am told there is the South Esk water, which I examined for this Committee, although I had not an opportunity of being present to give evidence upon it. I know, in the next place, the Pentland water, which I examined two years ago; and I say that either of these waters would be a better water for the supply of Edinburgh than the St Mary's Loch water.

4736. If a supply could be got from the Pentlands, in addition to the present supply, you think that should be utilised first? Yes, the supply from the Pentlands is very much like the present supply to Edinburgh. I examined six samples in the year 1868, and it was very much like the present supply to Edinburgh.

4737. Do you consider that water to be a good and wholesome water? Yes.

Dr Letheby was subjected to a long and searching cross-examination as to supposed contradictions in the evidence which he had given at different times as to his views on the effects on mortality of hard and soft water. He admitted that his views had varied from time to time as the searching inquiries of the men of science of the present day had brought new facts to bear on the subject, and that in particular he had stated in 1870, as a witness in the Brecon water case of that year, that the mortality of different towns did not altogether depend upon the softness or the hardness of the water supplied. In reference to this he said :—

4882. That was in the year 1870. The whole tenor of that evidence is to the same point. I always say this, that if we take these facts as they come before us, there is a remarkable coincidence that you have your high mortality in a soft water district, and your low mortality in a hard water district; but we cannot trace that to the water. There are many other circumstances to be considered.

In re-examination he explained farther on this subject,—

4883. It is entirely a question of risk, and it is a risk which you will not take if you can protect yourselves against it? No; if you can have a better water you shall have it.

4884. You do not assert now that the water is the cause? Oh, no.

4885. But you shew a remarkable coincidence between the soft water and the hard water as regards the rate of mortality, and you say that being so, it is not wise to take a soft water where you can get a hard water. Is that what you say? I have already said so.

The following is the report of Dr Letheby and Voelcker, before referred to, with the relative table shewing the results of analysis :—

REPORT by Dr Letheby and Dr Voelcker of an analysis of four samples of water from Edinburgh.

The samples were sent to the Laboratory of the London Hospital College by Mr Brodie of the city of Edinburgh, and they were contained in glass Winchester quart bottles, securely sealed.

We were informed by Mr Brodie that they were obtained at the following places, namely,—

1. From St Mary's Loch, March 27, 1871.
2. From Gladhouse Burn (Moorfoot District), March 29, 1871.
3. From the Heriot, March 29, 1871.
4. From a tap in Mr Brodie's house in Edinburgh, April 17, 1871.

The samples were first examined in the usual manner for colour and transparency; and it was observed that the water from St Mary's Loch was slightly turbid, and of a marked peaty tint. All the other samples were clear, and of a pale yellowish-green colour.

The chemical quality and hardness of the several samples are shewn in the accompanying table; and, for comparison, we have added the quality and hardness of the South Esk water, as proposed to be used for the supply of Musselburgh and Dalkeith, and of the New River Company, as supplied to this metropolis.

The results of these analyses are as follows :—

1. As regards colour, the water from St Mary's Loch is much more highly charged with peaty matter than that of other localities.
2. The amount of ammonia and organic ammonia, which are the representatives of putrescible organic matter, are largest in the St Mary's Loch water.
3. The proportion of oxygen required to oxydise organic and other oxydisable matter is largest for the St Mary's Loch water.
4. The quantity of calcareous and other saline matter is smallest in the St Mary's Loch water.
5. The amount of organic matter is largest in the St Mary's Loch water.
6. The St Mary's Loch water is by far the softest of all the samples.
7. The St Mary's Loch water acts to the greatest extent on lead, and thereby acquires a dangerous metallic impregnation.

We are of opinion, from these results, that the St Mary's Loch water is not a good or safe water for domestic use, and that it is much inferior in all the essential qualities of a wholesome water to the waters from the Heriot, the Gladhouse Burn, the present supply to Edinburgh, and the South Esk, which is to be used at Musselburgh and Dalkeith.

HENRY LETHEBY, M.B., M.A., &c.  
AUGUSTUS VOELCKER, M.D., F.R.S.

The following is the table referred to in the above report :—

Comparison of the quality of the water from St Mary's Loch, the Gladhouse Burn (Moorfoot district), the Heriot, the present supply to Edinburgh, the South Esk, and the New River Company, as supplied to London.

Grains per Imperial Gallon.	St Mary's Loch, 27th March	Gladhouse Burn, 29th March	Heriot, 29th March	Present sup- ply to Edinburgh, 17th April	South Esk 14th April	New Riv Company London
Appearance, . . . . .	{ slightly tur- bid, peaty coloured.	clear pale green	clear pale green	clear, dark- yellow	slightly tur- bid, pale- green	clear bluish-green
Ammonia, per gallon, . . . .	0'004	0'001	0'001	0'003	0'003	0'001
Do. Organic, . . . . .	0'015	0'004	0'005	0'010	0'006	0'003
Nitrogen, as Nitrates, &c., . .	trace	trace	trace	trace	0'013	0'133
Oxygen required by Organic and other oxydisable matter, . . .	{ 0'181	0'045	0'081	0'140	0'093	0'042
Earthy Carbonates, . . . . .	0'37	2'54	2'65	6'55	6'05	12'58
Sulphate of Lime, . . . . .	0'78	1'22	1'20	1'05	1'62	2'41
Chloride of Sodium, . . . . .	0'61	0'93	0'65	0'85	0'94	1'28
Nitrate of Magnesia, . . . . .	trace	trace	trace	trace	0'07	2'08
Silica and Alumina, . . . . .	0'16	0'21	0'16	0'36	0'10	0'38
Organic Matter, . . . . .	1'25	0'53	0'83	0'95	0'79	0'32
Total per gallon, . . . . .	3'17	5'43	5'49	9'76	9'57	19'05
Degree of Hardness, . . . . .	1'3	3'6	3'6	6'8	6'9	14'4
Do. do. after boiling, . . . .	1'0	2'4	2'7	4'2	3'6	4'2
Action on Lead, . . . . .	strong	very slight	very slight	none	none	none

The following is an extract from another table exhibited by Dr Letheby :—

TABLE showing the quality of the water supply as regards hardness and the death-rates in sixty-five English and Scotch cities and towns.

(NOTE.—Only the Scotch cities and towns are here given.)

Places.	Death rate per 1000.	Degree of hardness.
		From 10 to 6 degrees.
Edinburgh, . . . . .	25	7'0
Leith, . . . . .	23	7'0
		From 6 to 2 degrees.
Dundee, . . . . .	29	4'3
Paisley, . . . . .	28	2'9
		Less than 2 degrees.
Aberdeen, . . . . .	26	1'4
Glasgow, . . . . .	31	0'6
Greenock, . . . . .	35	1'3
Perth, . . . . .	26	2'0

Dr Voelcker corroborated Dr Letheby as to the report of the analyses of the different waters and relative table of results; and in general terms he expressed his preference of hard to soft water.

Dr Charles Wilson was also examined at great length about his objections to the water of St Mary's Loch as to the want of saline constituents in it, as indicated in the letters of a "Physician." Dr Alexander Wood and Professor MacLagan had already on the part of the promoters given evidence, the former at such length indeed as to be tiresome, in refutation of Dr Wilson's views as to the tendency of soft water to produce the disease called ricketts, which was one single effect of the water, and which has been passed over as tending, if gone into, to run this narrative out to too great a length. The evidence of Dr Wilson, in so far as directed to the same subject, must of course be also left unnoticed here.

Whatever conclusion the reader may be inclined to come to in this conflict of opinions, one thing at least is clear, that it is not a desirable thing to introduce into a city a very soft drinking water, so long as a moderately hard water can be got at a reasonable expense. But before any practical conclusion can be come to, there are many other objections to the water to be noticed in their order.

(d.) *The peaty and organic impregnation of the water.* The evidence of Professor Geikie, already cited, as to the origin of the streams which feed the loch must have prepared the reader to expect evidence that the water was impregnated strongly with peat; nor will he be disappointed, when the evidence is analysed. As the question is a scientific one, both as to the fact of impurity, and as to its effects, it must depend for its solution on scientific evidence alone.

Dr Littlejohn's evidence for the trustees was to the following effect:—

1533. Let me ask you this general question—peaty water is not necessarily unwholesome, is it? It is not.

1534. And it will lose its colour if it is stored in a reservoir, and allowed to stand a certain time? It will.

1535. But in order to utilise it, and make it agreeable to sight and taste, it must be stored in a reservoir? Yes.

1536. Did you, with Dr Macadam and Professor MacLagan visit St Mary's Loch? I did the following day.

1537. The following day after you had visited the Heriot? Yes.

1539. At the time you reached St Mary's Loch the following day, did you find the water leaving St Mary's Loch in large volumes? Yes.

1540. Was it peaty? It was not, it was as clear as crystal.

1541. Did you observe the character of the water in the loch itself as far as appearance went? I did; it was quite clear.

1542. Could you see the bottom of it at any considerable depth? Close in shore, for the first 20 feet from the shore I could see the shingly bottom.

1543. As you went along by the side of the loch did you pass other tributaries flowing into it from the watershed? I did.

1544. And among others one called the Megget? Yes.

1546. How was it? Was it peaty? It was not.

1547. What was the condition of the water? Good clear water.

1548. I ought to have asked you during these days that you were at Heriot and St Mary's Loch, was the weather fine or wet? Exceedingly wet.

1551. Did you also examine the stream connecting the two lochs? I did.

1552. That is a stream in which the water flows from the upper loch into the lower loch? Yes.

1553. Was it clear? It was.

1554. And how was the river Yarrow that flows into the loch? It was decidedly tinted.

1555. Indicating that the watershed supplying it was peaty? Was peaty or painted with its colour sooner than the other tributaries.

1556. I believe you had known St Mary's Loch before this? Yes; some fifteen years ago I practised there as a country doctor.

1557. In the neighbourhood of Selkirk? In Selkirk itself.

1558. Have you had plenty of opportunities of seeing St Mary's Loch under all conditions of weather and water? Yes, I have.

1559. What do you say about the water generally? A better water I do not know.

1560. Have you drunk it? Yes; again and again.

The following was the result of his cross-examination:—

1601. At Megget you say that there are moss hags, are there not? Yes.

1602. And the whole of the St Mary's Loch is a mossy district, is it not? In a large part it is.

1603. In the whole, is it not? No; I cannot say that.

1604. Is it not peaty and mossy all round? In a part, I say, it is.

1605. But in the greater part, is it not so? It may be so.

1606. It is so? I do not know of my own knowledge.

1607. Have you not seen it? Not the whole watershed of St Mary's Loch. I have not visited that.

1608. Would you not have expected to find the water peaty? Where?

1609. At St Mary's Loch? Decidedly not. St Mary's Loch is a large settling loch, and any streams tinged with peat that pour into it, the peaty matter is deposited in the loch, and the upper water of the loch, to those who pass along it, is perfectly pure.

1610. In your judgement the peaty matter subsides? I have not the slightest doubt of it.

1611. Then according to that doctrine the whole bottom of St Mary's Loch would be one mass of peat? I do not know what the bottom of St Mary's Loch is.

1612. It follows from your argument that if its tributaries bring down peaty matter, it subsides, and the bottom of the loch must be covered with peaty matter? I have no doubt it is.

1613. So that that peaty matter is liable to be stirred up by any agitation? Such as what.

1614. A violent wind?—such as a reduction of the present level of the loch by such a number of feet as to bring the peaty matter near to the surface? It depends upon the depth of the loch. I was there when a very high wind was blowing, and I could see none of that disturbance of the bottom.

1615. You say that you saw the bottom in one case? We see it all along the shore for about twenty feet.

1615A. Of course, twenty feet are a very small distance: you told us that you saw the water clearly to the bottom—you said a pebbly bottom? Yes.

1616. How many inches deep was that pebbly bottom? I cannot tell you that. I should say from two to three feet.

1617. It is very shallow at the edge in some places, is it not? Yes; it is shallow in some places.

1618. At those particular places where you say it was as deep as two feet, you saw a pebbly bottom? Yes.

1619. If other people went there, and their experience is diametrically the reverse of yours, their eyesight, I suppose, must have deceived them? Their eyesight must be imperfect, I should say.

It must be evident to the most superficial reader that Dr Littlejohn was very unwilling to tell anything tending to show impregnation of peat, and therefore what he did say is of more weight against the trustees. Dr Wood was not asked on either side about the matter. Dr Stevenson Macadam resolutely ignored the presence of peat altogether, and endeavoured to prove the entire absence of all colour, by exhibiting samples of water in narrow glass bottles, where no colour, unless a very decided one, could possibly be seen, except in one unconcealable specimen, not of the water of the loch, but of one burn, the Little Yarrow, running into the Loch of the Lowes, which, he said, was reputed to be the most peaty water in the district; and Dr Frankland's attention was never directed to the subject, or if it had been, he kept discretely silent. Such was the whole evidence of the trustees on this subject.

On the part of the opposition, Professor Geikie gave evidence, as already stated, on the peaty sources of the different feeders of the loch, and that the water was always more or less coloured. He stated farther:—

4513. \* \* \* That this is not a mere local or temporary accident is shown by the fact, that the stones along the margin of the water are always more or less brown or coloured.

4514. As to the water, did you have occasion, while inspecting the district, to notice the colour of the water? It was always of a brownish tint.

4515. Would you consider, looking to these circumstances that you have been telling us of, that it is a pure water for domestic use? I should think it by no means pure water.

4516. You think the amount of vegetable matter would be such as to render it impure? I cannot say. That is not a question for a geologist to answer. I am here as a geologist. If I were to form an opinion upon it, I should say that it is very unwholesome for domestic purposes.

In cross-examination he said :—

4535. Did you find any mossy peat sent down the Megget water? Yes; I have seen the Megget water so brown with peat that nobody would drink it.

4541. You say that this water is unwholesome; why is it unwholesome? I told you that I only gave that as my opinion as a Professor of Geology.

4556. Have you tasted the water from St Mary's Loch? Yes.

4557. Should you say it was unpleasant? It is not pleasant, certainly; it is not what I should like to drink.

Dr Letheby, after speaking to the analyses which he made of different waters, as already mentioned, gave this evidence :—

4684. Will you tell me generally what the result of your analysis is? In the first place, we made a very careful examination in regard to the colour of the water, and we found that with respect to the St Mary's Loch water it was slightly turbid, and was very notably coloured with peat. All the other samples were clear, and they had a pale greenish tint, or yellowish green.

4685. Is that the kind of colour that you would expect to find in suitable water for the supply of towns? Some of the waters are what I should call rather deeply tinted, but they are nothing like the St Mary's Loch water. This is the St Mary's Loch water in this sample [*pointing to the same*], that is the Gladhouse Burn water [*pointing to the same*], and that is the Heriot water. Then, for the sake of comparison, I put in a sample of water which is supplied to this metropolis—the New River water.

4686. Is there a marked difference between the St Mary's Loch water and all the rest? Yes, a very marked difference; any one can see it; if you place a little bit of white paper behind the bottles, or look down upon the bulk of water upon a sheet of paper, there is a very marked difference perceptible in the quality.

4687. I suppose that if any of those waters were put into a narrow vessel, it would not be easy to perceive any difference? Not so much. The samples produced by Dr Stevenson Macadam do not show it in a small quantity, as you can see it in a larger volume.

4688. To what do you attribute the colour in the St Mary's Loch water? To peaty matter, the acids of peaty matter—organic matter.

4689. With regard to the chemical qualities of the water, what result have you arrived at? As regards the chemical qualities of the water, I will put in a table that gives the composition of several samples.\* I have compared it with the South Esk water, not for this inquiry, but for a former inquiry before the Committee.

4690. Are the results contained in the printed tables correct? Yes; they are the results of analyses made by Dr Voelcker and myself, and he is present, so that they have been confirmed by duplicate analyses. On looking first to the proportion of ammonia in the several waters, it will be seen that the quantity of ammonia in the St Mary's Loch water is notably larger than it has been found to be in any of the other samples. The ammonia in the case of the peaty matter represents putrescible organic matter.

4691. Do you consider the presence of so large a proportion of ammonia an objection to the St Mary's Loch water as a water for the supply of large towns? The proportion of ammonia in the St Mary's Loch water is so large that I should condemn it on that account. It amounts to 0·015 of a grain per gallon. I am looking now to the organic matter in the water supplied by the New River Company, and I take the quantities only represented by the organic matter: "Ammonia, 0·004; do. organic, 0·015;" and if you put the two together you have 0·019 in St Mary's Loch; then 0·005, that is, less than one third, in Gladhouse Burn; you have 0·006 in Heriot.

\* See this table printed already, p. 142.

Then in the present supply to Edinburgh, it is 0·013; South Esk it is 0·009; in the New River Company's supply it is 0·004.

4692. It appears that St Mary's Loch water exceeds all the rest, and is so impregnated with ammonia as to be not suitable? The ammonia in that proportion is not injurious, but it is the representative of decomposing or putrescible organic matter.

4693. What do you say as to other foreign matters? Then we tested the proportion of oxydisable matters in the waters, and again it was found by that test that the quantity of oxygen required to oxydise organic and other oxydisable matter is very much larger in the St Mary's Loch water than it is in any other samples of water, and that, in fact, is confirmed by the appearance of the water.

4694. The CHAIRMAN—What is meant by the words "oxygen required by organic and other oxydisable matter?" All putrescible substances, and organic substances contained in water will, in the course of time, undergo oxydation; and for the purpose of ascertaining how much oxygen is required to do that work, we perform experiments, and that quantity of oxygen which is required to oxydise oxydisable matter very closely represents the proportion of organic or oxydisable matter in the water. Peaty matter is oxydisable matter.

4697. With regard to hardness and softness, is St Mary's Loch water, in your opinion, sufficiently hard? Before I pass from the other subject, I may say that the quantity of organic matter, as tested even by the incineration process, and by also some of the constituents that we obtain, is considerably more in the St Mary's Loch water than it is in any other: it is one grain and a quarter in the St Mary's Loch water, whereas it is only a little above half a grain in the Gladhouse Burn, and a little over three quarters of a grain in the Heriot, and ten-elevenths, or rather 0·95 of a grain in the supply to Edinburgh.

4698. Am I right in this, that although there is such a small quantity of saline matter in the St Mary's Loch water, the total quantity per gallon is made up to the extent of more than one-third by organic matter? Yes; the largest constituent of the St Mary's Loch water is peaty matter.

4699. If the peaty matter were taken away, the proportion of saline matter in the water would be infinitesimally small, would it not? Less than two grains.

In cross-examination he said:—

4752. You said that the colouring matter was from some acid or peaty substance in the water? Yes.

4753. Was there any acid which you could detect? No.

4754. With regard to the quantity of ammonia, you would find a greater quantity of ammonia in solution, would you not, in rain water than you found in this water? I cannot speak without my notes as to the exact proportion of ammonia that we find in rain water. We are constantly examining it, I may say after every shower of rain in the city, and yet I cannot venture to trust my memory as to the quantity of ammonia in it; but I will furnish you with it.

4755. There is no doubt, I suppose, that you would find more ammonia in rain water than in the St Mary's Loch water? More than 0·004, but not more than the organic.

4756. I am dealing with the ammonia in solution? Yes; you would find more of that.

4757. You would find more than the 0·004? Yes.

4758. The other matter, which you call organic matter, is the ammonia which you produce, is it not, by chemical process? Yes; we first distil with carbonate of soda to get out the ammonia already present, and then it is distilled by permanganate and broken-up caustic soda, and in that way we get at the organic matter.

4759. But it does not exist in a state of solution in the water? No, that is quite true, it will only exist during putrescence. It comes into the water during putrescence; it is an indication of putrescible matter, or ammonia producing organic matter.

Mr Glaisher also gave the following evidence on this subject:—

5089. You visited St Mary's Loch? Yes.

5090. In what kind of weather? In slight rain.

5091. Did you observe the colour of the water there? On the day I was there it was brown, so that I could see about two or three feet, but not more, in the water, and all the stones on the margin of the lake were coloured as though it was generally brown.

5092. Do you mean that the stones were partially coloured? The stones were partially coloured.

Dr Charles Bell on this subject, said:—

5545. In regard to St Mary's Loch, you know the district well? Yes, pretty well.

5546. You have often fished there? Yes; I have often fished there.

5547. And have often had an opportunity of judging of the quality of the water? Yes.

5548. What is that quality, in your opinion? I consider it decidedly bad. My attention was more particularly drawn to it this day week when I drove along the margin, and I was particularly struck with two distinct colours—one was a brown colour, the other, near the shore, was whitish clear. I could not understand why there should have been a distinction; I resolved to satisfy myself, and, therefore, I waded in and examined what was the cause of the brown colour. So long as that was undisturbed it formed a brownish sediment of a slimy character, but when it was disturbed it formed a cloud which prevented you seeing to the bottom distinctly. More near the shore the stones were covered with a white sort of slime: it had a glutinous feel, and it had very much the appearance of vesicles, or something like the miniature size of the spawn of the frog, and when you took it into your hand it had a disagreeable glutinous feeling.

5549. What was the slime composed of? I could not say decidedly what it was composed of. I could only say what it appeared to be, viz.: partly decayed matter and partly animal matter.

5550. Vegetable matter or animal matter? I think it was very much both.

5551. You felt it, I suppose: I did.

5552. It was slimy and glutinous? Yes.

5553. Now, from what you have seen recently, you told us you thought the water was bad; you think it is bad for domestic consumption? Yes, decidedly.

The evidence on this subject is closed by Mr Hawksley, who spoke very shortly as to the peaty colour, but very much to the point.

6489. \* \* It is a very dark coloured water, and must necessarily always be so, in consequence of the excessively peaty character of the district.

6490. With regard to the character of the district, are you able to speak to that from your own observation? Oh, dear, yes. What I did on the last occasion, when I was there three weeks ago, I believe, was this:—I took, as I always do on these occasions, an address card out of my pocket. I went to the outlet of the lake, where the water was in the basin exactly three feet one inch deep. I took the card, and I may mention that those cards having a lead glaze on them, are minutely heavier than water—very minutely. I moistened both surfaces of the card, and threw it into the water, and it descended horizontally, very gradually. You could see the whole of the tint; first it was a straw colour, then it was yellow, then it was brown, and then it was black, and at 3 feet 1 inch it disappeared, and that was before the rain affected the loch.

6491. In your judgment, that is a good test for judging of the discoloration of the water? Yes, and to shew you the delicacy of the test, if you take it to the water at Derby, where the water is received into a basin 8 feet deep, if you put it into that water, you can read the name quite distinctly, without any colour, by the aid of an opera glass, except that it is a little bluer than it is in the atmosphere.

There can therefore be no doubt as to its having been proved that the water was impregnated with peaty and other organic matters, that is, with matters liable to get into a state of putrescence. The remedy for this state of the water is that it be briskly agitated in a stream or river, when after a course of a number of miles, exposed to sun and air, the putrescible matter oxydises and evaporates, or is precipitated after becoming innocuous. If the loch in which it is stored is practically stagnant, there is no opportunity for the water being purified in this way by oxydation, and this leads to the consideration of whether the loch is so stagnant that its water would not be purified by oxyda-

tion before being sent into the close aqueduct for conveyance to Edinburgh.

(e.) *Is the water of St Mary's Loch practically stagnant?*—Dr Littlejohn was the first witness as to this on the part of the trustees. Dr Alexander Wood had mentioned in one of his reports, that he considered the spring water of the Heriot and the Talla superior to the lake water of St Mary's. In reference to this the following examination of Dr Littlejohn took place :—

1632. Do you concur in this, that the spring water of the Heriot and the Talla is superior to the lake water of St Mary's Loch? I did concur in that until I went and looked for myself, and saw the water of the Heriot and the water of St Mary's Loch.

1633. Then since that time you do not think that the spring water of the Heriot and Talla is superior to the lake water of St Mary's Loch? I candidly do not.

1634. Why do you not? is it upon the ground that the St Mary's Loch water is not lake water? If the water of St Mary's Loch belonged to a stagnant lake, I should have agreed with Dr Wood; but when I went there and saw a number of active tributaries pouring into it, and the Yarrow flowing from it in enormous volume, that showed me that this loch was not a simple stagnant lake, but a living active water.

1635. The ground for your change of opinion is that St Mary's Loch is not properly a lake water? Not a stagnant lake.

1636. It is so frequently supplied that in reality it is equal to spring water? That is my opinion.

1637. Is it spring water? There are springs in the loch, and an enormous body of water flowing into it and out of it; the whole body of water is kept in a state of motion.

1793. You would prefer a natural lake to an artificial one as a source of supply to a town? Most decidedly,

1794. Would you prefer a lake through which there were active tributaries constantly flowing? Decidedly.

1795. Do you consider it an advantage as regards St Mary's Loch, that the stream from the Loch of the Lowes, and the Megget both flow through the loch? Decidedly; if it was a stagnant lake I would not have had it on any account.

It is needless to go into any lengthened discussion on this subject, after hearing Dr Littlejohn's views on the part of the trustees, for it is a pure matter of fact admitting of being determined on indisputable grounds.

Mr Bateman stated the area of St Mary's Loch, including, it is presumed, the Loch of the Lowes, to be about 723 acres (3943), and he estimated the storage capacity of the upper eighteen feet of this, that is to say, the quantity of water capable of being drawn off when full, to be 533,000,000 gallons. But the loch is in many places very deep, and allowance must also be made for the space below 18 feet in order to ascertain the actual contents of the Loch. In a letter in the *Scotsman* of 12th June 1871, Dr Wilson, writing under the name of "A Physician," stated the matter thus :—

A water is properly termed stagnant wherever its main body has no perceptible current, and there may thus be stagnant portions even of a river. Let us see, however, in what degree the term is further applicable to the lochs. According to the statistical account of the parish of Ettrick, the St Mary's Loch has a depth of from 28 to 30 fathoms, and the much smaller Loch of the Lowes a depth of about 12 fathoms. With these data it may not be extravagant to estimate the average depth of the whole at only ten fathoms. Computing with Mr Bateman the superficial extent of the lochs at 725 acres, this average depth of ten fathoms would give, as their total contents of water, 11,842,875,000 gallons. Now, taking the *outflow*, to be assigned to Selkirk, of 15,000,000 of gallons daily, a quantity which is alleged to be above the average supply in summer, which must ever be the main testing time of

the conditions and qualities of the water; and regarding this quantity, as necessarily the precise equivalent of the *inflow*, on which alone the freshening power depends; the relation daily of the latter to the gross contents of the lochs is but as 1 to 789; and yet, with this overwhelming proportion of daily unchanged contents, the lochs are denied to contain a stagnant water. But this is not yet enough. Mr Bateman affirms that he can prove that the *outflow*, and once more, consequently the *inflow*, is often as low as five, four, or even three millions of gallons daily. With five millions of gallons of inflow, then, the proportion of fresh to unchanged water becomes as 1 to 2367; and with three millions it is only 1 to 3945. Possibly, the estimate here made of the mean depth of the loch ought to be abated; but possibly also, it ought to be increased. Even if largely abated, it will still leave conclusions more than strong enough to prove all that is requisite.

Practically, therefore, it was evident that the peaty and impure water of St Mary's Loch cannot be oxydised and purified by being exposed in agitation to the influences of sun and air before being sent to Edinburgh. On this head the evidence was much strengthened in the Committee of the House of Lords.

(f.) *The animalculæ in the water.*—Whatever the trustees may have known before, it is certain that on 6th October 1870, Mr Marwick, the clerk to the Trust, received from Dr Frankland his letter of the previous day, with a partial analysis of the water of St Mary's Loch, which stated that, prior to operating on the water, the water insects had been strained off; and on the following day he received the complete analysis, containing this remark, "Water fleas strained off." This analysis was not, however, communicated to the ratepayers till the morning of the 27th October 1870. Even then the communication was left to mere chance. The long report of the Works Committee, of 26th October, containing these reports of Dr Frankland in an appendix, was simply handed to the newspapers, that it might be published or not, as the editors or reporters should think proper. The *Courant* published merely the substance of it, much condensed. The *Scotsman* published it in full, but without the appendices; and the *Daily Review* alone, with the smallest town circulation of the three, published the report and appendices in full. In this way the general public were not made aware of the existence of these vermin in the water proposed to be given to them, until the "Physician" called attention to them in a letter published on 12th November 1870.

Coming to the evidence of the trustees on this subject, Dr Littlejohn knew nothing about it. He had never seen the fleas in the St Mary's Loch water, and only knew of their existence by having read the report of Dr Frankland, where it was stated that, before proceeding to analyse the water, he had strained off the fleas. All that he could say in reference to these insects was, that he believed them to exist in all impounded waters; and that, so far as his reading went, his opinion was that a larger quantity would be found in water artificially impounded, than in a natural lake, for which reason he preferred a natural to an artificial one for the supply of a town.

Dr Alexander Wood, in like manner, while he gave a long dissertation upon water insects which he had seen in the present Edinburgh water, of which he instanced a water spider, about the size of a split pea, had never either looked for or seen the water fleas in St Mary's

Loch water ; and though he somewhat innocently confessed that he did not know whether the insects he was speaking of were the same as those in regard to the harmlessness of which he proposed to instruct the Committee, he stated his belief that the water fleas which he had never seen existed in almost all lake water. Dr Wood's faith in this unseen animalcule is possibly not open to challenge ; but his evidence is subject to the remark, that in point of actual knowledge of what he was speaking about, there was evidently not a more ignorant person in the room.

Dr Stevenson Macadam showed himself to be a most enthusiastic witness for the trustees. First, he heralded his importance by the information that he had recently been consulted as to the water supply of Jerusalem, as if the fact that some personal friend had recommended him as a fit person to make an analysis of some Syrian waters was of the slightest importance in judging of his capacity as an analytical chemist,—a fact which nobody disputes ; and then he attacked the present Edinburgh supply by exhibiting a small phial of water which, he said, had been taken from a cistern in Edinburgh, and in which he had succeeded in developing one or two minute and scarcely perceivable insects, which, he said, were water fleas—while he could not develop any in a specimen of St Mary's Loch water. It was not, however, explained how long it was since the cistern from which the water was taken had been cleaned, nor how long his process of incubation had lasted,—things somewhat pertinent to the information which he was giving ; because, according to the evidence of Dr Wood, which is afterwards spoken of in terms of approval by Dr Macadam, the air swarms with insect life, the germs of some of which may be fitted for being developed in water. The inevitable inference from all this seems to be, that the animalcule which was developed in the Edinburgh water, whatever was its origin, was different from the St Mary's Loch water flea, which refused to be developed by the same process of incubation ; and that it is not to be assumed that, because the animalcule developed in the Edinburgh water may be innocuous, the different description of animalcule existing in the St Mary's Loch water must of necessity be innocuous also.

In cross-examination, however, he gave this evidence in reference to the fleas —

2067. Would you as soon take a water which contained these fleas, as a water which did not? In the quantity in which the fleas are present in St Mary's Loch water, and where I have seen them for several years when I was over there fishing, several times each year, I should not object to use the water, fleas and all.

2068. What is the quantity? One here and there in some quiet corner.

[Professor Christison, when compelled to speak as to misrepresentations to the Committee of the House of Lords of his opinions regarding the water, told a different story, as will be noticed in its proper place.]

2070. Do you mean to represent the character of this water to be, that only occasionally there is one of these insects here and there? If you go to St Mary's Loch

with a tumbler, and take a tumbler here, and a tumbler there, you will take fifty tumblers before you find a flea.

2071. In the worst season? Yes.

2072. In the most fertile season for fleas? Yes.

2073. Supposing they were in abundance, should you object to them then? I would object to them if they were in great abundance; but they are present in the water supplied to Edinburgh already.

2080. Have you ever considered whether, when dead and decomposed, they would affect the water? No; I do not think they would.

2081. Have you ever thought of that; I do not put the question without a suggestion—it is not my own suggestion, but it is the suggestion of a scientific person. I ask you, has it ever occurred to you that these decompositions would be prejudicial or not? I do not think they would, in the quantity I have seen them in St Mary's Loch.

2082. But they might in large quantities? In enormous quantities.

Such was the evidence of Dr Macadam as to the matter of fact, and it amounted to little. As he has never either studied or practised medicine, his ideas as to the probable effect, or rather non-effect, of these animalculæ on the human system may be passed over as of as little value as those of the Lord Provost or Bailie Lewis.

Professor Douglas Maclagan knew even less about the matter, if that were possible, than any witness who preceded him. It appears that he was at the Loch on 15th April, and made a search for water fleas, but could find none; and farther, that he had, on 17th February, received from Dr Stevenson Macadam a sealed bottle, said to be of St Mary's Loch water, which had stood till 25th April, without developing any animal life. As Professor Maclagan was thus in ignorance of what the animalculæ were that undoubtedly existed in the water, it might have been expected that he would have refrained from passing any opinion as to whether or not they were likely to be injurious to the human system; but no such consideration deterred him from giving an opinion intended to facilitate the introduction into Edinburgh of these vermin; thus:—

2370. I daresay you know from experience, and as a professor of medical jurisprudence, that these (*sic*) water fleas are found in the best of waters where they are impounded, either in natural lakes or in large reservoirs? I understand so from the statements of zoologists.

2371. Would they in any degree affect the wholesomeness of the water? I cannot understand why they should.

2372. You do not, as a resident in Edinburgh, entertain any apprehensions on the subject of these fleas? Not the least.

The following is a portion of his cross-examination:—

2430. Now, with regard to the fleas, do you say that it is immaterial whether fleas are in water or not? No, I do not say that it is immaterial.

2432. Suppose there is one in a gallon of water, would that be of any consequence do you think? No.

2433. Then, supposing there are 10,000? Then I think it would be a very dangerous water.

2434. But 1000 in one? I cannot tell you the effect.

2435. Where would you draw the line? I think it would be a very unpleasant thing to one's senses to see a great quantity of living creatures moving about in water in large numbers.

2451. I presume that although you obtained this water in the month of April, in which you found there were no fleas, the water would be in a very different condition if you had taken it in the month of July or August? Yes, very likely.

On the part of the opposition Dr Charles Wilson's letters of "a Physician" were put in evidence, in one of which, dated 23rd January 1871, he had stated in reference to the water fleas,—

That they may be found to exist in limited numbers in all impounded waters, no one will pretend to deny; though all may safely demur to that as a reason for their being introduced in unlimited numbers, along with a water notoriously fitted to favour their propagation. That they are innocuous is not probable, and at least is not proved. An example of an opposite view occurs to me as adduced by Moleschott, a writer on dietetics of the highest eminence, who states that the frequent diarrhoeas produced by the still running waters of the Netherlands, among which he specially instances the Maas, are commonly attributed to the organisms these contain. \* \* \* There would, in truth, be no great distrust or alarm, were the St Mary's Loch water merely "liable to contain a few minute atoms of animal life," to borrow the palliating phrase of Dr Macadam; but change the imaginary few into the real myriads, and the repugnance excited becomes sufficiently natural. Imagine here this picture of the Manchester water supply, one of the vaunted schemes of Mr Bateman, as given by Mr Homersham, the civil engineer, (Rep. of Royal Com. 6286.) "If," he says "you take a globular glass vessel, such as the globes in which gold and silver fish are kept, and which assists in magnifying these insects, you can see them jumping about in all directions." And he adds, "in spring water from the chalk you never find organisms, or an insect of any kind." Nor would the expensive process of filtration, which, judging from experience elsewhere, would cost the city about £1300 yearly, besides interest on capital, suffice to exclude the noisome swarms. Where an insect so diminutive in size, and living on other animalcules still smaller, contains so many as forty or fifty eggs at a time, the progeny must be too minute to be easily arrested by even the best constructed filter.

In addition to this Dr Wilson gave the following evidence:—

4966. You have directed your attention to the subject of water fleas? Well, a little, but not as a naturalist.

4967. From your reading can you tell us anything as to the effect of such animalculæ if taken into the system? I think it is unproved that they are innocuous. Some thought they were nocuous. Two very interesting cases have been sent to me by a friend at Stockholm. Such as were found in water were found living in the intestines of people suffering from diarrhoea, one of whom died.

4968. In the intestines of persons suffering from diarrhoea when alive? Yes.

4969. And was that diarrhoea attributed to their irritating effect? No question it was, but he was detailing this case.

4970. That he had discovered water animalculæ in the intestines of a person? Yes, suffering from long diarrhoea, but so small 20 to 25 might be seen in a single drop.

In cross-examination he said:—

5054. What is the water that is free from animalculæ? There will be found a few in any water, but so few that they are of no importance.

5058. I ask you whether these things are very common in the water which is supplied to towns? Do you mean the water fleas?

5059. Yes. In the soft water in Manchester they are very abundant, but certainly not at Edinburgh.

5060. How do you know that? Because I have not seen them except incidental examples.

5061. But you know that they were found in the Edinburgh water, do you not? I say occasionally. I would make the distinction that Dr Baird\* makes; in stagnant water they are found in great abundance.

5062. Do you mean to represent St Mary' Loch as stagnant water? Decidedly.

Dr Charles Bell of Edinburgh produced a bottle containing about a hundred animalculæ (the water scorpion), like very small active beetles, which, eight days before, he had taken out of the Loch while wading,

\*Author of "Natural History of the British Entomostraca."

his attention having been attracted by a lively shoal of them. That they were carnivorous he had no doubt, for they were fewer in number than when he first put them into the bottle, and several empty skeletons indicated that they had been devouring one another. He then gave the following evidence :—

5581. As a physician, what is your opinion as to the result that would be produced, supposing any one were to drink water containing those things? I certainly consider it would be very dangerous, because, I think, from their having lived so long in that close bottle, it indicates that they would live in the human system, and create a great amount of irritation, and I have no doubt that irritation would lead to the most serious consequences to human health.

5582. It is a well ascertained fact in medical science, is it not, that some water animals will live in the human system? Yes.

5583. And produce the most dire results? Yes; I had an opportunity of seeing the urine of a patient who had drunk the water of the Nile; and he returned to this country, and is now, if alive, in the Infirmary at Liverpool. Upon examining his urine, which was sent to Edinburgh by one of the physicians of the Infirmary, we recognised the ova of that animal. The poor unfortunate individual was suffering extremely from disease; his kidneys, it was represented, were a mass of disease and morbid matter; and the urine which passed from him contained the ova of those animals. The ova of the animal is *Hænatobia Villhargia*.

5584. That is an instance that came within your own observation? That came within my own observation, because I examined the urine which was sent, and I had every reason to believe that that was the specimen that was discharged from the kidneys of the unfortunate individual.

Two things are very clear on a consideration of all this evidence : (1.) That it is proved that there are numbers of water fleas and other insects in the water; and (2.) That it is not proved that they are innocuous to the human system, or capable of being removed by filtration, the burden of proof being decidedly the other way.

(g.) *The action of the water on lead.*—The witnesses who were put forward on the part of the trustees to satisfy the Committee that St Mary's Loch water was not dangerous to the citizens on account of apprehended action on lead, were Drs Littlejohn and Macadam, and Professor MacLagan, the trustees having apparently not thought it worth their while to direct the attention of Dr Wood to a matter so important to the inhabitants. Even the evidence of the two doctors was of the most superficial description, and Professor MacLagan was enabled to go more minutely into the matter, only because as Professor of Medical Jurisprudence he had necessarily a general acquaintance with the subject of lead poisoning.

On examination by the trustees, Dr Littlejohn gave evidence as follows :—

1573. We hear a good deal, and one has been alarmed at it before now, about the danger of conveying soft water through leaden pipes, or storing it in leaden cisterns? Yes.

1574. Has your attention as a medical officer of health been directed to that matter? It has.

1575. What do you say, judging from your experience of Glasgow? I am quite convinced that the St Mary's Loch water can be introduced into Edinburgh with impunity, without any danger to the health of the inhabitants.

1576. You mean in consequence of lead poisoning, or any action on the lead? Yes.

1577. Is there found to be any practical difficulty with the Loch Katrine water in Glasgow? None.

1578. And that is the softest water that is known? It is the softest water that I know of.

In cross-examination, the following explanation was elicited :—

1652. You say that you are one of the advocates for soft water ; do you know any thing about its action on lead by experiments of your own, or by observation? I know it well from ordinary reading.

1653. Is it not a fact that its action upon lead is of such a character as to make it dangerous for domestic use? Yes, when the softness reaches a certain degree of purity.

1654. At what degree would you put it? The water of St Mary's Loch has a hardness of about  $1\frac{1}{2}^{\circ}$ , and I know that that is quite sufficient to protect the inhabitants of Edinburgh from any contamination from lead.

1655. Have you ever made any experiment to test that? I have again and again made experiments with ordinary distilled water, which is the purest water we can have.

1656. Have you, as medical officer in Edinburgh, taken the trouble to make an experiment to see what its action on lead would be? I have to make that experiment every year, in the course of my lectures on medical jurisprudence at our medical school. I did not require to make it as to this special inquiry.

1657. Have you made experiments with the St Mary's Loch water? No.

1658. Your answer to that, I may take it, is No? I have not done so with the St Mary's Loch water. I know the hardness of that water, as testified to by competent chemists, and from my experience. I know that the amount of hardness protects people drinking the water from any injurious effect. It is a simple experiment.

1659. But you have not made an experiment? We made an experiment with distilled water by adding a certain amount of salt, to point out at what degree of impregnation with saline material the water loses its tendency to act upon lead ; it is proved by experiment.

1660. You have made these experiments with distilled water, but the fact remains that you have not made experiments with the St Mary's Loch water? Yes.

By way of explaining away the want of any experiment as to the effect of the loch water on lead, Dr Littlejohn was re-examined for the trustees, as follows :—

1784. As to experiments, of course you know how to make them as to water ; although you have not made an experiment upon St Mary's Loch water, you have upon water of such a character as to enable you to judge of the operation of that water upon lead? I have.

1785. I believe in reality you have never been regularly consulted as a chemist with regard to this water? I have not.

Before leaving the evidence of this witness, it may be proper to observe that as a lecturer on medical jurisprudence he must be presumed to have been aware of the fact that water impregnated with organic impurities, whether it be hard or soft, has a very decided action on lead ; and it would have been well for the credit of his evidence on this subject had he put the water to the test of experiment, instead of treating of it by inference from the action of water, from which care had been taken to exclude all organic matter, that is, distilled water.

The next witness was Dr Stevenson Macadam, whose evidence was to this effect, the first question being put in a quotation from one of his own reports to the Water Trustees :—

1959. "In the transmission of the water to the town it may be conveyed through built culverts or iron pipes coated with carbon, and in the distribution throughout the houses, it may be stored in leaden cisterns, and be passed through lead pipes, without acquiring any poisonous or deleterious property"? Yes ; I have experimentally demonstrated that the water can be so conveyed through lead pipes, and also be stored without acquiring any poisonous or deleterious properties.

1960. Now, that is one of the threats that is created—that the water may be injurious by destroying the lead pipes? It is one of the threats, but it is quite unfounded.

1961. You have tested that? Yes.

1962. It is not so? It is not so.

In cross-examination he said this :—

2083. Now, with regard to the lead; you say that this water had no action upon lead? I said that the water had no deleterious properties communicated to it.

2084. Did you apply this to lead? Well, I did.

2085. I should like to have that explained, in order that Dr Letheby may hear your analysis? The test I have generally used in detecting whether water will act upon lead or not, is to place the water in a small leaden cistern, and let it stand for twenty-four hours.

2086. Did you do that with this? Yes.

2087. What was the result? The result was that the action of the water upon the lead was less than one five-hundredth grain of a gallon of water. I then took a piece of lead pipe, as I always do, which was beaten close to one end, no soda being put into it, and poured the water into this lead pipe; it stood for twenty-four hours; the action was not greater than the one five-hundredth.

2088. There was not the slightest discoloration? That is not the test.

2089. But there was none? There never is any; the lead does not discolour the water; the test is an after test which produces the colour.

2090. Did you test it for the colour to see if it discoloured the lead in any way? It does not discolour it; there was nothing there to act upon the lead.

2091. That is your experience? Decidedly, from testing not only this water, but other water of a similar nature, because it must not be fancied that this is the only water of this particular nature which is in contemplation. It is a very common thing in Scotland to bring water of this quality into towns now.

Professor Douglas Maclagan's evidence was to this effect :—

2373. Another suggestion is, that from the pure character of the water it may be injurious to leaden pipes; is that your opinion? I think that is not likely, but I have made no experiment.

2374. Did you hear Dr Stevenson Macadam tell us what experiments he had made? I did not hear any of the evidence upon the subject.

2375. Then I may take it, upon your general knowledge of the water, and what you have seen of the analysis made by Dr Stevenson Macadam, you are of opinion that the water is one which is well adapted to supply the deficiency in Edinburgh? I think so.

The following was his cross-examination on this subject :—

2390. With regard to lead, I presume that Professor Christison is a person whose authority you would acknowledge upon this matter? Certainly.

2391. You are probably aware of the objection that he has stated as to certain qualities of water, with reference to their action on lead? Yes, in his book upon poisons.

2392. Can you tell the Committee what is the smallest quantity of saline particles which he thinks ought to be in water so as to render it innocuous, whether passing through leaden pipes, or being contained in a leaden cistern? I cannot tell you the exact quantity, but I think it must be the smallest quantity—I think one twelve-thousandth.

2393. I will read the passage :—"First, rain and snow water should not be collected from leaden roofs, or preserved or conveyed in lead." Will you endorse that? Yes.

2394. "That the same rule applies to spring water containing less than 1 in 15,000, or 4.66 grains of saline matter per gallon." Do you endorse that? Yes, I have no objection to do so.

2395. Have you ascertained at all what the quantity of saline matter in the St Mary's Loch water is? You have the figures.

2396. Does it come within those conditions? I think it does.

2397. Will you be good enough to take that book in your hand [*handing the same to the witness*]. That is Dr Stevenson Macadam's analysis. Will you endorse these views: "That the same rule applies to spring water containing less than 1 in 15,000, or 4.66 grains of saline matter per gallon?" Yes.

2398. You endorse that? I endorse the statement as to the quantity.

2399. Do you endorse that statement of Professor Christison, that you should not preserve or convey water in leaden pipes, which contains less than 4·66 grains of saline matter? Certainly not; because since that book was written, there has been a complete revolution as to the action of water upon lead; this took place at the time of the Glasgow Water Bill.

2400. When did this revolution take place? I think at the time of the Glasgow Waterworks.

2401. What would you put as the minimum of saline matter? I have not made any experiments to enable me to say.

2402. You are a professor of medical jurisprudence,—surely you can give me an answer; if you say that you do not believe in these figures of Professor Christison, you can tell me what your own idea is? I think that the Glasgow water does not produce any bad effect.

2403. I ask you, as a scientific authority, whether this rule is wrong or not, which Professor Christison lays down, namely, 4·66 grains of saline matter per gallon. What is the quantity of saline matter that you would require to render it safe to preserve it, or to pass it through leaden pipes? I think it is quite safe for the use of a community, to send as soft water as you can get.

2404. And to store it? Yes.

2405. The softest water that you can have is rain water and snow water? It must not remain long in store.

2406. Would you venture to pass it through a leaden pipe? No; I do not think it is good for the use of a community.

2407. Why? Because it is a highly aerated water.

2408. Has that anything to do with its action on lead? Yes; the gases have to do with that.

2409. Is not the saline matter which is contained in the water that which prevents the action upon lead? Most assuredly, if it is in a large quantity.

2410. That being so, is it not the absence of saline matter in snow and rain water which renders it inexpedient to use it? Certainly.

2411. What is the quantity of saline matter in rain water and snow water? The quantity of saline matter is very small; the total quantity of solid matter in rain water is about 2 grains.

2412. What is the saline matter? It is chiefly salts of ammonia.

2413. What is the quantity in snow and rain water? About 2 grains, or a little more.

2414. And that is so objectionable that you would not use it? I do not think it would be good.

2415. It would poison the inhabitants of a town who drank the water, would it not? It would depend upon how long it was in contact with lead.

2416. If it were kept, for say 24 hours in a leadern cistern, would it not poison the people who used it? I have great doubts about that.

[*Note.*—These two answers show the uselessness of the tests which Dr Stevenson Macadam applied.]

2417. Water which contains only two grains of saline matter you would say is a proper water to be drunk and stored in leaden cisterns? I can only speak from experience.

2418. What is that experience? The experience is what we learn in the case of Glasgow.

2419. What is the answer that you wish to give? The answer is simply this: that having made no experimental researches of my own, I can only be guided by general experience; and that is, that the community of Glasgow has a very soft water, the exact quantities of which I do not remember just now. I cannot pretend to say what might be the smallest.

2420. You do not say this from any actual observation, but merely from what you hear has been done in Glasgow? Certainly it has been done on a very large scale.

2421. Then you say that you repudiate this doctrine, that spring water containing so-and-so, equal to seven grains, may be conveyed in leaden pipes, but not to stand in leaden cisterns? I think it is too strong a statement.

2423. Mr CLERK—Will you give me the date of the work; was it in 1841? It was about 1840 or 1841 that the last edition of Professor Christison was published.

2424. Mr RODWELL—Do you recollect that in Banffshire, Dumfriesshire, and Aberdeen, a number of deaths took place? Perfectly well; I recollect Professor Christison reading the paper.

2425. Do you know whether it was ascertained in those cases what quantity of saline matter there was in the water? Yes; and it was small.

2426. Do you know that the conclusion was come to that the deaths were owing to the use of that water—to its effect upon lead? I believe it was so concluded.

2427. What has happened either in the water or in the lead since that time to alter the proportions of saline matter in the water, so as to render it innocent? I do not think that anything has altered the proportions since that time; but we know that you can send soft water through cisterns for the use of the community, and through pipes, without injuring the health of that community, no matter although it is very soft water.

2428. You are aware probably that at Amsterdam deaths were occasioned by soft water passing through leaden pipes? Yes, very likely; and they have made a very bad change indeed, for they have got very bad water; the last time I was there I could not drink it, because it was so abominable. I may state that there are two ways of poisoning—either with lead, or with organic matter.

2429. Are the people poisoned there now? I do not know whether they are poisoned there now, but the water they have is worse for drinking to look at.

It was plain that the trustees' counsel considered this, as well they might, to be most damaging evidence against them; and so they tried to take off the effect of it by a re-examination of their witness—in other words, by cross-examining him on the evidence which he had given in favour of the views maintained by the opposition. The following was the result:—

2461. With regard to Professor Christison, who is always regarded as a great authority upon every subject connected with water, the last edition of his work, I think, must be quite 30 years old? I am almost sure that it is 30 years old, at the very least.

2462. Since that time, I believe, there has been a great deal of experience obtained as to the effect of waters upon lead, which was not known at that time? Yes—most assuredly.

2463. In those cases to which my learned friend has alluded, where unhealthiness was ascertained to be connected with water carried through leaden pipes, do you recollect or not whether there were a good many nitrates found in that water, showing the presence of organic matter? I do not remember it; but I recollect hearing Professor Christison speak of it. I am in the habit of quoting these very things.

2464. Do you recollect this, that in consequence of Professor Christison's opinion, which was published in 1840 or 1841, there was great alarm felt about bringing Loch Katrine water into Glasgow on that ground? Most assuredly.

2465. And that water contained a smaller quantity of saline matter than the water of St Mary's Loch? Certainly less.

2466. I dare say you may recollect that in consequence of the alarm entertained as to the effect of so pure a water as that of Loch Katrine upon lead, the Bill was rejected the first time? Yes; most assuredly.

2467. It was rejected from the very fear which is proposed to be created here? Certainly.

2468. For how many years has that water been carried into Glasgow? I think about 12 or 14 years.

2469. I believe that it was about 1859 that it was brought in? Yes.

2470. As far as you can tell us, no injurious consequences can be traced to the introduction of pure water from St Mary's Loch into Edinburgh? No. I am in the habit of telling my students every day, when lecturing upon the subject of lead poisoning, and pointing out to them, how complete a revolution of opinion there has been as to that.

2471. As the best evidence of that, we heard from Dr Stevenson Macadam, that he had submitted the analysis of these waters to you and to Dr Christison? Yes.

2472. Did Dr Christison raise any objection as to the propriety of introducing this water into Edinburgh? No; he is in favour of it.

2473. He is now, I believe, President of the Royal Society of Scotland? Yes, he is.

2474. I suppose Professor Christison has not lectured upon toxicology for many years? No; not for many years. Professor Trail has been the occupant of the chair, and then myself since that time.

2475. You were a pupil of Professor Christison's I suppose? Most assuredly.

2476. As a Professor of Medical Jurisprudence, do you say that no alarm need be entertained now—I mean with reference to that idea that there must be four grains of saline matter in water to make it wholesome? Certainly.

2477. Do you say that when Professor Christison saw these analyses this year, he expressed no alarm on the subject? Yes.

2478. Professor Christison had the analyses of Dr Stevenson Macadam laid before him, as you also had? Yes; I had the general statements.

2479. And Professor Christison? Yes.

Mr RODWELL—Do you know whether Dr Christison had the analyses laid before him? I do not speak about that.

Dr Frankland said very little on the subject; and like the rest of the trustees' witnesses, mainly rested his opinion in favour of the St Mary's Loch water on the reported non-effect upon lead of the Loch Katrine water. What he said was:—

3400. We hear frequently a good deal about soft water acting upon lead; could the St Mary's Loch water safely be transmitted through pipes, and stored in lead cisterns? It could; I have made experiments and have found that although it acts slightly upon bright lead, yet it would not affect the water in a cistern.

3401. Well, now, do you know the Loch Katrine water? Yes, I do.

3402. So far as its action upon lead is concerned, is this water as good as that? I should say, roughly speaking, that the water of Loch Katrine acts a hundred times more upon lead than the St Mary's Loch water.

3403. And there is no objection to that, is there? No, there is no objection to it practically; it is not found to cause any inconvenience in Glasgow.

Mr Bateman of course favoured the Committee with a long dissertation, which was in the following terms:—

3543. What has been the result of your experience in Glasgow as to the action of the Loch Katrine water upon lead? Upon that Bill being thrown out, a great many experiments were made in order to ascertain what the action upon lead of the water supplied to the inhabitants would be, and every town in the kingdom was visited for the purpose of ascertaining what the effect of equally soft water had been. Water was brought from some of the cities in America which was very soft, and from many other parts of the world I may say. The result was, I may say, the most unqualified expression of opinion almost entirely by every one, including Dr Penny, that the water could be supplied without any danger to the inhabitants of Glasgow, and it has been so supplied. I do not know that we have heard of any lead poisoning in Glasgow, although nothing has been done to harden the water, or to change the ordinary supply, or the means by which it was supplied. Two of the strongest proofs, I think, of the safety with which extremely soft water can be delivered to a town were afforded by Inverness and Whitehaven, both of them supplied from lake water. The water supplied at Inverness came from the Ness, a few miles below Loch Ness; at Whitehaven the water was supplied from the Ennerdale lake direct, and that water had so violent an action upon lead, that if you scraped a bit of bright lead, and put it into a tumbler of water, in a few hours it became opalescent, but it had no action upon the lead—or scarcely any action upon the lead. Any action which might have taken place upon a piece of bright lead passed off in a short time. I hold in my hand a specimen of pipe from Inverness which is coated, although it has been lying in my office since the year 1854. It still retains the coating which it got from the Loch Ness water; it is as it were painted with a carbonate of lead, which, when once on, is imperishable. It is insoluble in water, and does not wear off as it was alleged to do. It is a natural production, and there is no instance of any mischief having been done either at Inverness or at Whitehaven.

It is difficult to tell whether Mr Bateman meant to say that soft

water had a violent action on lead, or that it had no action at all. It may read either way.

Such was the evidence of the trustees on this subject. On the part of the Opposition, the following evidence was given by Dr Letheby :—

When asked to compare the Loch Katrine water to that of the New River Company of London, in reference to saline ingredients, Dr Letheby after answering the question (4707) added, in reference to the water of Loch Katrine :—

The action on lead is not quite so great as in the case of St Mary's Loch water, but I should calculate that upon new lead it is rather strong, and on old lead it is not so ; it is nothing like so strong as in the case of St Mary's Loch water—that is to say, in half an hour or three quarters of an hour it will act on new lead ; if it is new lead the action is strong, and if it is old it is not so strong.

4708. Will you tell me what your experiments were for the purpose of ascertaining the action of the water of St Mary's Loch upon lead ? We have made a great many experiments, and we find it to be a capricious water ; old lead, which is already coated with a sort of varnish or crust of oxide and carbonate, is not attacked much by the St Mary's Loch water, although in a week after standing in contact with old lead, there is a marked action, perhaps amounting to a grain of lead dissolved in about seven or eight gallons of water. On new lead it will act in half or three-quarters of an hour, if the lead is scraped so as to present a bright surface. Then sometimes it does not act at all. We have made a great many experiments which show that sometimes it acts, and at other times it does not ; it is capricious. Most water containing peaty matter occasionally acts strongly—indeed it is the peaty matter that makes the difference in the action of that water as compared with the Loch Katrine water, which is not so peaty.

4709. In what way ? In this way ; that this water acts more ; that I have found from experiments.

4710. That is to say, from the presence of more peaty matter ? Yes.

There was a long cross-examination of this witness ; but nothing was elicited to affect the evidence already given. Indeed he rather strengthened it by stating his concurrence in a statement of Professor Christison's in his book on poisons, that (4803) “ one grain of lead dissolved by ten gallons of water is an unsafe water to drink.”—

Dr Voelcker said on the same subject.—

4920. Did you make experiments with the St Mary's Loch water as to its action upon lead ? Yes ; it acts upon lead as most waters do, some less, some more. It acts decidedly more upon lead than the Heriot water, or the Gladhouse Burn water, or the water with which the town of Edinburgh is at present supplied.

By-and-by the Committee, who had given every indulgence to the trustees in their long protracted evidence, began to exhibit very great impatience with the oppositon, evidently desiring to cut them short in their evidence. This disposition broke out very markedly on Dr William Wallace, an analytical chemist of Glasgow, being offered as a witness, when Lord Bury, the chairman, took the very unusual step, before a single question had been put affecting the inquiry, of asking the counsel for the opposition what object he had in view in calling this witness. On its being explained that the evidence would be as to the action of the water of Loch Katrine on lead, Lord Bury said no more, but with marked signs of impatience listened to the following evidence :—

6066. Are you largely employed as an analytical chemist in Glasgow ? Yes.

6067. Have you devoted your attention to the examination of waters used for the supply of towns? Yes, I have.

6068. Have you examined the water of Loch Katrine as to its action upon lead? I have.

6069. What is its action upon lead? It acts rapidly upon lead under ordinary circumstances; it acts energetically upon lead.

6078. Do you consider that there is any risk attaching to the use of soft water in leaden cisterns? I consider that when very soft waters are kept in leaden cisterns there is risk attending the use of such water.

6079. If hot soft water is used in lead, is the action of the lead much more energetic than in the case of cold water? It is more rapid.

6080. If you had a supply of water coming from a boiler through leaden pipes, would that water tend to take up more of the lead than if you used cold water? Yes, it would take up more of it.

Dr Robert Bell of Glasgow was next put in evidence to show how well founded were the apprehensions of Dr Wallace, by giving an account, in his own practice, of an undoubted case of lead-poisoning in Glasgow from the action of hot water on lead pipes. The following was his evidence so far as he was allowed to give it:—

6087. Are you a licentiate of the College of Surgeons of Edinburgh? I am.

6088. Do you practise in Glasgow? Yes, I do.

6089. Have you done so for some years? Yes, I have.

6090. Were you, about two years ago, called upon to attend a number of persons in a house in Glasgow, belonging to Mr Alexander, in Sardinia Terrace? Yes, I was.

6091. How many patients did you see in that house? I think there were five.

6092. Were they persons of varying ages? Yes.

6093. What did you find them to be afflicted with? They were all complaining of colic.

6094. What were their symptoms? They were complaining of severe pain in the abdomen.

6095. But I mean symptoms indicating what? They were symptoms that indicated colic.

6096. In one of the cases, a young lady of 22, were you able to ascertain what the cause of those symptoms was? I diagnosed lead poisoning.

6097. Did you make inquiries as to the cooking apparatus that was used in the house? Yes, I did.

At this stage, Lord Bury interfered, and stopped the farther examination of the witness, in the following extraordinary manner:—

The chairman stated that the Committee thought it quite unnecessary to pursue the examination of this witness any farther.

In reference to this summary stoppage of the evidence for the opposition as to the effect of the Loch Katrine water on lead, it is to be observed that the Committee had already patiently listened to the evidence of Dr Littlejohn that he apprehended no danger to the inhabitants of Edinburgh, from the experience of the Loch Katrine water,—of Professor Maclagan, that the experience of Glasgow enabled him to say that St Mary's Loch water was a proper water for Edinburgh,—of Dr Frankland, that Loch Katrine water was not found to cause any inconvenience in Glasgow, and drawing from that circumstance the same inference,—and of Mr Bateman to the same effect. And yet, the moment it was attempted on the part of the opposition to lead any evidence intended to rebut that of the trustees, the Committee, of their own accord, interposed, and refused to hear it. It may safely be affirmed, that no other tribunal in the kingdom than a Committee of

the House of Commons would have ventured upon such a proceeding. The seat of a judge who dared in a trial to do such a thing would not have been safe to be relied on for twelve months' endurance.

There was a great variety of other evidence, which it has not been attempted to digest in the preceding summary, all relating to matter that was in controversy; but the main heads and sub-divisions into which the narrative of the case has been arranged were those that prominently suggested themselves as of paramount interest. There was much evidence as to the citizen feeling,—as to the probable rating, and its effect upon property,—and as to the claims of the district of Yarrow and Ettrick on the water in preference to Edinburgh, which, had space permitted, ought to have received notice. But the narrative has already swelled into dimensions far beyond what was originally contemplated, and so there is no choice but to pass them over, especially as the contest in the House of Lords has yet to be told.

The evidence closed on the 12th of May, the Committee having sat for fourteen days; and after hearing counsel on that day, the room was cleared, and the Committee remained for an hour and twenty minutes in deliberation. On parties being readmitted, the chairman announced the decision of the Committee in the following terms:—

The Committee, after very carefully considering all the evidence that has been adduced, are of opinion that the preamble is proved.

During the period of suspense, while the Committee were in deliberation, the excitement on both sides was intense,—and the visible feelings of exultation on one side, and of disappointment on the other, on the announcement of the decision, were but what was natural in the circumstances. But one incident of flagrant impropriety took place, in some person, in the cluster of the promoters, attempting to get up a cheer at the victory of the trustees over their constituents. Who was the guilty party is not known, though he is suspected. The *Scotsman* reporter said that it was Bailie Lewis, and that he saw him. The author was present, and heard the attempted cheer, though he did not observe the utterer. It came, however, from the back of the party, where Bailie Lewis was not likely to be at the moment, in his anxiety for the fate of the bill of which he was the sponsor at least, if not the parent.

Much controversy has taken place as to what were the Committee's reasons for passing the Bill.

Undoubtedly the first and leading reason was, that as they themselves owed their seats to popular election, they assumed that the water trustees, who practically drew their appointments from the same source, must be acting with the approval and in the interest of those who elected them. That they started with this idea in their heads, which after all is by no means an improper one, is evident from the very unjudicial conduct of Lord Bury, in complimenting Bailie Lewis at the close of his evidence, on the value of that evidence, before it had been tested by counter evidence whether it was of any value whatever

(see *Scotsman's* report of 26th April). Of course, after such a recognition of the evidence, the Committee were bound to believe every monstrous exaggeration contained in it, even to the forty thousand petitioners who could have been got in favour of the bill, but were not; and certainly, if this evidence was worthy of credit, the case of the opposition was absolutely despicable. Then the evidence of Mr Leslie altogether discredited the Pentlands as a source of additional supply. Had he been able to give the same evidence in Committee, which he arrived at after the rejection of the Bill by the House of Lords, on a careful survey of that district, as to its capabilities of producing water, there can scarcely be a doubt that the Committee, whatever might have been their leanings, must have shrunk from passing the Bill. And, lastly, the refusal of the Committee to hear any evidence for the opposition, to rebut that which the trustees had been allowed to lead in reference to the action of the Loch Katrine water on lead, showed that after the evidence of Mr Leslie, they were not inclined to allow trifles to stand between them and passing the Bill.

The only thing further to be noticed here is, that the trustees, in adjusting the clauses, withdrew that which proposed to give them power to sell the existing works, and increased the quantity to be sent down the river for the use of the owners and occupiers below the loch, from 15 millions of gallons per day, as it originally stood in the Bill, to 17 millions of gallons, which was the quantity stated in it when it reached the Lords.

(4.) *The preparation for the contest in the Lords.*—When the news of the decision of the Committee reached Edinburgh, the feeling was one of general dissatisfaction, and a desire was very decidedly expressed, both publicly and privately, that the opposition should be continued in the House of Lords, on which, let republicans and advanced liberals say what they please, all classes of the community rely, and seldom in vain, for justice in such an emergency as that in which the city was now placed. Sir Walter Scott, no mean authority in regard to the feelings and dispositions of his countrymen, in commenting in the "*Heart of Midlothian*" on the Porteous Mob, remarked, that "the mob of Edinburgh, when thoroughly excited, had been at all times one of the fiercest which could be found in Europe, and of late years they had risen repeatedly against the government, and sometimes not without temporary success." The mob is simply that class of the people who have not been taught prudence and self-control. In the more substantial classes, who by education and training have acquired the qualities in which the other is deficient, the same feelings which rouse a mob to acts of violence, show themselves in a different, and by reason of control, in a more enduring form. It may therefore be assumed, as a corollary to Sir Walter Scott's estimate of the mob, that the citizens of Edinburgh, when thoroughly excited, are one of the most determined bodies to be found; and when those gentlemen who had been in London conducting the opposition to the Water Bill on their behalf,

returned home, they found the city like a charged mine ready for explosion on the first suitable opportunity.

Before the acting Committee of the ratepayers left London, they had had a deliberate consultation with their counsel, who had very decidedly advised them that the opposition to the Bill should be continued in the House of Lords, stating their opinion that had the Parliamentary Committee which had passed the Bill been one of the House of Lords, instead of the Commons, the Bill would in all probability have been rejected. On their return to Edinburgh, the Law and Finance Committee was called together, and they resolved without a moment's delay to call, and they accordingly called, a general meeting of the ratepayers opposed to the scheme, to be held in the Music Hall on the evening of Friday the 19th May, being the seventh day after the Commons' Committee had passed the preamble of the Bill, "for the purpose of resolving upon the continuance of the opposition to the scheme when it shall be promoted in the House of Lords, and arranging for making the opposition effectual." Bailie Lewis had stated in his evidence in Committee, that the meeting in the Queen Street Hall which preceded the contest in the Commons, had been called in the afternoon at an hour (two o'clock), which precluded the possibility of the tradesman class being present at it, and attempted to insinuate that they as a class, who were as he said the great sufferers for want of water, had no sympathy with the opposition. Care was taken that as to this meeting he should not have it in his power to make a similar statement and insinuation.

The trustees, however, or at least their friends, though they durst not call a meeting of their supporters, took every means in their power to defeat or disturb the meeting of the opposition. One mode which they took was, on the morning of the day fixed for the meeting, to distribute extensively in the workshops of Edinburgh, Leith, and Portobello, the following circular, the phraseology of which clearly indicates its source; and it may be remarked that, for the obvious purpose of having the room packed with workmen inimical to the opposition, the hour of meeting was stated to be half an hour earlier than that advertised:—

**MUSIC HALL MEETING TO-NIGHT AT HALF-PAST SEVEN.**—St Mary's Loch Opposition. Fellow workmen of Edinburgh, Leith, and Portobello. An attempt is to be made this evening to obtain a vote against bringing in an abundant supply of pure water from St Mary's Loch. The meeting is got up by wealthy New Town obstructives, who have large cisterns, and have never yet known the want of water. For the comfort and health of yourselves, your wives, and your families, be present early, and prevent your case being misrepresented in the House of Lords. I am, &c.

A SHOPMATE.

At the public meeting in the evening, the area of the Music Hall was entirely filled, and the galleries were nearly so, the orchestra seats being occupied by the ratepayers' Committee. The meeting began with a good deal of disturbance from a small but noisy clique, evidently the sole product of the morning's circular, of whom Councillors Romans and Murray (both water trustees and members of the deputation who

promoted the Bill in the Commons), and Mr R. D. Ker, who had recently got an appointment to an office in the gift of the Town Council through the influence of Baile Lewis—afterwards appeared as the leaders. Indeed, it is believed that Bailie Lewis was also present, though he had the discretion not to interfere in the proceedings.

Mr Charles Cowan was called to the chair, and after an explanation of the circumstances in which the meeting was called, the first resolution was moved by Bailie Cousin and seconded by Mr Alexander Fraser, blacksmith, in the following terms :—

1. That the whole evidence regarding the St Mary's Loch scheme, and the other sources of proposed water supply for the city of Edinburgh, which was never submitted to the citizens, having now been made accessible to them by the publication of the evidence laid before a select Committee of the House of Commons, this meeting after considering the same, is of opinion that the evidence is very decidedly against the introduction of a supply of water from St Mary's Loch, and regrets that the Committee should have found the preamble of the Bill proved.

On the resolution being put to the meeting, it was received with applause and waving of hands and hats, there being at the same time manifestations of disapprobation from the same noisy set. The chairman declared the resolution to be carried unanimously, the only opponents being a few frantic disturbers of the peace of the meeting.

The attempt to disturb the meeting now reached its height under the direction of Councillor Romans, himself both a water trustee and a Commissioner of Police. When Mr Henry Bruce had been called on by the chairman to move the second resolution, Mr Romans mounted on a seat in the body of the hall, and intimated a desire to address the meeting, to submit an amendment in favour of the Bill, avowing himself at the same time to be a promoter of the scheme. As there was then no motion before the meeting on which to move an amendment, the first resolution having been previously declared carried, his only purpose in this proceeding, if indeed in his excited state he knew what he was about, was to disturb the meeting. After some time had passed in noise and disturbance, and Mr Romans had apparently subsided into addressing his more immediate neighbours, Mr Bruce again began to read the resolution which he was to submit to the meeting, when Mr Romans, gathering up his hat and staff, made his way towards the platform, and ultimately after a deal of rough pushing and jostling, with the assistance of Councillor Murray, Mr R. D. Ker, and others of his supporters, he ascended the platform. As when he arrived there he persisted in attempting to address the meeting instead of Mr Bruce, who had been called on by the chairman, the police were called in, and he was ejected by the side door, in spite of the protestations of Mr Murray and others. When he reached the street, he and his friends insisted on his being committed on some charge or other, and as the police declined to do so, having fulfilled their instructions by removing him, Councillor Murray returned to the platform and importuned various members of the Committee to make a charge against Mr Romans on which he might be committed, but nobody would listen to him ; and at last, in the vain hope of getting

up an action of damages, the whole party insisted on being taken to the head office, where they went through the farce of bailing out Mr Romans, there being no person to prefer a charge against him.

The organised attempt of the trustees to frustrate the meeting having been thus foiled, and order having been at length restored, the following resolutions were successively moved and seconded by Mr Henry Bruce, Councillor Muirhead, Dr Charles Bell, Mr Charles M. Barstow, Mr Colin Mackenzie, and Mr John Ferguson, tailor and clothier; and were respectively declared adopted by the whole meeting, consisting of about 1400 persons, except what was left of the noisy set who had created all the disturbance, and who on a show of hands being called for, could not show more than eight hands, viz. :—

2. That it has been clearly proved by the evidence before the Select Committee of the House of Commons, that there is a great preventable waste of water, both at the reservoirs on the Pentland Hills, and in the city, which, if utilised, would add considerably to the present supply; and that by increasing the number and capacity of the reservoirs, an ample supply of water can be secured for many years to come; and when that source is exhausted, there are other sources, the aggregate supply from which, at a very moderate expense, far exceeds the total quantity required for the supply of the city.

3. That it has been proved by the evidence before the Select Committee, that the quality of the St Mary's Loch water is of a very doubtful and uncertain character; and this meeting is of opinion that no greater calamity could befall the city than to bring in a supply of water which might prove injurious to the health of the community, and deter strangers from coming to Edinburgh.

4. That under these circumstances, this meeting protests against the Edinburgh and District Water Trustees proceeding farther with the St Mary's Loch Bill, and, in the event of their declining to withdraw the Bill, resolves to oppose it in the House of Lords, and approves of the petition against the Bill, now submitted: And further, that the ratepayers request their representatives in the Council to convene simultaneous meetings in their respective wards, for the purpose of taking the sense of the ratepayers on the Bill.

After the last resolution had been put to the meeting, and been declared by the chairman to be carried by a majority of about 1400 to 3, another interruption took place from a remnant of the same party who had created the former disturbance. A Mr Waterston presented himself on the platform, with the desire of addressing the meeting, which, however, received him with a storm of groans and hisses. At length, seeing that the meeting would not listen to him, he handed a slip of paper to the chairman, containing an amendment which he wished to move on last resolution, to the effect that the meeting should not commit itself to oppose the Bill until the wards should have decided on the question. The chairman ruled that the amendment was too late, the resolution having been moved, seconded, and approved of almost unanimously.

The meeting was then closed by the following resolution, moved by Mr Thomas Knox, seconded by Councillor Wormald, and adopted unanimously :—

5. That the committee appointed by the meeting of ratepayers, held on 16th February last, be reappointed, for the purpose of collecting subscriptions and prosecuting the opposition, with power to add to their number.

The wards next took up the question separately, the following being the results :—

1. *Calton Ward*.—The three Councillors for this ward having all been opposed to the Bill, and no dissatisfaction having been expressed with their conduct, no meeting was called.

2. *Broughton Ward*.—Two out of the three Councillors having been opposed to the Bill, it was assumed that the majority of the electors were also opposed to it.

3. *St Bernard's Ward*.—At a public meeting called by the three Councillors, for the purpose of taking into consideration the propriety of opposing the St Mary's Loch Water Bill in the House of Lords, it was resolved, by a majority of 110 to 46,—

That this meeting being now possessed of full information as to the St Mary's Loch scheme, resolve that it is not desirable that a supply of water should be brought into Edinburgh from that source; and it is further resolved that the representatives of this ward at the Council Board and Water Trust be requested to give their combined and individual opposition to all further progress of the St Mary's Loch Bill, both in the Town Council and in the House of Lords.

An incident which occurred in connection with this meeting affords an example of the utter demoralization of public principle which characterised the dominant majority in the Town Council and Water Trust. Councillor Robert Somerville was in the chair, having for some time previously been a supporter of the St Mary's Loch scheme. In explaining the object of the meeting, and more especially his own position, he stated, in reference to the ward meeting in the previous month of October, that it, "as it happened, was held after the publication of the report of the Water Trustees, by which meeting the responsibility of opposing the scheme was thrown on the representatives. He had declined to take that responsibility. He had *accordingly* voted against the motion to oppose the St Mary's Loch scheme." Now, "as it happened" (to repeat his own words), there was not a word, not even a shadow, of truth in this statement, and the circumstances precluded even the possibility of error. The ward meeting referred to was held on 21st October 1870; the report which he had the assurance to say had been published before the meeting was held, bears the date of the 26th October, and was not published till the 27th; and the fact that the report had not been published when that meeting was held was then specially mentioned by Councillor Macknight.

Before the resolution above quoted had been put to the meeting (*Scotsman*, 30th May 1871),—

A ratepayer in the body of the hall asked the chairman, if the meeting was to understand that he (the chairman) meant to be guided in his future action by the result of that vote.

The chairman said that he would take the result of the vote, whatever it might be, into serious consideration. He would at least promise to resign his seat, if he did not carry their decision into effect in some form or other.

This meeting was held on 29th May 1871. On the following day there was a meeting of the Town Council, which was adjourned, first, to 1st June, and again to the 7th. On 30th May and 1st June two motions were under discussion,—one a motion by Bailie Lewis to proceed with the Bill, and the other an amendment by Bailie Miller that

the Council resolve to oppose the Bill. The division took place on the latter of these days, when the amendment was carried by a majority of 19 votes to 18,—Mr Somerville having declined to vote, and at the same time intimating that he had lodged his resignation of the office of councillor in the hands of the clerk. A formal letter to the electors of his ward was published by him in the newspapers of 3d June, as follows :—

Having felt constrained by a sense of duty to abstain from voting in the decision (*sic*) on the Water Bill in the Town Council yesterday, I have, in fulfilment of the pledge I voluntarily gave at the ward meeting on Monday last, resigned my seat in the Council.

The electors of the ward, who were opposed to the Bill, immediately set about getting a candidate of their own views elected, and applied to Mr Colin Mackenzie, who, besides having been a member of the Law and Finance Committee of the opposition, had now come prominently forward, in a series of letters in the newspapers, to expose the financial unsoundness of the scheme, and Mr Mackenzie had agreed to accept the office of councillor, if the ward should recommend him to the Town Council for election, and he should be elected. Alarm was immediately struck into the minds of the dominant majority of the Council, at the very idea of a gentleman far out of reach of their influence, and who could think and act for himself, getting into the Town Council; and forthwith steps were taken, by means of personal canvass, for a public appeal to the electors was out of the question after the result of the ward meeting, to get up a requisition to Mr Somerville to withdraw his resignation, which, by statute, could not be accepted and given effect to for a month after it was tendered. Bailie Lewis, too, and Councillors Gowans and Murray were seen in the twilight of the summer evenings, flitting like owls about the ward; and on the morning of 7th June, Councillor Somerville announced in the newspapers that he had withdrawn his resignation, by a letter to the electors in these terms :—

Having been presented by a requisition, signed by nearly 400 electors of the ward, the names of whom were obtained in a very brief period, and without anything approaching to a complete canvass, asking me to withdraw my resignation, which I tendered at last meeting of the Town Council (thus *satisfying me* that I still retain the confidence of the great majority of the electors of the ward), I have, in compliance with the requisition, withdrawn my resignation.

If there was such a requisition, no one of the general public ever saw it, and the number of names said to be attached to it was not even one-third of the general body of electors to whom he had, and as he boasted, “voluntarily” undertaken the pledge to give effect to the vote of the meeting, or to resign. But what better could have been expected of a man who had set truth at defiance, in the opening of the same meeting at which he undertook the pledge? Of course, from this time forward, until the electors expelled him from the representation of the ward, he voted in the Town Council for the promotion of the scheme.

4. *St George's Ward.*—In this ward all the three councillors were

ardent promoters of the scheme ; and when a requisition by several electors, requesting them to call a meeting of the ward, was presented to them, they declined to call any meeting, on the pretext that the electors had already decided the question in favour of the scheme.

The electors, however, would not allow their opinions to be stifled in this way, and therefore six of them published in the newspapers an advertisement requesting the electors to meet at a stated time and place, for the purpose of expressing their opinion on the scheme. The call was responded to, and the place of meeting (St George's Hall) was crowded to the door ; and the following resolutions were carried by acclamation, not a whisper of opposition being heard :—

The meeting being now in possession, through the reports which have been published, of the evidence for and against the St Mary's Loch water scheme, resolves that the Bill for bringing into Edinburgh water from that source ought not to be proceeded with, and requests the representatives of the ward to use their influence in the Town Council to withdraw the Bill.

That this meeting requests Bailie Skinner, as their representative in the Water Trust, to withdraw his support from the St Mary's Loch Bill, and, after the strong expression of opinion at this meeting, to oppose the Bill in future.

That in the event of any of the representatives of the ward declining to give effect to the above resolutions, the representative or representatives so declining be requested to resign.

At the next division in the Town Council, on 1st June, already referred to, the three representatives of the ward disregarded these publicly expressed resolutions, by voting for the farther promotion of the scheme, and in consequence, a requisition was sent through the ward for signature, calling upon each of them to resign his councillorship, on account of the line of action which they had taken since the meeting.

The requisition was signed by 703 electors out of 1357 on the roll, being more than a majority of the whole electoral body, and this requisition was transmitted to them on 19th June. On the following day, at another meeting of the Town Council, the question of approval or disapproval of the St Mary's Loch scheme was again the subject of discussion ; and on that occasion the three Councillors for St George's Ward, with the requisition of more than an absolute majority of their whole constituents in their possession, calling for their resignation, voted in defiance of these constituents for the continued promotion of the scheme ; and Bailie Skinner afterwards proceeded to London, and was there during the whole contest in the House of Lords, professing to be promoting the Bill in behalf of those constituents who had repudiated both him and the Bill.

5. *St Stephen's Ward.*—A meeting of this ward was called by the three councillors. Councillor Murray, the senior councillor, who took the chair, was at one time a very decided opponent of the scheme, but latterly, for reasons best known to himself,—for they were never rightly explained,—he became as ardent a supporter of it. The other two representatives of the ward, Bailie Howden and Councillor Wormald, had all along been opposed to it.

In opposition to a motion of approval of the scheme, the following

resolution, put as an amendment, was carried by a majority of '86 to 29 :—

The meeting being fully informed through the reports which have been published of the evidence for and against the St Mary's Loch scheme, resolve that the Bill for bringing into Edinburgh water from that source ought not to be proceeded with, and request the representatives of this ward to use their influence in the Town Council to withdraw the Bill.

A further resolution was carried by a majority of 89 to 19 :—

That Councillor Murray be requested, as a representative of this ward in the Water Trust, to withdraw his support from the St Mary's Loch Bill, and after the strong expression of opinion at this meeting, to oppose the Bill in future.

And, lastly, Councillor Murray having declined to pledge himself to withdraw his support from the Bill, the following resolution was proposed and carried without a division :—

Seeing that Councillor Murray, in violation of his own professed opinions, declines to pledge himself to carry out the expressed wishes of his constituents, this meeting withdraws its confidence from him as one of the representatives of the ward, and calls upon the Councillor to resign his seat.

Like Bailie Skinner, Councillor Murray defied his constituents, and promoted the Bill to the last, being on the London deputation.

6. *St Luke's Ward.*—This ward was much in the same position as St Stephen's,—its senior councillor, Mr Romans, being a water trustee, and something more than an ardent supporter of the scheme, while the other two councillors, Messrs Tawse and Wilson, were opposed to it.

The three councillors, in compliance with a requisition from some of the electors, called a meeting in the usual manner, at which Councillor Romans presided. The meeting was a very crowded one.

The following amendment to a motion of approval of the scheme, was adopted as the resolution of the meeting by a majority, in the proportion of eight or ten to one :—

That, in the opinion of this meeting, the St Mary's Loch scheme is quite uncalled for, seeing that the evidence led before the House of Commons' Committee conclusively shows that there are other sources from which we may be supplied with water of a better quality, at far less money, and in abundant quantity : Therefore this meeting requests its representatives at the Council and Water Trust to oppose the promotion of the St Mary's Loch scheme, and instructs a copy of this amendment, signed by the chairman, to be forwarded to the Town Council.

Councillor Romans having intimated that he intended to pay no attention to this resolution, but to continue to support the Bill, the following resolutions were successively proposed and adopted without a division :—

That Mr Romans be requested to cease action, in deference to the constituency of this ward ; and, in the event of his refusing this, that he be respectfully requested to resign.

That this meeting condemns the reckless and extravagant expenditure in regard to the promotion of the St Mary's Loch scheme, more especially before the Parliamentary Committee :—(1.) Because of the unnecessarily large number of trustees sent to London at our expense to promote the Bill ; (2.) Because of the number of scientific and non-scientific witnesses retained, but not examined ; (3.) And, most especially, because of the employment, at extra salaries and remuneration, of almost the entire staff of the hired city officials, particularly the City Clerk and the City Assessor downward, to the great detriment of the public business ; (4.) Because all

this has been done by men whose very claim to public support has been their profession of economy and justice in carrying out the public business.

Mr Romans also defied his constituents by voting in the Town Council on 1st June and afterwards, for the farther promotion of the Bill. But he had the decency to refrain from going to London for the contest in the House of Lords, though he had been present during all the contest in the House of Commons, for what use the chief promoters only know.

7. *St Andrew's Ward.*—The action in this ward was very peculiar indeed. The whole three representatives of the ward, viz., the Lord Provost, and Councillors Mossman and Blackadder, were decided supporters of the scheme, and as there had been no municipal contest in the ward for a long period, there was no standing Committee, as existed in other wards. The ratepayers' general Committee therefore took in hand the getting up of a requisition to the representatives to call a meeting, in the usual form. Mr Johnston, the secretary, of course took the charge of the movement, and when he had procured the signatures to a requisition of 133 ratepayers, he on behalf of these ratepayers transmitted the requisition to the Lord Provost for himself and the other two representatives.

His Lordship, in a document which he sent to the newspapers, as the proper channel of communication between him and his constituents, chose to indulge in a variety of expressions of what he meant to be contempt for the "fearfully tainted channel" (viz., Mr Johnston), through which the requisition came to him, of the cause of which feeling that individual is at this moment, and is likely to remain, in blissful ignorance; and he gave as his reason for refusing to call a meeting, the following quotation from a great man, no less than "the late illustrious Edmund Burke," to whom he appeared to liken himself,—  
"I am your representative, not your delegate. I shall deem it my duty to promote your interests, even though that may be occasionally against your present inclinations;" and he added emphatically, much in the fashion of a postilion who, on arriving at the hall door of the mansion which is the end of his journey, brings up his wearied hacks with a terrible splutter, "That is the position which the Lord Provost has taken up. That is the position which he will maintain in the face of the most infuriated opponents of the St Mary's Loch scheme."

Undeterred, however, by his eloquence, or the authority he cited, the electors took the matter into their own hands, and six of them called a meeting for the purpose of expressing the opinion of the ward on the scheme; and as the Lord Provost had chosen the public newspapers as the proper channel for his communication to the electors, they made use of the same channel to communicate with him and his colleagues, by inserting in the advertisement calling the meeting a request to them to attend, and face to face explain their reasons for refusing to comply with the requisition addressed to them.

\* The Calton Convening Room, which was the place of meeting, was filled; and, as might have been anticipated, none of the representatives

of the ward made their appearance. The following resolution was proposed and carried by acclamation, there not being one dissentient in a meeting of about 400 persons :—

That this meeting having now got access to the evidence bearing on the various sources of water supply to the city of Edinburgh, which had been withheld from the ratepayers till forced from the water trustees before the Committee of the House of Commons, resolves that the Bill for bringing in a supply of water from St Mary's Loch ought not to be proceeded with, and regrets that the representatives of the ward have hitherto promoted the scheme ; and trusts that, in deference to the almost universal feeling of the ward, they will take this resolution into consideration, and withdrew their approval from the Bill.

The disciple of Edmund Burke, and his colleagues considered their opinions far superior to the judgment of their constituents, and they continued to promote the St Mary's Loch scheme, as for the interest of these constituents, though against their inclinations.

8. *Canongate Ward*.—In this ward the Councillors received a requisition to call a public meeting. But in place of doing so, two of them, Messrs James Lewis and Younger, judged it better to issue a card to each elector on the roll, inviting him to state in a form printed on it, whether he was in favour, against, or neutral in reference to the Bill. These cards were afterwards collected, in so far as filled up, and the result of the whole, as certified by the two Councillors, was as follows :—

In favour,	.	.	.	.	.	.	.	436
Against,	.	.	.	.	.	.	.	708
Neutral,	.	.	.	.	.	.	.	322
								<hr/> 1466
Removed, and not found at their address by the post collectors,								627
Stated to have received no card by post,								12
Unintelligible replies,								5
Electors indifferent, unsigned cards, and electors deceased,								415
								<hr/> 1059
Number of electors on roll,								<hr/> 2525

Councillor Cranston, a water trustee, continued to support the scheme ; Councillor James Lewis who had always been opposed to it, continued his opposition. Councillor Younger took a curious way of ignoring the results of his consultation of the ward. He added to those who had returned cards in favour of the scheme (436) the neutral returns (322), and the 1059 who had made no return at all, including of course those who had died and left the ward since the roll was made up ; and having thus made up a large majority who, he said, were either in favour of the scheme, or were not opposed to it, he held himself free to give effect to his own opinions, and continued his support of the scheme. The mode by which he arrived at this result is not likely to commend itself to the general public as a model for imitation out of the range of miserable Town Council morality.

9. *St Giles' Ward*.—The Councillors for the ward complied with a requisition by calling a meeting in the usual way. They were all supporters of the scheme, and called the meeting in the Police Board

room, capable of holding about 200 persons. The room was crowded. The meeting became very noisy, and the chairman (Councillor Temple) was utterly unable, and seemed very little disposed, to preserve order. After a motion in favour of the scheme had been proposed and seconded, and an amendment to an opposite effect had also been moved and seconded, the confusion and disorder became so great that the large majority of the meeting left the room in a body, and adjourned to the Square of Royal Exchange, where the motion and amendment, which had been proposed in the Police Board room, were put to the vote by shews of hands. No one voted for the motion, and 129 were counted for the amendment, which was thus carried unanimously. Its terms were similar to those of the first resolution adopted by St Stephen's Ward.

The residue left in the Police Board room was then publicly stated, and there is no reason to doubt the fact, to have amounted to 55 persons, who negatived the amendment, and passed their own motion in favour of the prosecution of the scheme.

10. *St Cuthbert's Ward*.—The meeting of this ward was simply a burlesque. The three Councillors were all supporters of the scheme. The meeting was called by them ostensibly "to consider the question of the introduction of a supply of water from St Mary's Loch"; and the form which the proceedings took has very much the appearance of having been a preconcerted device to prevent any expression of the feeling of the ward at all. After all the Councillors had in succession extolled the merits of the St Mary's Loch water scheme, one of their friends, also a supporter of the scheme, started up, and *moved a vote of confidence in their representatives, and they should continue to allow them to vote as they wished conscientiously to do!* Looking to the purpose for which the meeting was called, the motion was absolutely ridiculous, but nevertheless, though not formally put from the chair in the usual manner, it was understood to be carried. Had the thing ended here, it might have been argued that as the three Councillors were avowed supporters of the scheme, the vote of confidence in them implied an approval of their views. But it was immediately seen that nobody in the meeting attached that meaning to the resolution which had been adopted, for the very next thing done was the moving, seconding, and adopting of another motion "that the Lord Provost, Magistrates, and Council, be requested to test in a fair and honest manner, by means of voting papers, the opinion of the ratepayers as to whether they are in favour of or opposed to the St Mary's Loch scheme." Truly, the whole proceeding was nothing but a burlesque.

11. *George Square Ward*.—The meeting of this ward was called by the Councillors, one of whom was a supporter of the scheme, and the other two were opposed to it. The meeting was throughout a noisy one.

The following resolution was adopted by a majority of 89 to 46, having been proposed as an amendment to a motion in favour of the scheme:—

That this meeting condemns the St Mary's Loch scheme in consequence of the vast

expense attending it, also the conflicting evidence with regard to its quality; approves of the conduct of Councillors Mitchell and Scott-Moncrieff, and will do everything to strengthen their hands in carrying on the opposition.

Another resolution was carried against the previous question by 88 to 37, in the following terms:—

That the meeting resolve to petition the House of Lords against the bill, and request the chairman to sign the petition in name of the meeting.

And finally the following resolution was carried against the previous question by 97 to 28.

That the meeting request that Councillor Millar give effect to the resolutions then come to by uniting with their other representatives in opposing the bill.

It may be mentioned that Councillor Millar paid no regard to this last resolution.

12. *St Leonard's Ward*.—Bailie Lewis had a great deal of manœuvring to avoid calling a meeting of this ward. When several of his constituents waited on him, he went with them to his colleague Bailie Marshall, (consulting Councillor Mackay seems never to have occurred to him, or to any person else,) and it was then agreed that a meeting should be called in the usual way, if a requisition to that effect subscribed by 100 electors were presented to him. In a day or two a requisition by 132 electors was sent to him. He then proposed to call a meeting in the Police Board room, at the interval of a week, the room being capable of holding about 200 persons, and being at a considerable distance from the ward. The requisitionists having considered both the place and proposed time of meeting to be unsuitable, they offered to hire St Mary's Hall, in the immediate vicinity of the ward, and capable of holding upwards of 1200 persons, for an earlier day. Bailie Lewis, however, made difficulties about meeting their views, and therefore the Committee who had got up the requisition called a meeting themselves.

Bailie Marshall attended the meeting, but Bailie Lewis, and of course Councillor Mackay, who was simply his nominee, were both absent. It was very numerously attended, the hall being densely packed. The following resolutions were adopted almost unanimously, not above thirty hands in the immense multitude being held up against them:—

That this meeting of the electors of St Leonard's Ward is of opinion that no farther proceedings should be taken for the promotion of the St Mary's Loch scheme, and hereby requests the representatives of the ward to employ all their influence in arresting further proceedings.

That as Bailie Marshall has declared that upon an ascertained majority of the ward being found opposed to the St Mary's Loch scheme he is prepared to vote for the withdrawal of the bill, the meeting, therefore, continues its confidence in Bailie Marshall; but that, as Bailie Lewis has misrepresented the opinion of the constituency, and declared his determination to prosecute the St Mary's Loch scheme, this meeting respectfully, but firmly, demands his resignation.

13. *Newington Ward*.—The meeting of this ward was also called in the usual way on the Councillors receiving a requisition. It was numerously attended.

The following motion was carried against an amendment to an

opposite effect, by an overwhelming majority, at least three-fourths of the meeting being in favour of the resolution :—

That this meeting, having heard the statements of Bailie Cousin, Treasurer Colston, and Mr Muirhead, expresses confidence in Bailie Cousin and Mr Muirhead as to their actions in regard to the question of St Mary's Loch scheme, and instructs the representatives of the ward to obtain a withdrawal or a defeat of the bill.

In consequence of this resolution, Treasurer Colston who up to this time had been a promoter of the Bill, at first simply withdrew his support from it, and afterwards voted against it in the Town Council and Water Trust.

The proceedings of the Town Council come next to be noticed. Prior to the contest in the Commons, viz., on 21st., 22nd., and 23rd., February, they had had a three days' debate as to whether or not the minutes of a previous meeting should be approved of, in so far as they related to a resolution to proceed with the Water Bill; and on the last of these days the Council had by a majority of 22 to 19 (every member having voted) confirmed the minutes of the previous meeting in favour of the bill.

The first meeting of the Town Council after the Bill had passed the House of Commons was held on 30th May, and was continued on 1st June. A memorial from the ratepayers' meeting of 19th May, along with a copy of their resolutions, came to be considered, and before the division in reference to the Bill took place on 1st June, all the ward meetings had been held, and the reports of them had been published in the newspapers. After a sharp and acrimonious discussion as to the order of business, which the Lord Provost, as usual with him, ruled in favour of his own party's contention, that contention being that the consideration of the citizen's memorial, sent from an influential public meeting, should be postponed till after the disposal of the business on the ordinary programme, the discussion resolved itself into a motion by Bailie Lewis immediately to proceed to the consideration of the amended clauses of the Bill, which was met by an amendment moved by Bailie Miller, for the purpose of giving effect to the citizens' memorial, in the following terms :—

That, in respect that the vast majority of the ratepayers of Edinburgh are opposed to the Bill, the Council resolve to oppose the Bill in the House of Lords, and appoint a Special Committee with full powers, to take all necessary measures for carrying out the resolution.

On the motion and amendment being put to the meeting, the amendment was carried by a majority of one vote, the numbers being 19 to 18; and by the same majority a Committee was appointed to give effect to the resolution. The majority of 19 was composed of the members who had been in the minority of 19 at the division of 23rd February preceding; and the former majority of 22 was reduced to a minority of 18, by the absence of Councillor Younger, and by Bailie Marshall, Treasurer Colston, and Councillor Somerville, whose wards had declared against the scheme, declining to vote.

This resolution, however, was inoperative until, in terms of the standing orders or usage of Council, it should have been approved and confirmed by the votes of two successive meetings. At next meeting

of Council, on 20th June, the question of approval of it came up, when another bitter discussion took place. The decision of the previous meeting was reversed by the casting vote of the Lord Provost, twenty members having voted for approval, and twenty (including the Provost) for disapproval, and Bailie Marshall, as before, having declined to vote. Of the other three members who did not vote on the previous occasion, Councillor Younger, (Canongate) who had formerly been absent, voted with the promoters, as did Councillor Somerville who had now forfeited his pledged word and withdrawn his resignation; while Treasurer Colston recorded his vote for the approval of the minutes.

Practically, therefore, the Town Council was now absolutely neutral in the matter. But the greater number of the twenty promoters formed a group the like of which was never before seen in civic affairs. Six of them had been required by their constituents to cease misrepresenting them, or otherwise to resign; five others represented wards who had in public meetings, specially called for the purpose, declared against the scheme; and another had pledged himself to resign if he could not give effect to his ward's resolution against the Bill, and had done neither.

The Water Trust consists of twenty-five members. Prior to the decision of the Committee of the House of Commons there were in it only five opponents of the scheme. After the public and ward meetings, Treasurer Colston felt it to be his duty to oppose the farther progress of the Bill, and, therefore, the number of members of the trust opposed to it was increased to six.

Other two public meetings have to be noticed, and then this narrative will pass to other matters.

Two working men's meetings were called for the same hour on the afternoon of Saturday, 17th June—the one, of those opposed to the Bill, to be held in Bruntsfield Links, and the other, of those in favour of it, to be held in the Queen's Park.

At each of the meetings resolutions were passed with unanimity, at the one strongly against, and at the other as strongly in favour of the Bill; and as the reporters for the public press estimated the numbers present at each to have been about 3000, the most that could have been said was that there was a great difference of opinion among the working class in reference to the scheme. Great doubt, however, was afterwards cast upon the honesty of the Queen's Park meeting by an attempt of the promoters of the Bill to prove before the Lords' Committee, by a process of square yard measurement, that it had been attended by 14,000 persons. As Bailie Lewis was seen in the neighbourhood, and was proved to have had, along with Councillor Gowans, an active hand in getting it up, and therefore must have known how the fact really was, this attempt to magnify the numbers present reflects little credit on him, and raises a suspicion that the meeting was a mere assemblage of workmen, whipped together by its originators for the purpose of a show, without reference to whether they were rate-payers or not. This discreditable affair will be noticed afterwards.

It may be mentioned in conclusion, as to these public meetings, that the one which was held in the Queen's Park, just mentioned, was the only one which the promoters of the Bill ventured to call in order to attempt to originate an expression of public feeling in its favour.

While these public meetings were agitating the usually easy going citizens, various other things were taking place which tended to excite the feeling already existing against the Bill to a white heat.

In the first place Mr Colin Mackenzie commenced the publication in the newspapers, on the day on which the pent up feelings of the citizens broke forth in the meeting in the Music Hall, viz. : on 19th May, of a series of letters, in which he showed the financial unsoundness of the scheme, and that the practical effect of adopting it would be to raise the domestic rate to 1s. 8d. per £ in perpetuity. It is impossible to find space here for any detail of the reasons on which he proceeded ; but the substance of them was that the cost of the scheme (*as a whole*, not of the mere works shown on the parliamentary plans, which showed nothing but what the standing orders required,) was greatly understated ; that the expectations of increase of rental on which the estimate of probable revenue was based, were mere speculations unwarranted by past experience ; and that the anticipated increase of sales of water to manufactories was visionary, because no person had been able to say what was expected to be manufactured. The letters, however, were reprinted, and published in a separate form as a pamphlet, and will well repay a perusal. The singular ability of the letters, and the comprehensive grasp of the subject which they displayed, besides stirring up the minds of the citizens to an appreciation of the probable burdens which they ran the risk of having imposed upon them, attracted the notice of the electors of the ward of St Leonard's ; and the Liberal Municipal Committee of that ward, tired of advanced liberalism as displayed in their then representatives, or at least two of them, and struck with the soundness and ability of Mr Mackenzie's views in municipal matters, requested him, an avowed tory in imperial politics, to become their candidate for the representation of the ward, and in the following month of November they carried his election against the retiring Councillor, who was a mere voting machine for Bailie Lewis.

It must not be supposed, however, that the more determined promoters of the scheme rested contented with the not very successful attempt at getting up a meeting in the Queen's Park. On the morning of Sunday the 28th of May, the walls of the city were placarded with huge broadsheets, titled "The Working Man's Water Catechism," not posted on the ordinary places for such publications, but on shop fronts, ornamental walls, and other places where they could be conspicuously seen. This precious production was a sort of imitation of the Shorter Catechism, consisting of twenty-nine questions and answers, and had been posted up early in the morning, that during the quiet Sunday, when nobody was likely to remove them, every person would see them in passing to and from church ; and in the course of the following week

the catechism was printed in an octavo form and circulated under the superintendence of the City Assessor all over the city. The following are some of the choicer portions of it :—

2. Who are the chief sufferers (from scarcity of water)? The working men's wives and children, who, like beasts of burden, have to carry water down closes and up long flights of stairs.

7. Who oppose this (the St Mary's Loch scheme)? The wealthy ratepayers, who do not feel the want, "the respectable middle class" according to Thomas Knox, Esq., J.P.

8. Why? Because it will cost them a little more in rates. *See Mr Colin Mackenzie's Letters in Scotsman.*

19. Who are likely to be the most impartial judges—men who have been excited by all kinds of false statements, and out of whose pockets the rates have to come—or a Select Committee of the House of Commons, who attended impartially to the evidence laid before it, and whose minds were not biassed by statements not given on oath? The Committee of the House of Commons decidedly; and they were quite unanimous, after paying most close and wonderful attention to all the evidence on either side.

23. Who are now doing their utmost to raise our rates? The opponents of the Bill, who, in a vain endeavour to save their own pockets, are rendering an expensive parliamentary contest necessary, and putting thousands of pounds into the pockets of London lawyers, which would otherwise have gone to reduce the rates.

28. What will be the effect of the passing of the Bill upon the labour market? Four-fifths of every pound spent on works will go directly into the pockets of the working classes.

29. What, then, should the working men do? Resist all attempts to oppose the Bill, and turn out at the November election, all cowardly rats who forsake the ship when in a storm. [*By the way, the absolute nonsense of the simile in this last answer is exquisite.*]

After suspicion had pointed at Bailie Lewis, Dr Alexander Wood avowed himself the author of this cruel and ill judged attempt to hound the poor at the throat of the better class, and to widen the gulf, which, after many an effort to bridge it, yet yawns between them. It is believed that Councillor Cranston and the city assessor were Dr Wood's coadjutors in this affair, and Bailie Lewis also appears to have had his finger in the pie. The attempt was, however, an utter failure. The citizens of every class and description, high and low, young and old, male and female, had studied the question for themselves, and formed their own opinions; and this attempt, in place of cooling, still farther inflamed their hostility to the scheme.

Another mode was at the same time resorted to of trying to stem the strong tide of opposition, which was rising higher and running stronger every day. Some of the promoters, with characteristic audacity, concocted a pamphlet, which they termed a "Statement by the Trustees," and printed some 60,000 copies of it, and distributed one to every householder in the city. At a meeting of the water trustees on 7th June, it came out that the trustees, as a body, knew nothing about it. It bore the *imprimatur* of the names of the three Provosts; Bailie Lewis, and Councillor Archibald seemed to know all about it; the City Assessor distributed it; the Lord Provost said the document was issued by the trustees generally; Convener Robertson, Bailie Cousin, Treasurer Colston, and Councillor Wilson disclaimed it and all knowledge of it; and Mr Marwick said it was published by the Sub-Committee. Out of this chaos of contradiction it is only

possible to extract that the pamphlet had been prepared by the City Clerk, in concert with a nameless Sub-Committee, appointed by another Committee, doubtless formed for the purpose of having on it only a few picked men of the wildest promoters, who had the assurance to publish and circulate it as a statement of the trustees, without any authority from that body. But, whatever was the origin of the pamphlet, its publication brought an old house about the ears of the trustees.

It is not intended to go here into any examination of the statement, which is thus shortly described by Mr Colin Mackenzie in one of his letters published on 8th June :—

The paper is an able one, if one-sided, and is a capital brief for the counsel for the Bill, though certainly not the impartial and dispassionate narrative one would wish to be submitted for the opinion of neutrals. It consists of two parts :—(1.) Quotations from the evidence in the Commons' Committee ; (2.) A sort of continuous narrative in which these quotations are imbedded, like the batter in which the plums in a plum pudding are fixed.

The quotations, I believe, are correct in text, and, of course, make a strong case, for they contain *all* that is to be said on the one side of the question, and *nothing* that is to be said on the other. They will not weigh much, however, with anyone who has read the whole evidence, and knows both sides of it.

The running commentary in which they are imbedded is most ably drawn—ingenious to a degree, if not ingenuous—and by touching and toning the picture at one point, suppressing a few facts at another, and using the imagination a little at a third, the writer has really made out a capital piece of special pleading for the actings of the trust. To go over it in detail, and show each omission and each inaccuracy, would be just re-writing it.

A copy of it was handed in at Professor Christison's door on the evening of Saturday, 3rd June. It contained questions and answers, Nos. 2470-1-2 (See page 157.), already quoted from the evidence of Professor Maclagan, in the last of which that witness made the unqualified statement that Dr Christison was in favour of introducing the water of St Mary's Loch into Edinburgh. Dr Christison immediately published in the newspapers of 6th June a letter to the Lord Provost, whose name was at the published statement, absolutely denying that he had ever given any such opinion. After referring to some communications which he had had with Mr Marwick, Dr Maclagan, and Dr Macadam, he stated :—

It is not correct to say, as was said in evidence before the Committee of the House of Commons, that "Dr Christison did not raise any objection as to the propriety of introducing this water into Edinburgh," that "he is in favour of it."

Let me not be misunderstood however ; I have as little expressed an opinion unfavourable to the introduction of the St Mary's Loch water into Edinburgh. At the time referred to, there were no adequate means for forming an opinion upon the whole question. I am sorry to add that the extraordinary contradictions as to mere fact, in the evidence brought out by the Commons' Committee, regarding the quality of the water, leave me as much in the dark as ever on that subject.

And in concluding the letter he said :—

Since my position in the Royal Society has been referred to as adding weight to my supposed views, I think it due to my fellow members to make them aware that in a question of such grave importance, their president has not hastily and rashly committed himself to an opinion which is capable of being positively proved or disproved by a careful inquiry.

This letter had a very marked effect in strengthening in the city the

feeling of hostility to the trustees, and of dislike to the introduction of the St Mary's Loch water.

While all this was going on, a petition for the ratepayers to the House of Lords, praying their lordships to hear them by counsel and witnesses, and to reject the Bill, had been prepared, and was signed by 15,688 ratepayers, and was afterwards lodged. The promoters took care not to send up the City Assessor to soil his figures farther by attempting to throw discredit on this petition.

#### 5. THE CONTEST IN THE LORDS.

The Select Committee appointed to try this Bill consisted of Lord Wharncliffe, *Chairman*, the Earl of Morton, and Lords Eliot, Northwick, and Churston. They met on 22d June, but as they had two other bills to dispose of in the first instance, the St Mary's Loch Water Bill was not taken up till the 28th.

The parties who appeared and took part in the opposition were substantially the same as before, the exceptions being that the Duke of Buccleuch, who had taken no part in the previous contest, now opposed on the preamble, after a vain attempt on the part of the trustees to shut him out, and that Mr Scott of Rodono, with whom terms of settlement had been arranged, now offered no opposition; while the minority of the Town Council, who had petitioned against the Bill, also appeared by the same counsel and agents as the ratepayers.

In treating of the contest before this Committee, it is not intended to go again over the evidence, as the case now submitted will be sufficiently understood by noticing in what respects it differed from that laid before the Commons' Committee.

Bailie Lewis, as the leading witness of the trustees, made the same outcry about scarcity, in and prior to 1870, which he had made in the Commons, and he charged Mr Charles Cowan and Mr Ramsay with having, before handing the works over to the trustees, deliberately removed a log from the sill of the waste weir of Glencorse reservoir, in order to reduce the water in store, and thereby embarrass the trustees. The absurdity of this charge will be afterwards shown.

The district meetings, too, in 1869, of which so much had been said in the House of Commons, were now touched upon very lightly; indeed reference to them at all, except for the sake of preserving consistency, was almost childish, after the way in which the city had risen in the previous month in condemnation of the scheme,

Nor was anything heard of the springs bubbling from the green sward, and gushing from the clefts of the rocks,—or of the surging springs in the loch which produced the wonderful holes in the ice.

Nor was anything heard of the thousands who could have been got to sign petitions in favour of the Bill. Most of the tawdry decoration with which his former evidence was bedizened had been laid aside, and one could get a better look at the few facts, now stript of their concealment.

The Lord Provost was the next witness, and he, too, was very sub-

duced in tone. Of course, nothing was said about the air-holes in the ice, which he had mistaken for springs,—or as to the trial of temperature, or the way in which the taste of the water had been tested. But the restraint from trying to be funny which appeared to have been imposed upon him, led him to attempt to distinguish himself in the serious line of evidence, the result of which was that he got into a far more awkward mess than before, and soiled his fingers to such an extent that no subsequent washing or scouring has been able to remove the stains. Indeed, the episode is so remarkable that it cannot be passed over. In his cross-examination, he took it upon him to give the following evidence:—

518. Have you ever ascertained from any medical man or chemist what their opinion was of this water? I have seen the chemical evidence given by Dr Frankland, and other men of equal eminence.

519. Have you heard Dr Christison's opinion? Yes.

520. I will not ask you what his opinion was, but I ask you whether this is a correct representation which is put in this paragraph; it is at page 14,\* question 2472. The question is put in this form—just follow me—this is the question put to Dr MacLagan, "Did Dr Christison raise any objection as to the propriety of introducing this water into Edinburgh?" The answer, which is italicised in this print, is, "No; he is in favour of it." Do you agree with that statement? *I do.*

521. That Dr Christison is in favour of it? *I know he is.*

522. When did you ascertain that? Monday week. I called upon him.

523. Was that with regard to the wholesomeness, and with regard to the lead? He did not enter into particulars.

524. Had you any letter from him? I had. Unfortunately I have not it in my pocket; but it was marked "private."

525. I ask you, did you discuss with him the effect that this water would have on lead? I cannot say that I was competent to do that.

526. Did you hear him express any opinion, or did he express an opinion to you, about the effect of this water upon lead? I do not ask what the opinion was, because I shall have another opportunity,—did he express to you an opinion upon the effect of this St Mary's Loch water upon lead? He did not.

527. When did you receive the letter from Dr Christison? I think Monday week (19th June).

Next morning, viz., on the 29th June, Mr Brodie, the agent for the opposition, received from Professor Christison a letter, dated the previous day, to the effect that the Lord Provost had "received my opinion, and that it is not so favourable as I wished." In consequence of the receipt of that letter, the counsel for the opposition asked the Lord Provost, on the same 29th June, to be recalled, when he (Mr Rodwell) called his Lordship's attention to the question and answer above quoted, No. 520; and thereupon the following examination took place:—

638. Then I put this further question (521), "Dr Christison is in favour of this water?" and you say you know he is; do you adhere to that answer, that Dr Christison is in favour of it? I would like to say one word upon that. In a private letter from Dr Christison, marked private, he goes on to say that he had not had time to analyse that water in the manner he would wish, and he made that excuse for not coming here to give his evidence; but he says, "*No doubt after all we shall get St Mary's Loch,*" and it was upon that statement of his that I stated to you that Dr Christison, upon the whole, is in favour of that water.

639-40. I ask you whether you represent to their Lordships that Dr Christison is in favour of St Mary's Loch? *I think he is, upon the whole.*

641. That is your opinion now—this morning? It is.

\* This refers to the printed "Statement by the Trustees," which has already been the subject of remark.

This renewed evidence of the Lord Provost being at complete variance with the statement of Dr Christison in his letter to Mr Brodie, advantage was taken of the circumstance of a gentleman professionally connected with the opposition, having occasion to go to Edinburgh on the afternoon of Friday the 30th, to have personal communication with Dr Christison, and ascertain what the facts were. Accordingly, he telegraphed to Dr Christison, who met him by appointment on the Saturday, and furnished him with the copy of a letter which the Lord Provost had received from him on the morning of the 29th, before he underwent the second examination. Dr Christison farther stated, that he had on that day (1st July) written to Lord Wharncliffe, complaining of the misrepresentation of his opinions; that he was to be in London on the evening of the following Monday on the business of the General Medical Council; and that he would, if it was wished, appear on any day in that week as a witness, and tell the truth for himself. The gentleman referred to returned to London on Monday morning with the copy letter and this information, when it was resolved to call Dr Christison. His evidence will be noticed in its proper place. His letter to the Lord Provost will be found in the Appendix (No. I.).

The terms of that letter show that it was the first and only communication from Dr Christison since the meeting of 19th June referred to in question and answer 522, which the Lord Provost strangely muddles up with an alleged private letter of the same date (527), of which more in a little; that it is neither marked private, nor a private letter in any sense of the word, express permission being given to the Lord Provost to make any use he pleased of it, with a notification that its import had been communicated to the opposition by the writer; that it contains no such excuse as was stated for the Professor not coming to give evidence for the promoters, as stated, or any passage even consistent with it; that it does not contain the passage quoted by the Lord Provost; and that, on the contrary, instead of being in favour of the loch scheme, the writer expressly said, "I have done enough to satisfy me that the water of St Mary's is doubtful in quality for the supply of Edinburgh."

When the Committee met on the morning of Monday 3d July, the following procedure is recorded to have taken place.

The CHAIRMAN [*to Lord Provost Law*]. We have had a letter from Dr Christison, in which he states that your evidence the other day was not in accordance with his views regarding his own opinions, and he sends a memorial which I have opened and the Committee have read, which I think it better to place in the hands of the learned counsel on both sides, leaving it to them to take such action upon it as they think best.

The letter or memorial was accordingly handed to the counsel for the parties, and a copy of it is given in the Appendix (No. II.). In it he positively denied that at the interview between the Lord Provost and him on 19th June, one word was spoken by him, or indeed by his lordship, that was favourable to the water. He farther referred to his letter to the Lord Provost, received by that gentleman on the morning of 29th June—to the surprise with which he read his evidence of

the first day—and to his expectation that on receipt of it the Provost would have corrected his erroneous evidence of the day before, “but” said he, “to my renewed surprise, with my true opinion in his possession, he renewed on the second day, his statement of the first day.” He concluded by characterising his Lordship’s evidence as “altogether erroneous, unauthorised and misleading.” The painful but necessary inference from this letter is, that the quotation given by the Lord Provost from an alleged private letter which he said that he had received from Dr Christison, was a pure invention, such a letter having evidently never existed.

Professor Christison’s evidence will speak for itself when the subject of the quality of St Mary’s Loch water is touched upon; but in the meantime, it may be convenient, though this particular matter now ceased to be part of the contest, to follow it to its bitter end. The trustees’ counsel having before the Committee, when it was proposed to examine Dr Christison as to the subject matter of his letters, successfully resisted the inquiry, and confined his evidence to the merely scientific question, it was not to be expected that the Lord Provost’s constituents would miss the first opportunity of calling him to account. Accordingly at the usual ward meeting, held prior to the elections in November 1871, he was taken sharply to task for his conduct, the meeting being crowded almost to suffocation, and many persons being unable to obtain admission. In the course of the meeting, which was a very excited one, and after Mr Mossman had attempted, but certainly not to their satisfaction, to explain his conduct in reference to the Water Bill, the Lord Provost on being asked whether he meant to give any account of his stewardship during the past year, defied the meeting by the following unprecedented answer—“I don’t mean to give the slightest account of my stewardship.” Such treatment of his constituents was not likely to allay the excitement already existing, and as might have been expected the meeting got more excited than before. Mr Mansfield, an elector in the ward, after an attempt to get from the Provost an explanation of his reason for refusing to call a ward meeting in May, directed his Lordship’s attention to Dr Christison’s letters and to his own evidence as to that gentleman’s opinions, and asked him how he could reconcile his evidence with Dr Christison’s letter then in his pocket. Upon this the following scene took place (the narrative being confined to the particular matter in hand):—

**THE LORD PROVOST**—I reconcile it in this way. I called on Dr Christison two days before I went to London, and had a long talk with him, and I had letters from him which were marked private, and which I was not at liberty to use.

**MR MANSFIELD**—That letter was not marked private.

**THE LORD PROVOST**—That letter was.

**MR MANSFIELD**—I beg your pardon. I will read a statement from it:—“I have no present intention of making any further use of this letter than giving your Lordship the information I promised. But I think it only fair to the opponents of the Bill that I inform their agent Mr Brodie, that you have received my opinion, and that it is not so favourable as I wished. You are welcome, however, to make any use you please of my letter; but, if used for any purpose, I am sure your Lordship will use it entire and not in part.”

The LORD PROVOST—That was the only public letter from Dr Christison. I had three or four letters from him marked "private," in which he expressed opinions not half so strong as these, and just at the same time. And then you observe that even in that letter which was handed to the agents on the opposite side, he states that he had made certain observations upon the water, but that his investigation was by no means ended.

Mr MANSFIELD—But enough to satisfy him.

The LORD PROVOST—*And the chances were that when he came to complete his observations, he might turn round and change his mind (!)* Allow me to say that in all this controversy with Dr Christison in regard to the water, *I have been most careful not to say a single syllable that will reflect upon Dr Christison.* He and I have always been the most perfect friends. In regard to those private letters of his which I looked up this evening, *and thought of bringing here (!),* but I would not trench so far upon the confidence of the Professor as to read them. *I am satisfied that all I said in reference to his opinions was thoroughly according to conscientious convictions (!)*

Mr MANSFIELD—I hope I am not troubling your Lordship too much, but you have not answered my question how you reconcile your statement that Dr Christison was in favour of the scheme—

The LORD PROVOST—*I believe he is so at this moment.*

Mr MANSFIELD— I have been at a loss to follow your Lordship's answer. I think you came to the conclusion that he said that he had not been able to make a complete analysis, but that when his analysis was complete he would be quite certain to change his opinions?

The LORD PROVOST—*I think so.*

Mr MANSFIELD—Dr Christison himself says in his letter that he had quite sufficient to satisfy him—

The LORD PROVOST—No, no. He says he has not finished his investigation.

Mr MANSFIELD—I admit that; but he says, "I have done enough to satisfy me that the St Mary's Loch water is doubtful in quality."

The LORD PROVOST—He has not finished his investigation, and *I am entitled to infer that when the investigation is finished, he will change his mind.*

It is difficult to read this farrago of nonsense,—to designate it by the very mildest possible term,—without entertaining doubts whether the man who could so conduct himself is possessed of any better sense of moral responsibility than a child. Persons holding themselves responsible for their actions, either to their fellow-citizens, or to a higher power, ordinarily do just the very opposite of what the Lord Provost says he did,—that is, they would read the public, and suppress allusion to private letters; and would state as present matter-of-fact that which they knew to be the fact, and not that which they thought it possible or even probable might come to be the fact, but was not so as yet. Were the Provost's idea of what a witness is justified in saying in evidence given effect to, the crime of perjury would be blotted from the statute-book, without any necessity for the interposition of the legislature.

Evidently the audience did not believe one word of what he said. Mr Mansfield immediately proposed the following motion, calling on the Provost and Mr Mossman to resign their seats in the Town Council, when his Lordship, after getting up an acrimonious and indignified wrangle with the meeting, refused to put the motion, and then, finding the position getting too hot for him, he walked off from the platform, leaving them sitting; whereupon the meeting elected a new chairman, and by acclamation adopted the motion, which was as follows:—

That this meeting, in consequence of the unsatisfactory explanations of Lord Provost Law and Mr Mossman's refusal to call a meeting of this ward in May last, to ascertain the feeling of the electors in regard to the St Mary's Loch scheme, and in consequence of the misrepresentation of the Lord Provost in regard to Dr Christison's opinion of the quality of the St Mary's Loch water, before the House of Lords' Committee, declares they have forfeited all claim to its confidence, and respectfully requests them to resign.

In spite of this resolution, Lord Provost Law has clung to office—for a reason quite of a piece with his reasons for giving the evidence he did, and which will be noticed in the sequel.

Coming back to the contest in the Lords' Committee, the different heads under which it was noticed in the Commons' Committee will be taken up successively in the same order.

(1.) *The minimum quantity supplied.*—The case as presented in the former Committee was simply repeated here, and so requires no farther comment.

(2.) *What supply per head is necessary.*—In addition to the former evidence, the following evidence of Mr John Ayres, the manager of the Norwich Water Works, was led on the part of the opposition, in support of his former opinion that 25 gallons per head per day was an adequate supply of water for Edinburgh :—

5516. I believe you are prepared to give some figures as to what is the actual requirement of a family for domestic purposes. You fixed a meter, and tested the quantity of water used in different houses for some three years consecutively? Yes.

5517. Will you state the result? I put a meter to 28 good cottages, containing 120 people; each cottage had a separate water-closet, and in something like three years,—it was 950 days,—they used 8 gallons per head per day for everything. I then fixed another meter to some cottages where there were 30 people, for about the same period, and they used 8·01 gallons per head per day for domestic purposes and water-closets. I then fixed another meter for 66 people, in some cottages, for domestic supply and water-closets, and they used 11 gallons per head per day; there must have been a leak or something there. Then I fixed a meter on a house of £100 rental, where they had both bath and water-closet, and they used 11·57 gallons per head per day.

5518. You tried your own house in the same way? Yes; where we have a water-closet and bath, and a stable, and we used 10·87 gallons per head per day, there being 11 or 12 people in the house. I then fixed a meter at the deanery, where there are four water-closets, a bath, and a very large garden, and there they used 16·13 gallons per head per day; they had a large garden to serve.

5519. That is irrespective of manufactures? Yes.

(3.) *Preventable waste.*—The evidence given on this subject in the Commons was substantially repeated in the Lords; but a vigorous attempt was made to neutralise the proof of the practicability of preventing waste in the city, furnished by the example of Norwich,—Dr Littlejohn having been specially sent there to prepare himself to give evidence, if possible, in contradiction of that formerly given by Mr Ayres and Dr Pole. The following examination was the result of his visit :—

1648. Have you been to Norwich? I visited Norwich.

1649. Did you at all inquire into the circumstances of the water supply there? I did.

1650. Do you think we can draw any inference as to Edinburgh from the circumstances of Norwich? Decidedly not.

1651. Why not? First of all, private wells exist to a large extent in the poorer districts of Norwich, and from those private wells the poor derive a large proportion

of their supply. We have no private wells in Edinburgh. Secondly, the water-closet accommodation is exceedingly limited in Norwich, for this reason, that it is only within the last month or so that their drainage has been completed. They have in Norwich what are called bins outside the houses communicating with privies; such a state of matters does not exist in Edinburgh; we have no such bins communicating with privies. The amount of water required at Norwich at present is exceedingly small. If they introduced water-closets in Norwich, then a larger supply of water would be demanded.

1652. We heard a great deal about Norwich in the House of Commons; is it any criterion at all, or is it a mere myth? When I went to Norwich as I described, I found it was a myth. The houses of the poorer classes in Norwich, and in the English towns, generally speaking, are exceedingly small, only one-storey high; they have not the enormous number of flats to each house that we have in Edinburgh, and they have not a population of 250 in a single house.

1653. Is it not the case that in Norwich a large proportion of the working population live on the banks of the river? Yes.

1654. So that the refuse is carried off immediately from the backs of their houses? Yes, in those portions of the town on the river.

1655. Is it the case that they also get their water from the river? Yes; and there were also wells, and they obtained their supply from the wells, as well as from the town supply.

1656. There is constant service at Norwich? Yes.

1657. Is it not impossible to apply the case of a town with a constant supply to the case of a town with an intermittent supply? Yes, I consider so.

In cross-examination he said:—

1701. Is the waste at Edinburgh enormous? I have no doubt it is, and I have been into no town, whether in England or in Scotland, where the loss by waste is not enormous. At Norwich I did not see any cock supplying water but what was leaking; and if I myself tightened one cock, I am sure I tightened forty or fifty during my stay in Norwich. It is impossible to have a water supply without so much leakage.

The value of this evidence will be at once seen by contrasting it with the evidence of Mr John Ayres, the manager of the Norwich Water Works, who, after repeating the evidence which he gave formerly, gave this account of the matters regarding Norwich to which Dr Littlejohn referred. After stating that the inhabitants of Norwich, with constant service, were fully supplied with  $14\frac{1}{2}$  gallons per head per day, the following examination took place:—

5507. We have had called on behalf of the promoters, Dr Littlejohn, who gave my Lords some information about Norwich. Is this a correct description; and if not, in what particular do you think it is inadvertently inaccurate. He is asked about Norwich, and he says,—“First of all, private wells exist to a large extent in the poorer districts of Norwich; and from those private wells the poor derive a large proportion of their supply.” Is that an accurate account? For the last two years the wells have been dry.

5508. The  $14\frac{1}{2}$  gallons per head per day you say has not been affected by any drawing from wells? Certainly not.

5509. Then he says:—“The water-closet accommodation is exceedingly limited in Norwich, for this reason—that it is only within the last month or so that their drainage has been completed?” *The drainage which has been completed has not affected the water-closet accommodation of Norwich.* They have now altered the drainage for an irrigation scheme. Formerly the town drains ran into the river. *We have now 2500 water-closets,* but it has nothing to do with the drainage.

5510. I find that Dr Littlejohn said also that the people got some of their supply from the river. Is that so? *It is not so. The river for many years has been a common sewer,* and so much so, that persons residing in villa residences on its banks, a little way down the river, obtained an injunction against the corporation to take the sewage out of the river, the stench being so great as to be almost unbearable.

5511. He says:—“They have in Norwich what are called bins outside the houses

communicating with privies. Such a state of matters does not exist in Edinburgh. We have no such bins communicating with privies. The amount of water required at Norwich at present is exceedingly small?" Of course, there are a large number of bins in the poorer districts, in addition to the water-closets I have mentioned. I may say that I have read the evidence of Dr Littlejohn, and I am very sorry to be obliged to differ with him, but I do entirely on many points. From his evidence, one would infer that the people took water from the taps at the same time that they have pumps in their yard; that they can either take their water from the water supply or from pumps: but that is not so. There are not six cases like that in all Norwich. He further states that the inhabitants of Norwich live largely on the banks of the river. There is scarcely a cottage on the banks of the river. On the river there are only warehouses and factories and malt-houses, and things of that description. He says they take the water from the river to drink. That is not so. I can only say, in differing from Dr Littlejohn, if he likes to go to Norwich with me, I shall be delighted to show him that he is entirely wrong.

5512. He told us that he had recently been at Norwich;—did he apply to you or any other official to assist him in acquiring accurate information? He did not call upon me, and I have made inquiries, and I find that he did not call upon the engineer of the local board. We should all have been very pleased to have given him every information possible.

5513. In regard to the river, this is what he says at Q. 1653:—"Is not it the case that in Norwich a large proportion of the working population live on the banks of the river? Yes?" That is a mistake. There may be one or two houses with privies on the banks of the river; that would show, on the other hand, that the people could not drink the water.

5314. As to these buildings on the banks of the river, it is the fact, is it not, that they consist principally of warehouses, manufactories, wharves, and storehouses? Almost entirely so, with scarcely an exception.

5515. Dr Littlejohn also suggests, that "the houses of the poorer classes in Norwich, and in English towns, generally speaking, are exceedingly small, only one-storey high; they have not the enormous number of flats to each house that we have in Edinburgh." Does that make any difference in the quantity of water consumed for domestic purposes? It makes no difference whatever whether there are five cottages, one above another, or five alongside one another; they use no more water per head; on the contrary, they use less, for there is less back yard to wash down. My experience is exactly the reverse.

In reference, however, to his answer to question 5507, he explained, in cross-examination:—

5525. With regard to Norwich, you say that a system of drainage was carried out which affected the wells? Yes.

5526. But that drainage having been carried out and completed, has not the water returned to those wells? It has returned to the wells within the last two months.

5527. So that at the time Dr Littlejohn was speaking of during his visit, the wells were then full? Yes; but that does not affect the state of the supply in any way.

5528. You come to contradict Dr Littlejohn; and you said that when he says that the people drew water from the wells, that could not be, because the wells had been drained by the drainage? No; I said, undoubtedly, there is this district coloured yellow, in which a large number of persons take water from pumps—there may be 12,000 persons there who take water from pumps; but those same persons do not use the company's water, and therefore they do not come in my calculation. I made the remark, that Dr Littlejohn's evidence led to the inference that the same persons had the company's water and the pump water; that the supply was so small, because they took a large portion of what they required from the pumps. That was my impression.

Mr Alfred William Morant, the engineer of the Norwich Board of Health, corroborated the evidence of Mr Ayres in every particular.

(4.) *The alleged approval of the scheme by the ratepayers of Edinburgh.*—Bailie Lewis still, but with bated breath, stuck to his former account of the sanction given to his scheme at the ward meetings in

October 1870; but he did not, till pressed in cross-examination, say anything of the wholesale condemnation of it passed at the ward and other meetings in May 1871. It took no less than 26 separate questions (322-347) to drag out of him that there were nine ward meetings held in May 1871, "and that in a great proportion of them there were majorities" against the Bill; and also that at a meeting in his own ward, attended by hundreds of people, he had himself been asked to resign. The true account of these meetings has already been given, and the reports of them were furnished to the Committee. Strangely enough, however, he did not venture to say a word for his public meeting in the Queen's Park, which has been already mentioned. The statistics of it were to be proved, not by one who counted the numbers present, but by one who had measured the ground on which they stood—much in the fashion of a critic, who estimated the contents of a book by its thickness and its boards, and whether the angles at its corners were correct right angles, but without taking into account whether the pages were blank or not.

This witness of the square and rule was a Mr William Paterson, joiner, then general secretary to the Associated Carpenters and Joiners of Scotland, whatever that may mean. The following is his evidence:—

951. You know the Queen's Park very well? I know the Queen's Park.

952. Was there a meeting of working men at the Queen's Park? Yes; on the 17th of June.

953. Was it an orderly meeting? A very orderly meeting.

954. Was the advertisement convening that meeting to consider the statements made in name of the working men in regard to St Mary's Loch? Yes.

955. Was that meeting in favour of St Mary's Loch or against it? The resolutions submitted were all in favour of St Mary's Loch, and they were unanimously agreed to.

956. Have you any idea of the number of persons present at that meeting? Mr M'Neil and I were appointed the previous night by the Committee who had the arrangements for the meeting, to endeavour to ascertain the probable number at that meeting. *We found it impossible to ascertain the number in any other way than by measuring the ground.* The ground was measured at half past five, and it was found to be 1496 square yards. Allowing six persons to the square yard, it would give 8976 as being present at the meeting. At a later time it was measured again, and it was made out to be 2400 square yards, which at six persons to the square yard, would give 14,400 as being present.

957. You ascertained the number of yards occupied by the meeting, and then you calculated so many persons to the yard; and in that manner you arrived at the number you have given? Yes.

Now, in regard to this person's evidence it is to be noticed that in the *Daily Review* of 20th June, there was published a certificate by him and a Peter M'Neil, to the same effect as this evidence. This Mr Peter M'Neil was the next witness examined for the trustees; but, singularly enough, not a question was put by him with the view of corroborating his fellow workman. The obvious inference from this is not very flattering to either, and least of all to the credibility of Mr William Paterson, whose peculiar mode of arriving at his results required confirmation.

Bailie Miller, on the other hand, who saw the meeting was satisfied that the number present did not exceed 3000. But the *coup de grace*

was given to the wild estimate of Mr William Paterson by Lieut. M'Lellan of the Edinburgh police, a witness above all suspicion, who was on duty at the spot, and who estimated the number present to be close upon, but not exceeding 1500.

It cannot be doubted that the ludicrous break down of this attempted proof was more prejudicial to the character of the promoters, than if they had been content to let the numbers stand upon the estimate of the public press, which was about 3000.

(5.) *The evidence of a determined opposition.* The new evidence on this subject consisted of the meeting in the Music Hall—the ward meetings and results of voting cards—the changes evinced in the Town Council and Water Trust—and the meeting in Bruntsfield Links, all before mentioned—the reports of the whole of which, reprinted from the public press, and assumed by all parties to be correct, were laid before the Committee. In addition to this there was the petition to the House of Lords against the Bill, subscribed by 15,688 ratepayers.

Except the square yard proof of the numbers at the meeting in the Queen's Park, which so signally failed, there was no attempt to confront this evidence; but the trustees tried to turn its flank by way of Leith, Provost Watt being the assailant in that direction. His operation was as follows, referring to the increase of the shipping trade at Leith, and the joint understanding under which the three corporations went into their water adventure:—

583. You at Leith look upon this, to a certain extent, as a matter in which Edinburgh is bound to carry out its understanding with you? Yes; Edinburgh invited us to a conference, and we have gone cordially and honourably with them, and I do not see why Edinburgh should ask us now to withdraw this Bill.

584. This is a Bill which you, the corporation of Leith, are as much interested in as the trustees of the Water Trust in Edinburgh, and you look upon it that you are part promoters of the scheme? We are very much interested in it. I consider it a matter of very serious consequence to Leith to have an abundant supply of water for the increase of manufactories, and for the health of the inhabitants.

585. As far as Leith is concerned you have substantially made up your minds that the best place from which to get water is St Mary's Loch? *So far as I am aware the community of Leith are very much united upon that point.*

The close of the last answer was the key of Provost Watt's position, and unfortunately for him, while he was busy on the enemy's flank, his own position was so seriously assailed, that his attack was neutralised. A plebiscite was being taken in Leith in his absence, and the result was fatal to his evidence of unanimity on which his case rested. For Councillor Lundy of Leith gave the following evidence on 4th July:—

4116. Have you, along with two other gentlemen, Mr Cree, and Mr Field, of the firm of Field & Allan, been endeavouring to ascertain the feeling of the people of Leith in this matter? Yes, during the last four days.

4117. By means of voting cards issued to the whole of the ratepayers over the whole place? Yes.

4118. Will you give us the result in figures of what has been ascertained? We began on the 29th of June to post the cards, and we posted 6078 voting cards, and we began the collection on the 30th, which we concluded last night; altogether, with what we collected, and those which were sent back voluntarily, we got 968 who signed for the bill, and 1664 against it, that is a majority of 696; but there were 1075 who either signed that they were neutral or did not sign at all, or the cards

were collected, and had not been signed; then we had 919 returned by the post office.

4119. That is people who had left their houses? People who were dead. You must understand that we had to take the old roll; and as a matter of course there have been all the removals taking place at term time. The post office service, I may say, literally broke down, for the postmen were utterly unable themselves to deliver so large a quantity of cards; they had to visit every house and every door in Leith, and they had to put on extra postmen who were not acquainted with the district, and consequently they were not so well able to find the men who had moved: so that we had 919 returned, and we had the remainder, 1452, which we were utterly unable in the short space of four days to get collected; but we got 1664 against the Bill, and 968 in its favour.

4121. As the result of your inquiries, from the return which you have taken, are you perfectly satisfied that the feeling of the large majority of the people of Leith is against the St Mary's Loch scheme? I think so, both among the working classes that I have conversed with, and also among those of my own class.

Mr James Cree, merchant, Leith, gave evidence to the same effect as Councillor Lundy as to the general feeling against the Bill, chiefly on account of its being an unnecessarily expensive measure.

Plainly, therefore, the evidence of the promoters as to the alleged unanimity in Leith in favour of the Bill was not merely contradicted, but the weight of the evidence lay rather in the direction that a majority of the community there was opposed to it.

(6.) *The capabilities of the Pentland Hills.*—The variations from the case as it was formerly presented were chiefly these:—

Reference has already been made to a charge brought by Bailie Lewis against Mr Charles Cowan and Mr Ramsay, of having, some time prior to the delivery of the works to the trustees in May 1870, removed a log from the sill of the waste weir of Glencorse reservoir, in order to reduce the water in store, and thereby embarrass the trustees. It is not in the least surprising that this subject was not brought before the Commons' Committee, because the charge meant of necessity that, by the misconduct of these gentlemen, the scarcity of water in the summer and autumn of 1870 had been at least aggravated, and it also implied that the scarcity of water was not altogether due to the incapacity of the Pentlands to supply it; and it therefore weakened the case of necessity for the introduction of the St Mary's Loch water. But the fear was now upon the trustees, from the exhibition of the strength of the case of the opposition in the Commons' Committee, that they would be able to prove, before a Committee of a more judicial character, that a sufficiency of water could be had in the Pentlands; and so, with the view of discrediting the case and the evidence of the opposition, they resorted to this suicidal and pettifogging device of charging the chairman of the opposition committee, and the most prominent and formidable, because the best informed, witness for the opposition, with having been largely instrumental in producing the very scarcity, of which they were fighting with tooth and claw to take advantage, as if it had been an inevitable thing, unaffected by human agency. The desperation of this attempt to throw discredit on the opposition is perhaps the most complete condemnation that could be pronounced of the conduct of a body of public trustees, in so dealing with upwards of one-third of their own constituents. The

following is the way in which the charge was advanced by Bailie Lewis :—

148. In the time of the Company they had received, by agreement with Mr Cowan, permission to raise the height of that weir by some temporary erection? Yes; in 1860, the company entered into an agreement with Mr Cowan that they were to be allowed to raise the waste weir twelve inches. This was done by putting on a large log of wood, 12 inches square, and in consequence there was a considerable addition to the supply in those years when there was a sufficient rainfall.

149. To the extent to which the log raised the embankment? Yes; to the extent of twelve inches.

150. Was that an arrangement supposed to be permanent or temporary? It was a permanent arrangement; and for an equivalent of ten guineas annually, this log of wood was to remain on in perpetuity, but it was removed between the time of the passing of the Act and Whitsunday 1870, when the trustees entered into possession of the works.

151. Not by the trustees? No; without their knowledge or concurrence in any way.

152. Mr Cowan, who gave this consent, is one of the gentlemen who complains of the waste; and he is the chairman of the opposition ratepayers? Yes; he is.

153. So, in fact, at all events in that respect, he himself, or those acting under his authority and orders, have caused the very waste of which he complains when he comes before Parliament? Yes. Had the log of wood been allowed to remain in April 1871, as in former years, I have no reason to believe that any argument could have been advanced in regard to waste and overflow in the present year.

In cross-examination he said :—

311. Now, did I understand you to say that it was owing to Mr Cowan, whom my learned friend introduced as the principal opponent of this Bill, that the people were deprived of water? I do not think I said that.

312. My learned friend put the question distinctly? No; I do not think so.

313. That log you said was removed by Mr Cowan? Yes.

314. In consequence of that log being removed, there was a less supply of water? I mean to say that it was by the removal of the log that there was an overflow in the month of April of the present year, and that there was no overflow for two years previously; and had the log not been removed, I apprehend there would not have been an overflow in the present year. That was my statement.

315. There would have been more water? Most certainly there would.

316. Twelve inches of water you said? Precisely so.

317. They would have had more water, I suppose? Yes.

318. Has it not been suggested to you that one of the modes of securing a larger supply of water to Edinburgh is by doing permanently that which was done by Mr Cowan temporarily, namely, by raising the reservoir? I dispute that it was temporary; according to this agreement it is specifically set forth that 12 inches was to remain in perpetuity.

319. If you succeed in that, that would give you more water to dispose of? Certainly it would in those years when there was a sufficient supply to make the advantage of the log manifest.

Mr Ramsay, the manager of the Water Company, gave, however, a very different account of the matter, in these terms :—

4375. We heard something about the removal of a log at the Glencorse reservoir; how was it that that log came to be placed upon the reservoir? I think it was soon after the year 1847—probably two or three years after that, not more—when Mr Cowan (who is proprietor of the ground which was flooded by the putting up of that log) gave permission to the company to put on a 12-inch log on the waste weir. That 12-inch log was put on, and continued for many years without any charge being made for it; but by-and-bye, Mr Cowan said he would allow the log to remain in perpetuity for ten guineas a-year, and that was paid up to the end of the period when the water works were in possession of the company. But a letter came from Mr Cowan, I forget on what day, but I think it was in the spring of 1870, or in the winter of 1869, calling upon us to remove the log. Upon going to look at the log, I found the log in such a state of rottenness as to be unsafe; and I thought the best thing I could do, in order to prevent an alarming accident that would be

sure to follow if the water should rise suddenly upon the log, was to remove it; and as any arrangement that the company had with Mr Cowan was as good in the hands of the trustees as in the hands of the company, it was left to them to put on the log again if they wished it.

4376. You removed the log because it was dangerous? Yes. I had seen a few years before the frightful accident which occurred at Sheffield; and if the water had risen in the reservoir 12 inches over the top of the log, and the log had given way, you would have had two feet of water over a surface of 56 acres, sweeping everything before it, and producing a calamity quite impossible to estimate.

4377. Some complaint was made by Bailie Lewis, in the course of his evidence, of that log having been removed, though you have the right to put it there in perpetuity. Whatever rights you had, of course the Water Trustees have now? Whatever right the Water Company had is conveyed to the Water Trustees.

There was a deal more of examination and cross-examination, but the aspect of the matter as above stated by Mr Ramsay was not altered. It may be questioned if the Water Company had any power to raise the level of the reservoir by putting a log over the waste weir; but whether they had such a right or not, the charge was a mere piece of clap trap, for according to the trustees' own evidence there was no escape whatever of water over the waste weir in 1870. Besides, if they were entitled to have the log there, they should have replaced it themselves in the autumn of 1870, so as to have been ready to impound the water expected to run to waste in winter; and if they had not the right to replace it, then the attempt to make the fact of its removal, from whatever cause, evidence against the opposition, was so absurd as to refute itself.

Mr Stewart, the trustees' engineer, had, since the Bill passed the Commons, made a new examination of the Pentlands, and could find on the south side of the range, above the cultivated land, only a small district of about 3,500 acres unappropriated, which might yield 3,500,000 gallons per day; while by impounding the waste water of the Glencorse Valley, and taking an average of seven years, 16 gallons per head per day additional could be got from both sources at a cost of £500,000, (2529-2542).

In the Commons' Committee the opposition were taunted by the trustees' counsel in his reply, that they had not adduced one single word of evidence suggesting the Pentlands as a practical scheme; and he went on to say: "that is a striking fact. Again, it only brings us to this, that not only is the Pentlands story an invention of Mr Hawksley, but an invention of Mr Hawksley at the very latest period, for the purpose of bringing it before this Committee after this case had been opened, and the petitions had been prepared. I ask again whether the Pentlands scheme has ever been mentioned but to be put aside as an impracticable thing."

In order to prevent the possibility of the capabilities of the Pentlands being thus misrepresented again in the Committee of the House of Lords, the ratepayers were put to the expense of preparing and proving the plans of a scheme shewing how these capabilities could be brought into operation. The expense thus entailed on the ratepayers, to meet the oppressive system of warfare pursued by the trustees was very heavy, but fortunately it was not prohibitory, as was probably expected. Plans were accordingly prepared by Mr James R. Forman,

C.E. of Glasgow, in concert with Mr Hawksley and Mr Hemans, C.E., both of London. As the evidence of Mr Forman, in explanation of these plans, was practically of great importance in bringing out the decision of the Committee, it is now given at some length :—

5627. Have you made an investigation for the purpose of ascertaining how the present water supply of Edinburgh could be best increased? Yes.

5628. Have you visited this district called the Pentlands? I have.

5629. You have heard the evidence that Mr Glaisher has given with regard to the rainfall which appears from the published tables? Yes.

5630. What have you taken as the drainage area of the Pentlands? My attention was drawn to the additional supply of Edinburgh a short time ago, and I made a general inspection of a large portion of the Pentland Hills. The object we had in view was to utilize a portion of the Pentlands which is coloured on that map in red where the word "Pentlands" is written. The extent of drainage area, including that portion of the hills is 8608 acres, and the object we had in view was to utilize that portion so as to augment the supply to Edinburgh by something like 7,000,000 additional gallons per day.

5631. When you are speaking of this supply, instead of talking about 7,000,000 gallons per day, tell me how much that would be per head per day? 28 gallons per head per day.

5632. What amount of area did you select? I selected the amount coloured red on that map, 8608 acres, as the necessary amount to secure that quantity, that is exclusive of the area which is required for compensation, and we have to add on to that 3123 acres more for compensation.

5633. From that district you say that you can get the 28 gallons per head per day? Yes, we can.

After an unsuccessful attempt on the part of the trustees to prevent the opposition proving this scheme, on the ground that the plans had not been exhibited while their witnesses were under examination, the examination of Mr Forman proceeded :—

5636. How do you propose to take that? The plan proposed is a very simple one; by carrying an open aqueduct along from the valley of Glencorse, on the south-side of the Pentlands, as far as is coloured red on that map; and that aqueduct includes within it a drainage of 8608 acres, and the produce of that 8608 acres, taking 20 inches as the available rainfall, is sufficient to give to Edinburgh 7,000,000 gallons daily, or 28 gallons per head per day.

5637. In addition to the present supply? Yes.

5638. Would that water be secured or caught by a catch water drain? Yes; that aqueduct I refer to is practically a catch water drain.

5639. You would have, in order to store that water, to make additional reservoirs? Yes.

5640. Have you been over this district for the purpose of seeing whether reservoirs could be advantageously constructed there? Yes.

5641. What is the result of your examination? The result of my examination is that the whole country there abounds in good sites for reservoirs; I never passed over a country where better sites for reservoirs existed, and I have selected two sites there, one at a place called Logan Burn, and another at a place called Black Hill. The Logan Burn reservoir would hold 570,000,000 gallons, and the Black Hill reservoir 688,000,000 gallons, making a total of 1,258,000,000 gallons, and these two reservoirs together would hold 180 days supply at the rate of 7,000,000 for Edinburgh.

5642. Which is 28 gallons per head per day? Yes.

5644. What do you estimate would be the expense of the aqueduct, or the intercepting drain, and the reservoirs? The total estimate of the expense of storing that water, and securing that water, and of leading it to Edinburgh, is £190,853.

5647. What would be the cost, taking it per million gallons? The cost, taking it per million gallons, would be £27,300.

5648. Supposing that at any future time, twenty years hence, an additional supply was required for the increased population of Edinburgh, have you a district near, by which you could supplement it? I have not turned my attention to another area of the Pentlands in detail, as I have done in this case, for the simple reason that I thought the supply of 28 gallons per head per day additional was more than ample,

and it was hardly worth going into it on a more extensive scale ; but I have not the slightest doubt that another 8000 acres in that district could be utilized in the same way.

5649. \* \* \* Then as to compensation ; the compensation is given off in this case from a place called Marfield, where it is proposed that a reservoir should be constructed for holding 684,000,000 gallons ; that is ample to secure the compensation usually given ; that is one-third of the total available rainfall.

The evidence of Mr Forman was fully corroborated by Mr Hawksley and Mr Hemans, so that it is unnecessary to go over theirs.

(7.) *St Mary's Loch Scheme*, (1.) *Quantity*.—The evidence on this subject in the House of Lords did not materially differ from that in the Commons.

(7.) *St Mary's Loch Scheme*, continued, (2.) *Cost*.—When Bailie Lewis was examined in the former Committee, access had not been got to the report of Mr Leslie, and so he could not be pointedly examined, with reference to its precise contents, as to the reasons for concealing it. Now, however, he was confronted with it, and compelled to point out the precise passages which the trustees desired to conceal, and the reasons for concealing them. Without going over these it is sufficient to say that what the trustees desired to conceal were the passages about the insufficient storage and the cost, because they said that these passages would afford the mill-owners on the stream a powerful argument for opposing the scheme which there was no occasion to communicate to the ratepayers, as (284) “the trustees were satisfied that Mr Leslie's estimate of expense was incorrect.”

Before leaving this report it may be mentioned that when the Lord Provost was under cross-examination he was asked (529) if he, as chairman of the trustees, was a party to its suppression or non-publication ? and his answer was, “I was no party whatever.” The stories of these two leading trustees do not seem to harmonise very well together.

In regard to the remainder of this section the evidence may be taken as practically the same as formerly. But another subdivision, spoken to by Mr Colin Mackenzie, may be added here, viz. :—

(e.) *The probable amount of rating*. The following was the evidence given by Mr Mackenzie on this subject, there being now no power to raise farther funds by the sale of the existing works :—

3659. Taking it at a moderate figure, supposing the sum of £500,000, for the sake of round figures, to be the cost of this scheme, will that involve a rate of 1s. 3d. on the houses that will have to pay for domestic supply ? I have carefully investigated that question of rating, and such is my opinion, in addition to the 1d. of public rate.

3662. What do you say is the rateable value upon which this domestic rate would be levied ? About £800,000 a year, which gives for every 1d. of rate, a little less than £3500 a year. Every penny of domestic rate would thus represent a borrowing power of £70,000, that is to say, 4 per cent. interest, and 1 per cent. sinking fund.

3663. Taking £70,000 as the extra cost for the supply not now required, do you see any reason why the people of Edinburgh should pay that extra penny, in order to provide for wants that may arise some 20 years hence ? I do not, and that is the opinion of almost every person I know in Edinburgh.

3664. That is one of the main objections to this Bill ? Yes.

3665. I have assumed half a million as the absolute cost ; upon information you have received, and upon the evidence you have heard, you believe that it will be

nearer £750,000 than £500,000? Such is my belief, and I have explained my reasons fully in the letters I have written to the papers.

3666. That will involve a very considerable rate upon those liable to a domestic rate? Assuming that they came back to Parliament, and obtained additional borrowing powers, that would involve a rate, according to my calculation, of about 1s. 8d. in the pound, besides the public rate.

(7.) *St Mary's Loch Scheme continued.* (3.) *Quality of the water.* On the subject of the water of the loch consisting almost entirely of spring water, Bailie Lewis and the Lord Provost, as already mentioned, did not repeat the former nonsense they uttered, about the gurgling, bubbling and surging springs in the loch, and on the hills and in the clefts of the rocks; nor did the case get any new aspect as to the peaty origin of the water, and the question about the saline ingredients in it. But its aspect was considerably varied in regard to the other subdivisions of the section.

(d.) *The peaty and organic impregnation of the water.* Professor Douglas Maclagan did not appear as a witness, an explanation, apparently a volunteered one, having been made by Dr Alexander Wood, that he had been unwell for some weeks, and had stated to him, some indefinite time before (1470), "that he felt he should not be able to appear as a witness." Without meaning to insinuate any doubt of the sufficiency of this reason, possibly he was not sorry at having it, for he had made terrible mistakes in his evidence in the Commons' Committee, both as to Professor Christison's opinions, and as to alleged mistranslations by Dr Charles Wilson, of passages in the books of foreign authors.

Of new evidence, Dr Frankland had analysed two samples of water from St Mary's Loch, and one from the Megget water, taken on 27th May and 20th June; and he said that they were very similar to, but rather better than the samples which he himself had collected in the previous autumn (1216).

Dr Alexander Wood had visited the loch, and lowered a white porcelain plate, which at the depth of six feet became slightly yellow, became barely visible at ten feet, and eclipsed at twelve feet (1342). The date of this visit was not stated by him; but Professor Archer, who accompanied him, stated it (1887) to have been the 20th of June. Now, Professor Christison, whose evidence will be afterwards more particularly noticed, in speaking of a visit made by him to the loch on 12th and 13th June, said that for six weeks previously there had been very little rain indeed, and a reference to the weather reports in the newspapers will show that the same description of weather continued up till the 20th; so that the water of the loch must have been in a condition to show the colour of a peaty infusion of the water in the least possible degree. Keeping this in view, the reader will be able to give its due weight to the following far fetched attempt of Dr Wood to speak, from this inspection, of the general character, at all seasons, of the water running into St Mary's Loch:—

1453. With regard to St Mary's Loch water, did you examine any of the burns that are feeders to the loch? Yes, I examined them all.

1454. What sort of water did you find in them? Very good water indeed. We dropped a penny piece into the Megget, and standing on the bridge over it, we could see her Majesty's image at the bottom of the water. The driver, who took an interest in it, said, "Try a pin," and we dropped a pin. At first we could not see the pin, till it was pointed out that it had fallen at the edge of a stone, and then we saw it, *we being at a height of 25 feet above the water, and there being 2 feet of water running over it.*

1456. How far from the lake was that? It was a very short way from the lake.

1457. Did you go on to the land a mile or two off? No; I looked at the colour of the water in the burns, and I was satisfied that there was no peat in them.

1458. You did not say that at certain seasons of the year the water is not very dark? *I only speak of what I saw when I visited it.*

It appears from the evidence of Dr James Struthers of Leith (1480) that on this occasion Dr Wood was accompanied by him, Professor Archer, and Drs Littlejohn and Macadam, all of whom corroborated his evidence; and all of them even went the length of saying, that on dredging the loch, at a depth of 19 or 20 feet, they found no peaty deposit—nothing but "sandy material mixed with bits of fern and grass, and fern stalks and leaves." (1506).

In positive contradiction of this evidence as affording any data for judging of the state of the bottom of the loch, the following witnesses were adduced on the part of the opposition, viz.

William Mitchell farmer, Henderland, on whose farm the Megget water enters the loch. He described the water of the Megget water as very dark in colour when in very high flood, and dirty white between floods; and stated, that it occasionally runs of a dark mossy colour for weeks. He then gave the following practical evidence of the mossy condition of the water in times of flood:—

5301. Have you an extensive meadow near the mouth of the Megget? Yes.

5302. In large floods in the winter does the water run right over that meadow? The loch comes back on the meadow in a very high flood.

5303. The level of the loch rising, it spreads over your meadow? Partly.

5304. When the water subsides again, what do you find on the meadow? A great deal of refuse, mixed with peaty matter.

5305. How many acres may you have covered in that way? It may be five or six acres.

5306. Will you give some idea of the average depth of this deposit on your meadow when the water rises? I have seen it lying about a foot thick, not over all the six acres, but it will be in stratas.

5307. You mean in stripes? In stripes along the meadow; when the floods recede it will be lying about a foot thick.

5308. The peaty deposit? The peaty deposit, mixed with refuse.

5309. Are the four or five or six acres more or less covered with it? Yes; after the loch recedes it leaves a certain refuse over all, and when there are very high floods during the winter season, I am always sure of a good crop of hay the next autumn.

5310. The result of the manure of this deposit? Yes.

5311. Do you spread this deposit over the ground as a manure? Yes.

5312. And successfully? Yes.

Mr Ramsay, after stating the impossibility of separating the pure from the impure waters of the St Mary's Loch district, as can be done in the Pentlands, gave this account of the bed of the loch:—

4436. As to the bed of the loch, have you had occasion to notice that? Yes.

4437. What is the character of it? In some parts of it the channel is very beautiful and pure; in other parts of it there are great masses of peat. I took an apparatus with me for dredging up from the bottom what I supposed to be mud or peat,

but my dredging apparatus turned out a failure ; but I had a long boat-hook with me, and I thrust that down the whole length, and I could put it down into a mass of soft material, which I took to be peat, and that you find to a great extent surrounding the lake.

4438. At the place where you tried the boat-hook, what would be the depth of the water ? It would be very shallow there over the peat. I think we got aground upon it. I was in a long and large boat, which would not draw more than a foot of water, and I thrust the whole length of the boat-hook down, but I did not reach the bottom of the soft substance.

4439. Under the Bill they will have power to lower the level of the lake 14 feet ? Yes.

4440. That would expose this peaty matter you have been referring to ? Yes ; and my apprehension is, that it would be a frightful sight. I remember the state of the Thames below Westminster Bridge, before the Embankment was made ; it will not be very unlike that on a different scale ; you would find a large exposure of stuff of some kind or other, and when the dry weather came it would stink most abominably.

4441. As to the peat, and so on, that you saw at the bottom of St Mary's Loch, you think the same result would be produced by its exposure to the sun ? No doubt of it at all : it is soluble vegetable matter, and the exposure of it to the air, between wet and drought, would be quite sure to bring about that result.

Professor Christison was the next witness examined on this head ; and as the Lord Provost, both before and afterwards, took such unwarrantable liberties in misrepresenting his opinions, it is not merely fair to all parties, but important to the public, to give at length the true evidence on this subject of a gentleman whose opinions deservedly carry so much weight with them, and which were, in consequence, so misrepresented :—

4595. Did you, in consequence of communications, or in consequence of what you had read and heard yourself, go to St Mary's Loch on the 12th of June (1871) ? I went to fulfil an intention I had had to go there on my own account, quite irrespective of this investigation, because I saw there were many curious points connected with the question, which induced me to revive my old investigations of 40 years before, and which I felt anxious to go through with, and I then resolved that if anything came out of those investigations, both parties should be welcome to any information I obtained.

4596. Did you spend a portion of the 12th, and most of the 13th, in examining St Mary's Loch and its neighbourhood ? I did.

4597. At that time I believe there had been no rain for some weeks ? For six weeks there had been very little rain indeed—nothing to increase the body of water in the streams.

4598. Did you go on to the lake ? I did ; I was very much on the lake both days ; in fact, I was pursuing the double object of observing and angling, so that I was long on the lake.

4599. First, I will ask you with regard to the colour of the water ; what did you find it to be ? A peculiar yellow colour—an amber yellow.

4600. Comparing it with the Edinburgh water which is now supplied, was it much darker than that ? Quite different.

4601. What means did you take to ascertain the colour ? In the first instance, I sunk in the lake a porcelain basin, four inches in diameter, on which I put three or four spots of red sealing wax, so as to have an opportunity of distinguishing them as the vessel went down. I was surprised to find that when it was only about a foot in the water, it began rapidly to put on this yellow tint, and when it was about three or four feet down, it had reached an amber colour, and when it went down to the distance of ten feet and a-half it disappeared entirely, when there was a cloud over the sky, and at twelve feet it disappeared entirely when there was sunshine. Then, when I went home, I put this water into a tall glass jar about three or four inches in diameter, with the top of a very white porcelain crucible at the bottom, and I did the same with the Edinburgh water. In the case of the St Mary's Loch water, the colour of the porcelain through 20 inches of water was of an amber colour, whereas through the 20 inches of water, in the case of the Edinburgh water, the porcelain was perfectly white. Then I put the two waters into a common

water bottle upon the dining-room table-cloth, and then I saw that there was a very distinct difference indeed between them; the table-cloth was a perfectly pure white seen through the bottle of the Edinburgh water, whereas through the St Mary's Loch water, it was of a faint, disagreeable brownish tint. I was very much surprised at this, because I had been led rather to believe previously that St Mary's Loch water was a water quite destitute of any such objection.

4602. With regard to colour, you think that a supply of water possessing that colour is objectionable for domestic and sanitary purposes for a city like Edinburgh? I certainly should be very sorry to produce water at my dining-table of that peculiar colour.

4603. Do you think it would be a water that would be acceptable at Edinburgh for domestic purposes, bearing that colour? I do not think so. I do not think that any person who saw that water would like to produce it upon his table.

4604. Or drink it? I do not know about that. Some people are not very nice about the water they drink.

4605. Did you taste it? Yes. On a previous (parliamentary) occasion I stated that I was no great water drinker, and I still continue to be of that habit; but I did taste it, and it appeared to have the flattish taste of lake water. I endeavoured, with the utmost possible impartiality of taste, to ascertain whether it had a peaty taste or not, but I could not make up my mind upon that.

4607. Did you see minute fleecy particles of dead organic matter? Yes, very minute—like small particles of gossamer floating in the water.

4609. Did you also plumb the bottom of the loch? Yes, in several places.

4610. What was the result of that? The first observation I made was rather a curious one. I have been very much in the habit of using the plummet in deep sea fishing, and I was surprised that I could not feel the plummet touching the bottom. I felt no sensation on its arriving at the bottom. In deep sea fishing you just raise the plummet when you reach the bottom, and you feel every time the plummet strikes the bottom, though it may be 60 or 100 feet deep, just as much as if it were only three or four feet deep; but here there was no sensation on the plummet striking the bottom, though it was evident that it had reached the bottom, because the cord was relaxed. I found this again and again, and I was struck with the fact that in drawing it up there was a sort of suction, as if it was coming up through some soft material; all of which we can easily understand upon the theory that there is loose peat or mud or something at the bottom.

4611. Did you examine the plummet when you brought it up to the surface? I endeavoured to bring up some of the material, but I was not successful in doing so. I was not sufficiently provided with means for bringing up the material from the bottom.

4612. At all events you were satisfied that the bottom of the loch was soft mud? I thought it was minute peaty matter or mud.

4617. Something was said poetically about the silver strand? It is very beautiful to look at, at a distance.

4618. Of what does it consist? Angular stones covered with dirty grayish matter; and on examining it with the naked eye, I found it to consist of very minute fibres of the same weed of a dark greenish colour, covering the stones within the water mark, the dirty grayish colour being the colour which those water weeds assume in drying.

4619. When this vegetable matter was dry it was of the gray colour you describe, and when it was wetted it was of a greenish brown? Yes, very considerably darker, but it was the same weed as that on the stones at the margin of the lake; abruptly there commenced a dark green brownish colour, which made the water look as if it was deep when in fact it was very shallow.

4620. Did you take samples home, and subject them to analysis? Of the water I did. I did not take any of the stones home.

4621. I mean the water. What was the result of your analysis with regard to the presence of organic matter in the water? That there was peaty matter in the water—extract of peat, in fact, and a small proportion of salts—the usual salts contained in our lowland waters, and to an amount rather more than had been found by other analysts—about a  $\frac{1}{1000}$ th part altogether.

4622. Is not it quite possible that the variations in the analysis of this water arise from the water being taken at different seasons of the year, and under different atmospheric influences? I think so.

4623. At one period of the year, samples of water might be taken, the analyses of which would not show the presence of organic matter, while samples which were

taken at a different period of the year would show an inferior quality of water? Quite so. The water at one period of the year might be more diluted by rain.

4624. You have not had the time or the means to make all the analyses you would wish to make? No, certainly not. I have not finished all I should like to do with this water.

4625. Have you seen enough to bring you to the conclusion that at all events the quality of this water is doubtful for the supply of Edinburgh? I think so, from the presence of peaty matter in such quantity that the colour is evident by the simple test to which I subjected it, of examination in a glass jar, and in a water bottle, and from the experiments I have made which satisfy me that the colour is owing to peaty extract.

4633. You say it is a doubtful water—it is not a water, so far as your knowledge extends, which you would recommend to be introduced? No, I would not—I would not introduce it on my own responsibility. I would require more information.

As specimens of the gross impertinence with which the trustees and their counsel were in the practice of treating witnesses whose evidence was likely to thwart their views, the following portions of Professor Christison's cross-examination may be given:—

4677. Are all these matters connected with the water supply of Edinburgh to be postponed till Dr Christison has made up his mind about this St Mary's Loch water? Far from it. I should be glad if Dr Christison had not had anything to do with this investigation at all. It is not with my will that I am here.

4680. Without asking you to pledge your own opinion, I again ask you whether you do not think that the citizens of Edinburgh—and, I venture to say, this Committee also—may be content with the numerous analyses which have been made by most distinguished people during the last two years? That is for the Committee to judge, without my opinion at all.

4681. You do not suggest, then, that this measure should be postponed till Dr Christison has had time to make up his mind fully upon this matter? Most assuredly not, because I do not intend to engage in the investigation at all.

Mr James Dewar, demonstrator of chemistry in the University of Edinburgh, on separate examinations of St Mary's Loch, came to the same results as Dr Christison did, and also as Drs Letheby and Voelcker did in reference to the analyses of St Mary's Loch water.

Dr Jabez Hogg of London, however, performed the part of the matador in this portion of the contest, and delivered the deathblow to the quality of the water of St Mary's Loch, by showing its foul impregnation. This gentleman is surgeon to the Royal Westminster Ophthalmic Hospital, is a professional microscopist, and is honorary secretary to the Royal Microscopical Society.

He subjected four different samples of the water of St Mary's Loch to microscopical observation. The first was taken from the north-west shore of the loch, about nine feet from the shore; and in reference to it he said,—

4867. I found an immense quantity of vegetable matter, composed chiefly of confervæ, navicula, diatomaceæ, and animal matter composed of amæba diffuens, cercomonas, and larval forms of trichoda lynceus, and an immense amount of decaying vegetable organic matter, with fragments of entomostraca and scales of moths.

The second sample was taken with a boat from the centre of the loch, between the old burying ground of St Mary's Kirk and Bowerhope, which was found to be of a rather better quality, containing less organic matter. The third sample was taken opposite the mouth of the Megget water, about twenty yards from the shore, and was much about the same as the previous sample. The fourth sample was a some-

what peculiar one. With the view of having the vegetation on the stones covered by the water on the margin of the loch, and spoken to by Dr Christison and others of the witnesses, examined by a scientific person, a new and clean pail had been procured; an inch or two of small gravel was put into the bottom of it; as many of the stones covered with vegetation as would lie side by side were then causewayed into it, and the interstices filled up with the same gravel, to prevent friction upon each other; and then the pail had as much water put into it as it would carry without spilling. The pail and its contents were then slung from the axle of the carriage to Selkirk, and in the railway train to Edinburgh, and afterwards conveyed in the same way to London, where it was delivered to Dr Hogg for examination. Doubtless the shaking of the pail and its contents in its succession of journeys from St Mary's Loch to London, had detached from the stones some of the vegetable matter, which had begun to putrify. Be that as it may, however, the following is the account which Dr Hogg gave of its state when he received it:—

4873. What did you find there—was that much the same as the other? The water was very bad indeed. The water gave a perceptible odour to the nose at some distance. It could be “nosed,” as we term it, at an ordinary distance.

4874. That is, smelt? Strongly smelt.

4875. What did you do with those stones? They are at my house. I examined them carefully.

4876. What did you find upon these stones—what was there? I found a great amount of organic matter upon those stones. They were covered to some quarter of an inch by vegetable and organic remains of animal life.

Dr Hogg was then asked if he could perform in presence of the Committee any experiments to show the extent of the impregnation of the water with organic impurities, when he answered that putting into the water a small quantity of the solution of permanganate of potash (Condy's Fluid) was the recognised ready mode of testing the purity of water. On being desired to perform the experiment he took a clear bottle containing some of the Edinburgh water, taken from a cistern in town, and on applying the test it became of a fine violet colour, as bright and clear as that of the large bottles shown in druggists' shop windows. Another sample of water, taken from one of the streams coming from the Pentlands, to the west of Glencorse, was tested in the same way, and also remained bright and clear, though scarcely so much so as the former, which was accounted for by its having been collected when the stream was slightly turbid after rain. But on applying it to one of the first three samples from St Mary's Loch—the sample was not specified, as Dr Hogg said they were pretty much the same—the moment the test was applied the water in the bottle began to turn brownish and become turbid, and in a few minutes it had the appearance of muddy ale. On being asked the explanation of the differences in the effect of the solution on these waters, Dr Hogg said:—

4882. The brown indicates that there is a vast quantity of organic matter, and it will keep oxydising by the permanganate of potash until the whole of that matter is thrown down.

4883. That is the recognised mode of testing it roughly? That is the recognised ready mode of testing it.

4884. Can there be any mistake about it? There cannot be any mistake about it.

So much for the experiments ; now for the results. The necessary inference which Dr Hogg drew from these experiments was that there are elements in the St Mary's Loch water which render it very unsuitable for use, and very unwholesome (4885) ; because it is found that during the summer diarrhoeas and dysenteries, and many of our gastric fevers, originate from drinking water of that kind (4886) ; and that at the present time none of the London waters in the least approach in character to that which had been produced from St Mary's Loch, though in 1852 these waters were pretty much of the same character (4888-90). He farther stated that, looking at it from a medical point of view, he was not aware of any process by which that water could be artificially rendered fit for the use of the inhabitants of a large city, because there is a very large amount of organic matter held in solution and suspension, which in that way escapes all filtering ; and filtration of water does not apply to that kind of organic matter which is found in St Mary's water (4891).

A quantity of mud which had been dredged from the bottom of the loch, opposite the mouth of the Megget water, was also placed in the hands of Dr Hogg for examination, after having been in a closely corked bottle for between a fortnight and three weeks. This he subjected to examination by the microscope, with the following result given in his own words :—

4906. You have also, I believe, subjected to the microscope some of the thicker stuff? Yes.

4907. That is the mud on the bottom of the loch? That is so full of organic matter that one is scarcely able to define the amount of nastiness in it.

4908. It is horribly filthy? It is horribly filthy ; it was so bad that upon turning out a bottle in my room I was obliged to turn it out of doors.

It cannot be doubted that these experiments, and the inferences deduced from them had a great effect on the minds of the Committee. They were made on the 5th of July, and the bottles stood on the table before the chairman till the close of the case on the afternoon of the 7th. On the assembling of the Committee on the morning of each day after the 5th, the members of the Committee were observed to take up and examine the bottles between them and the light, the Edinburgh water remaining bright and clear to the last, while that of St Mary's Loch became browner and muddier the longer it stood. The grounds on which the Committee rested their rejection of the Bill did not include the objections to the quality of the water ; but what they saw in regard to it unquestionably strengthened their views of the grounds which they assigned for their decision, and the writer is not speaking altogether without authority, when he says that even if the question had turned upon the quality of the water alone, the Bill would have been rejected.

(e.) *Is the water of St Mary's Loch practically stagnant?*—On this subject the evidence for the opposition varied somewhat from what it was before the Commons' Committee. They did not call their former witness, Dr Charles Wilson, but they brought Dr Christison and Mr James Dewar, to give evidence as to some important observa-

tions which they had separately made at the loch, tending to show that, for at least a long period of every year, the water at no great depth from the surface is absolutely stagnant, and to raise the suspicion that from their temperature the lower strata of water may never rise so as to mix with the warmer water flowing into the loch, and passing along its surface and out by the river Yarrow. But if the lower strata do rise, they are likely to bring up with them a large impregnation of organic impurities, tending seriously to pollute the water flowing out.

The following was what Dr Christison observed in reference to this matter, on his visit to the loch on 12th and 13th June 1871:—

4613. Did you ascertain whether the water had begun to rise from the bottom at all? I forgot to take the means of ascertaining that point by means of the temperature; but understanding that another gentleman was going out to see the water, I asked him to make the observation, and I gave him what I thought was the best mode of doing it with safety.

4614. You would ascertain whether the water from the bottom had begun to move, by the difference of the temperature? Yes; I should come to the conclusion myself, from the great depth of the loch in many places, and considering the coldness of last winter, that the water at the bottom of the loch would not be sufficiently heated to rise, for it is not so much by communication that cold passes from the bottom to the surface, and heat from the surface to the bottom, as by the intestine movement of the water,—by communication the heat passes very slowly through the water. I came to the conclusion that it was very improbable that the water had been sufficiently heated at the bottom at that time to rise, and an experiment was made by this gentleman, who reported to me that there was a difference of 10 degrees between the temperature of the water at the top and at the bottom; at the surface it was 56 and 57, and at the bottom it was 45 and 46.

4615. At what period of the year could you ascertain whether the water did move from the bottom? It might be ascertained in the course of the month of October.

4616. Not till after the summer months? The water can only be heated by the heat of the earth, and the heat of the earth at our latitude and at that altitude is not great, so that I think it must be the month of October before the complete motion of the water would be accomplished.

Afterwards Dr Christison said that it was probable that samples of water taken at one period of the year might show the presence of organic matter, while samples taken at a different period might not, and that this ought to be made the subject of experiment.

Mr James Dewar, whose evidence as to the peaty impregnation of the water has already been noticed, made on 21st and 23d June the observations of which he gave the following account:—

5137. Did you experimentalize upon the temperature of the water at different depths? I wanted specially to ascertain the condition of the lower stratum of water, with reference to the production of a current in this loch; and in order to be distinctly certain, I used two instruments—a maximum and minimum thermometer, Sykes's,—and also one which I obtained from the Meteorological Society, which has a sounder, which is heavy of itself,—and this thermometer keeps, if it has been down for a quarter of an hour, a sample of water at the bottom; and unless there is a very great difference in the temperature when you draw it up, it has not had time to absorb the heat, and you get the temperature in this way just as well as the other. They both agreed, and I was perfectly satisfied.

5138. What do you infer from that? I infer that if the upper stratum of water is still in the same condition and in the same place as it was during the winter months, there is no aeration taking place in this loch, consequently the water must be very badly aerated below. There is no active current; that is perfectly distinct.

5139. Do you agree with what Dr Christison and Dr Letheby have said that it is

desirable, in order to form an opinion of the value or the quality of this water, to have an analysis taken at a later period of the year, after the summer heats? I say so.

In reference to this matter, Dr Letheby said :—

4999. Were you in the room to-day when Dr Christison was examined? I was.

5000. Do you agree with him in his statement that it is impossible to come to a determination as to the quality of the water by samples obtained at certain periods of the year? With regard to loch water of this description, there is no doubt that at some seasons of the year it will have a very different composition; for example, at this season of the year (July), it will be very much better than it is in the autumn, when probably peaty matters to a much larger extent are carried into the loch. In the next place, the lower stratum of water, which is now out of reach of examination, rises into the upper part of the loch, and becomes diffused through it.

Dr Letheby then mentioned the analysis which he made of St Mary's Loch water on 27th March, as to which he gave evidence in the Commons; and after referring to an analysis of a more recent sample, made on 15th June, his evidence proceeded thus :—

5006. \* \* \* The sample taken on the 27th of March contained 1·25 of organic matter. The sample that has been taken more recently, and which shows that the water is rising, and probably throwing more peaty matter up, contains two grains,—that is, three-fourths of a grain more per gallon.

5007. Does that confirm the view expressed by Dr Christison that you are unable at this period of the year to tell clearly what the pernicious effects of that water may be? It does.

5008. Does it lead you to the opinion, that as the weather gets warmer, and the water rises, you would find in the autumn, supposing your experiments were made, as he says, in October, there would be a still greater quantity of organic matter? I anticipate so.

5009. Do you think, therefore, that the analyses made at this season of the year, which have not been made at the end of the summer and in the autumn, are satisfactory tests as to the quality of the water? The analyses merely show the quality of the water at a particular time; and in a large loch, as I have heard it described, like St Mary's Loch, I do not think that any analysis of the water, made in the early part of the year, would be an indication of what it would be at the latter portion of the year.

The trustees' witness, Dr Odling, supported this view; for after having spoken to his analyses of three different samples of water supplied to him by Dr Stevenson Macadam as from St Mary's Loch, he gave the following evidence in cross-examination :—

2286. From the three samples produced before you, you are not prepared to say that at all seasons of the year St Mary's Loch water is a good potable water? Except in this general way, I understand that it is a loch of large magnitude. I can only give you this general answer, that large reservoirs and large lochs do not, as a rule, vary very much in composition from time to time, but smaller ones vary very considerably.

2287. Would you, upon the samples you have had submitted to you, be prepared to stake your reputation that that was a good water at all seasons of the year to supply Edinburgh? Certainly not from the examination of these three samples alone.

(*f.*) *The Animalculæ in the Water.*—On this head the proof for the trustees took a somewhat new direction, compared with its course in the Commons' Committee, not merely in regard to the present question of the animalculæ, but also in regard to the organic impregnation of the water. The reader must have observed, but if the author has as yet failed to make this evident, he will now state it distinctly, that the St Mary's Loch scheme was the creation and adoption of the—well—

cream of the most advanced liberal section of the inhabitants, and so it was promoted in the way peculiar to that section in their political manoeuvres, that is, not by raising themselves or their schemes to a higher level, but by dragging everything better down to or below theirs. So, feeling themselves at a difficulty in promoting the St Mary's Loch scheme on its own merits, they characteristically adopted the mode of attaining their object most familiar to themselves, viz., that of crying down the existing water supply as being no better, indeed rather worse, than that which they proposed to introduce. Samples were therefore collected, Dr Struthers of Leith told how, by Dr Stevenson Macadam and a party, of the water of some of the present reservoirs, and analyses were made of them by Drs Frankland and Macadam, which professed to show that in respect of organic impregnation, these waters were worse than that of St Mary's Loch. Even samples of the most peaty Compensation reservoir that could be got, viz. : Harperrig, from which not a drop of water can be led to Edinburgh, were included, for the purpose, as explained by Dr Frankland, (1237), of showing that new supplies to be got from the Pentlands must necessarily be of the same description. So long as this new evidence bore on the mere quality of the water, the attempt of the trustees to defile their own nest was so contemptible, and so palpably at variance with what every unprejudiced inhabitant of Edinburgh knows to be the fact, viz., that the present water supply of Edinburgh is unimpeachable in point of quality, that it would not have been worth notice ; but when the attempt was stretched the length of showing that the present reservoirs were as full of animalculæ as St Mary's Loch, inferring, of course, that they could be removed by filtration, it became impossible to pass it over, even though filtration was no part of their scheme.

Drs Macadam and Struthers visited the reservoirs on the Pentland Hills shortly before the inquiry in the Lords' Committee. Dr Struthers told that they examined all the reservoirs on the north side of the hills, but they did not examine either of the reservoirs on the south side. Dr Struthers admitted that the object of this examination was to show that all the water now to be got on the north side of the Pentlands was unfit for domestic use. But seeing that the scheme set up by the opposition was to bring the additional supplies entirely from the south side of the Pentlands, this line of evidence would not have been even considered worth notice now, but for the details of the great quantity of water fleas and animalculæ said to have been found in the Clubbiedean reservoir, which were represented to be so numerous that one or two were found in almost every tumbler of water lifted. Dr Struthers, however, gave an account of how Dr Macadam and he got their samples of water and fleas, which they exhibited in Committee, from the reservoir. It is quite sufficient to quote it, and let it speak for itself :—

1519. We had heard a great deal of the large fleas that came from St Mary's Loch, and we went to the weeds at the sides of Clubbiedean, and that was the result

[pointing to a specimen on the table,] which contains so many of that species of flea called *Daphne pulex*. To produce that as an ordinary sample of Clubbiedean water would be fallacious. That was purposely drawn from the edge in order to get a sample with fleas in it.

When Dr Macadam was examined afterwards on the same day, he, having been present and heard the evidence of Dr Struthers, did not contradict this statement; so that it may be inferred that when Dr Wood and he on another occasion inspected the same reservoir and found fleas, as they said swarming, they doubtless hunted them up in the same manner. As Clubbiedean is the only reservoir specified in which fleas were found, it may be taken for granted that the search was unsuccessful in the other reservoirs, though Dr Macadam made a sort of general statement that fleas, (probably "one here and there in some quiet corner," as he said of St Mary's Loch,) are found in every reservoir in the Pentlands.

Now all this attempt to discredit the present supply of water was completely dispelled by the microscopical observations of Dr Jabez Hogg, who examined samples of water taken from every supply reservoir in the Pentlands, and found in them no great amount of vegetable matter, and only a few spores or ova of animals (4913-8), and which were quite good samples as compared with the St Mary's Loch water (4919). But in regard to the last named water he exhibited a drawing which he had made of what he saw in two or three drops of that water under the microscope, containing "remains of boggy particles, vegetable boggy leaves, and hairs of plants," (4905) and "animal matter composed of amæba diffluens, cercomonos, and larval forms of trichoda lynceus" (4867).

Then followed this evidence:—

4893. Those animals exist in that water—you say that it is three drops? Three or four drops.

4894. In addition to what we have heard of in this room, viz.: water fleas, there are the variety of insects that you have mentioned? A variety of very large insects.

4895. By a LORD—Is this the water flea? That is the cyclops; this is the flea; that is a carefully made drawing of the flea.

4896. Mr RODWELL—In addition to these animals, do you find also a great number of the ova and larvæ of them? Yes; immense quantities.

4897. Would any process of mechanical filtration stop these ova? Not that I have found.

4898. They are so subtle that I suppose they would pass through almost any thing? They are so minute, in about a single particle about the size of the head of a pin, we should find three or four thousand of them.

4899. Taking it from a medical point of view again, do you think the introduction of those animals into the stomach is likely to be conducive to health? Not at all.

4900. Should you object to it? I should very strongly object to it; I am a water drinker.

The statement of Dr Hogg as to the abundance of animal life in the water of St Mary's Loch was fully corroborated by Dr Christison, in the letter in the appendix which he wrote to the Lord Provost on 28th June. He was not, however, questioned on this subject in Committee, nor was the letter produced, so that the statement to be immediately noticed was not before the Committee; but, nevertheless, Dr Christison in the letter of 28th June, in which he checked the Provost for

misrepresenting his opinion, stated (and his statement will carry with the inhabitants of Edinburgh as much weight as his oath would do), that "I found generally two water fleas (*daphnia pulex*) in every tumbler I filled, sometimes one only; seldom more."

(g.) *The action of the water on lead.* The only things requiring notice on this subject, in addition to what were formerly noticed, are some recent experiments.

Dr Stevenson Macadam had made some additional experiments as to the action of the water on lead since the Bill passed the House of Commons. His detailed account is too long for these pages; but he got some leaden pipes closed at one end, and some small leaden cisterns as he did formerly, and these were used to test both St Mary's Loch water, and that of the present supply to Edinburgh. The pipes and cisterns were filled with water, which was drawn off every 24 hours and examined, fresh water being always supplied after each drawing off. The result was stated to be that the action of both waters was as nearly as possible the same, the tests which were applied showing no difference in their action; and what action there was was far within the limits of safety.

Nor had Dr Christison hitherto found any action of the water on lead; but he stated that he intended to put it to farther tests.

But Dr Letheby had also since the Bill passed the Commons tested the water pretty closely as to its action on lead. He found that sometimes it did not act, and sometimes it did act, becoming quite milky when tested. In short the new experiments came to the same result as that which he had stated previously, namely, that it is a capricious water; and his evidence on this head is really summed up in these four questions and answers:—

5031. The character that you gave this water with its action upon lead is that of a capricious water? I said so before.

5032. Is it possible that at certain times there may be properties in the peat, or some acid generated, which might prevent its action upon lead? I think it is dependent mainly upon the quantity of carbonic acid that happens to be developed in the water; where the carbonic acid happens to be abundant there is more action on lead; if there is not carbonic acid in the water, it will not act upon the lead.

5033. There may be specimens taken at times which will show no action upon lead? No doubt, I have found that.

5034. At the same time there are some specimens which you, from your own ocular demonstration, proved to act upon lead? Yes; there can be no mistake about it; there it is.

There is no doubt that water has a greater tendency to act upon fresh surfaces of lead than upon old ones, and Dr Letheby referred to the operation of cleaning a cistern with a brush as likely to remove the deposit formed on the lead, and to expose a fresh surface to the action of the water. He was cross-examined as to this, and also as to something which he had said about the action upon lead of the Loch Katrine water, with the following result:—

5046. You talk about scraping a cistern; surely the ordinary cleaning of a cistern does not scrape it? I find when I take a brush and brush old lead, that I bring its surface into a condition to be acted upon by both this and the Loch Katrine water.

5048. Where have you done it in the Loch Katrine water? Samples have been sent to me, and I have made experiments in my laboratory over and over again.

5049. I want to know if there is such an action upon lead as produces a sensible effect upon people's stomachs—it might produce possibly an effect upon a bottle of water? You would not allow me to speak from hearsay, and I do not want to speak from hearsay now; but I say my impression is, that there is a good deal more lead poisoning in Glasgow, besides lead colic, than the public are aware of. That is my impression.

5050. We shall see what the Glasgow people say? I know it is so. I know it is publicly stated that there is no such action; but I know better.

In concluding this notice of the evidence before the Lords' Committee, it may be observed generally that the trustees' evidence was much more constrained than it was in the Commons' Committee. The dashing escapades in which they had indulged formerly were carefully avoided now, for they had been taught circumspection by the way in which the evidence by which they attempted to gloss over the unsound parts of their case had been handled, and the certainty that the opposition, who had been well prepared when they had merely to grope their way, would be still better prepared now; while the evidence of the opposition from the knowledge which they had got of the promoters' case, was much more precise, and was better directed to what were the really insuperable objections to the scheme.

As Mr Rodwell had not made his speech to the Committee before he led his evidence, he at the close of it addressed the Committee, stating in precise terms the grounds on which he asked the rejection of the Bill, and the evidence by which he maintained that his objections were supported.

The ordinary course of procedure would then have been for each of the other petitioners against the Bill to have in succession stated to the Committee their cases in evidence, with speeches of each of their counsel either before or after their respective evidence was led; after which, and immediately preceding the decision, the trustees' counsel would have replied on the whole case.

At the close of the speech of Mr Rodwell for the ratepayers, however, the Committee interrupted the proceedings, and after some conversation among themselves, desired the room to be cleared. After a short deliberation parties were called in; whereupon

The CHAIRMAN states that the Committee desire to hear the reply of the promoters in the case of the ratepayers, before going into the cases of the other petitioners; and if the Committee, after hearing the reply upon the case of the ratepayers, should be of opinion that it was expedient to proceed with the Bill, they would then hear the cases of the other petitioners, and the reply upon them.

It was felt that this was really conclusive of the fate of the Bill, for it could scarcely be conceived that the Committee would have then shut off all the local opposition, and proceeded to a judgment in the case of the ratepayers alone, unless they had almost made up their minds to reject the Bill; because on any other footing they would have had to resume, in the cases of the other petitioners, an opposition of indefinite duration.

Mr Denison was accordingly heard in reply, and the style of argu-

ment which he adopted (but perhaps, after all, he had no choice) was conceived in the same overbearing spirit that had characterised all the behaviour of his clients towards the ratepayers. After trying to prove that his clients were in every instance in the right, and the opposition in every instance in the wrong, his speech closed with declamatory invectives, of which the following are specimens :—

You are asked to reject this Bill. What will be the consequence of rejecting it? What will Edinburgh gain by your rejecting it? It has been kept in a flame and in boiling water from 1868 down to the present time by reason of the unlucky accident of the St Mary's Loch being struck out of the scheme on a standing order objection. You see the heat to which the water has risen now. Do you think the heat will subside by rejecting this Bill? The trustees are responsible for supplying Edinburgh with water. Do you think that rejecting this Bill will induce them to adopt any of the schemes which are said by their witnesses to be absurd and impracticable? They cannot do it. It is not as if you had two rival water Bills before you; you might then pass the one and reject the other. But you cannot do that—you can only reject the Bill; and I say, that rejecting this Bill will only keep Edinburgh in hot water for I do not know how long a time to come, and there is not the slightest chance that Edinburgh will get any additional supply of water whatever; and least of all is it probable that the trustees will come for any scheme before your Lordships, because though your Lordships have rejected the other scheme and not this, I must deal with it as if your Lordships had rejected this Bill. The Pentlands scheme is utterly absurd and impracticable; you said it was, and we believe it is, and we shall not, by a portion of the ratepayers on the other side, be laughed into believing the contrary. \* \* \*

I have not said a word about costs. I remember in the last of these proceedings this expenditure is put down at no less than £20,000, which we were charged with wasting. No doubt the opponents say we waste it; *but if the opponents bring us to fight these battles here, and to fight them at the distance from home at which they have to be fought*, I daresay that is not an exaggeration. But it will have to be done again if you throw out the Bill. It has been done twice already. It was done in 1869, and at the end of the fight in 1869, at the last moment, when my learned friend, Mr Hope Scott, was going to make his speech, he was pulled down from behind and told we have settled, so that there the expenditure went for nothing, and they only saved the hour of the last speech. What has been spent now I do not know. But I know this case has lasted longer than that; and if the matter is to be fought another year, I do not know why it should not last as long again. That is another thing that will fall in the long run, and, in the end, upon the town itself. I hope your Lordships will be satisfied first that this is a thoroughly bad scheme before you expose the town of Edinburgh to the further litigation, and the further disturbance, which the rejection of this bill will certainly cause, because certainly, for some time to come, there will be no increased supply, and there is a strong probability that there will be no increased supply at all.

The room was then cleared, and after a deliberation of about twenty minutes, on parties being re-admitted, the Chairman read the following as the decision of the Committee :—

The CHAIRMAN—This case being a very important one, apparently, the Committee have thought it right to put in writing their opinion, and the reasons for coming to it. The Committee are of opinion that it is not expedient to proceed further with the Bill. They hold that, with better care and regulation as regards waste, and with increased storage for the utilisation of water drawn from the present sources of supply, Edinburgh can obtain all that is requisite for her needs; and they hold further that they cannot sanction so large an expenditure of money, which appears not to be required at present.

On this decision being pronounced, an application was made to the Committee by Mr Serjeant Sargood, the counsel for Messrs J. & H. Brown & Co., manufacturers, Selkirk, for their costs against the trustees, under the provisions of the Act 28 and 29 Vict. cap. 27, enti-

tuled "An Act for awarding Costs in certain cases of Private Bills," by the first section of which it is provided, that when the Committee on a private Bill shall decide that the preamble is not proved, or shall give effect in clauses for the protection of petitioners, and shall unanimously report that such petitioners have been unreasonably and vexatiously subjected to expense in defending their rights, they shall be entitled to recover from the promoters such costs as the Committee may think fit. The Committee, however, declined to entertain the application.

Such was the result in Parliament of this great contest, being a victory gained by the citizens against a body of trustees, who attempted to carry out their own individual views, utterly ignoring the opinions and wishes of the ratepayers, and with a strong suspicion that they were promoting their own individual whims and interests rather than the public good; and it now remains to be considered what were the consequences flowing from this victory.

#### 6. THE CONSEQUENCES OF THE CITIZENS' VICTORY.

(1.) *Its pecuniary results.*—Had the trustees, after the rejection of the bill, and after a reasonable time had elapsed to allow angry feelings to subside, accepted the situation, and frankly acknowledged, or even acted as if they acknowledged, their error in not laying the details of their scheme before the ratepayers prior to promoting it, and in persisting in its promotion after the citizens had unequivocally declared against it; and had they farther undertaken that no future scheme of water supply would be promoted by them without previously obtaining the assent to it of the ratepayers, it is almost certain that no exception would have been taken to their paying the costs of their abortive Bill out of the rates. But in place of that, the very first thing they did on their return from London was to set about trying to prove that the Pentlands scheme was all a myth in respect of additional supplies of water to be got there.

To understand the tortuous mode in which they sought to arrive at this result, it is necessary to explain the relative positions towards the trustees held by the two consulting engineers, Mr Leslie and Mr Bateman. Mr Leslie had been appointed their general consulting engineer in August 1870, and as such had been consulted about the St Mary's Loch scheme and works, and the estimates; but because he would not report that the works could be executed under £500,000, he was superseded in reference to the new works (Evidence in Commons, 5250), he being still retained as consulting engineer in reference to the existing works (5117). He had, however, given this evidence in reference to the Pentland district:—

5216. It was, in your judgment, unwise to go to that district, and to depend upon it for an increased supply of water to Edinburgh? Yes; for a considerable increase I think it would have been so. You might get a little increase.

Mr Bateman, on the other hand, having been ready to indorse Mr Stewart's estimate of the cost of the St Mary's Loch scheme, was

appointed consulting engineer as to the new works ; but he had given evidence (Commons, 4477) that 8 or 10 millions of gallons per day could be got from the Pentlands.

With these circumstances in view, the reader will be better able to see the drift of the following remit which the Water Trustees made on 21st July 1871, on the motion of Bailie Lewis :—

That having regard to the decision of the Select Committee of the House of Lords, the trustees remit to the Works Committee and the consulting and local engineers of the Trust to make inquiry as to any improvement in the system of distribution, and as to waste which may be preventable ; and to the Works Committee and Mr Leslie as to the sources pointed at as suitable for additional supply, with power to Mr Leslie to take such assistance as he may think necessary from Mr Hawksley and Mr Forman, or any other engineer, as he may think necessary, and to report ; and direct the reports obtained to be printed and circulated in full among the members of the trust.

In urging his views, Bailie Lewis stated the object of the latter portion of the remit thus : “ What was proposed was to test the evidence submitted by the opponents of the St Mary’s Loch Bill before the highest tribunal in the land ; ” and he supported his remit by the following choice specimen of stump oratory :—“ Talk of public opinion being against the trustees ! He did not believe it. He believed the public knew that the trustees had no interest to serve but the public interest ; and the trustees knew that so long as they had a good argument to submit, and so long as they had faith and confidence in the public, the public would stand by the men who had proved themselves to be disinterested in a great social controversy like this.”

The plain inference from this characteristic piece of declamation was, that notwithstanding all that had passed, the existing trustees maintained that they still possessed the confidence of the public, who would support them in a renewed attempt to revive the St Mary’s Loch scheme, provided they could cast doubt upon the sufficiency of the Pentlands as a source of additional supply. The choice of an engineer to report on this subject was skilfully devised to effect the purpose in view. The natural person to appoint for such an inquiry, supposing them to adhere to their own engineers, would have been Mr Bateman, their selected engineer for new works, but then he had declared that the supply from the Pentlands could be more than doubled ; and so obviously he was out of the question. Mr Leslie, however, whose engineering had, when it suited their purpose, been confined to their existing works, had given an opinion unfavourable to the capabilities of that district, and so Mr Bateman was in his turn superseded as the engineer for new works, and Mr Leslie replaced, as being more likely than that gentleman to condemn the Pentlands.

To dispose of this remit, though its result is, strictly speaking, beyond the object of this history, it may be mentioned that this ingenious but transparent device failed in practice ; for Mr Leslie, on a careful examination of the district, satisfied himself that he had formerly under-estimated its capabilities, and reported that, subject to provision being made for compensation, there can be brought in from

the Pentlands, for an expenditure of £205,000, an additional supply of  $6\frac{1}{2}$  millions of gallons per day, which, added to the present supply, would give upwards of 50 gallons per head per day to a population of 254,000.

The trustees having thus taken up the ground of attempting to maintain that they were right in promoting the St Mary's Loch scheme, and having entered upon a farther squandering of trust funds, in prosecuting at their own hands, and in defiance of those ratepayers who had successfully opposed that scheme, new inquiries for the purpose of discrediting the capabilities of the Pentlands,—the opposing ratepayers, with the view of checking this defiance of them, and the consequent reckless misapplication of public funds, resolved to bring to issue before the Court of Session, in the most summary manner, the right of the trustees to squander the funds of the trust in the way they were doing. Accordingly, Mr Charles Cowan of Loganhouse, who had been the chairman of the opposition, and Mr Colin Mackenzie, W.S., who had been a member of the Law and Finance Committee which conducted it, presented, in their character of ratepayers, under the Edinburgh and District Waterworks Act, 1869, a Note of Suspension and Interdict, praying the Court to prohibit and interdict the acting trustees from expending the funds of the trust in payment of any costs incurred in promoting the abortive scheme, and from raising money, and imposing and levying rates for any such purpose, on the ground that all the funds and rates which the trustees were authorised to raise and levy were appropriated by their Act to certain specific purposes, and to these purposes only, which did not include the promotion of new schemes of water supply. Interim interdict was granted in the Bill Chamber by Lord Ormidale on 21st July 1871; and it was renewed by Lord Mure, in a slightly modified form, on 31st August following, in sending the case to the Court of Session to be discussed there. In the Court of Session it came to depend before Lord Gifford, who, on a record being made up and closed, sent it on 21st October 1871 to his debate-roll for discussion, preliminary to judgment.

The cause stood in Lord Gifford's debate roll, to be taken up in its order, when the municipal elections took place in November; and reference has been already made to a statement by the Lord Provost at the meeting of the electors of St Andrew's ward, held previous to the election, that he had departed from a previous resolution which he had made then to resign his offices both of Provost and Councillor. The explanation of his reasons for this course of conduct has been left till now for consideration, because it arose out of the law proceedings just noticed. After a resolution had been made and seconded at his ward meeting, to the effect that he and Councillor Mossman had forfeited the confidence of their constituents, and should be asked to resign, he evaded putting the proposed resolution to the meeting and stated,—“Allow me to say that I had made up my mind entirely to retire in November, and in that way you will have no trouble in kick-

ing me out." He then made an attack on Mr, now Councillor Mansfield, advocate, the mover of the resolution, and insinuated that he had been employed to make it, pointing evidently to the ratepayers' Committee and their Secretary ; and then on Mr Mansfield indignantly denying all employment or concert in the matter, he refused to retract the charge or insinuation so made ; and he concluded with the following statement made amidst a perfect babel of interruption and confusion.

This meeting to-night would have decided me to retire entirely in November, but with the action brought against the trustees in the Court of Session, if I had been guilty of retiring at this particular juncture, and leaving my colleagues in the lurch to fight the battle in the Court of Session, it would have been beneath all notice. I have not the slightest wish to remain in power, neither do I care *that* (snapping his fingers), but I would not leave my colleagues to fight the battle in the Court of Session. I do not care a farthing how you vote. I don't care twopence for a single thing of the kind ; but as my colleagues are bound to fight the battle, I wish to fight it along with them.

To understand his motive for clinging to office after his constituents had, at a public meeting called by himself and his colleagues, passed a resolution all but unanimously declaring that they had forfeited their confidence, and calling on them to resign, it is necessary to keep in view the excited state of public feeling in Edinburgh, and the unmistakable hostility of the citizens of Edinburgh to the St Mary's Loch scheme and its promoters. Prior to the new elections the Town Council may be said to have been almost equally divided on that question—and of the thirteen Councillors retiring by rotation, it happened that no less than ten were supporters of that scheme, only three being opponents of it. The latter three were almost certain of re-election, while four out of the other ten were certain to be replaced by opponents to the scheme, there being no opposition to them, with a very strong probability of opponents being returned for at least several of the remaining six wards, formerly represented by promoters. It was thus evident that the Edinburgh portion of the water trust would be entirely changed (the Provost excepted who was a trustee *ex officio*), for the majority of the new Town Council would be opponents of the scheme, and would of course elect trustees whose opinions concurred with their own. In so far as the litigation was concerned it was of little moment whether the Provost was in the trust or out of it, because the interdict was directed against him as an individual as well as a trustee, and he had thus a perfect title to appear and protect his own interest, whether he was a trustee or not. But the shoe pinched in regard to the expenses of the litigation, and therefore this subject requires to be looked into. Before the process of interdict was commenced, the old trustees had paid away nearly £3000 of trust funds towards the expenses of their Bill, as appeared from their accounts ending 15th May 1871, made up and exhibited under the provisions of their Act ; and probably after that date, and before the interdict was granted, they had paid farther sums on the same account, and they were under heavy liabilities for farther expenses of promotion. If the interdict proceedings should

be successful, then the whole of these sums would require to be replaced, for the same principle of law which prohibited the expenditure of funds for similar purposes, would require the replacement of what had been already expended. It is quite clear, therefore, that the question which was under litigation was one of a purely personal character, and to be litigated at the personal risk and expense of those interested. Should the ratepayers succeed, their expenses of the suit would be a charge not on the trust funds, but on the individual persons who were misapplying them. Should the result be otherwise, and the trustees be successful, their costs, on the other hand, could not be charged on the trust funds, because they were not defending the trust from a foreign attack, but were defending themselves; and so they must recover their costs from the ratepayers who sought to make them liable, and who, in the Bill Chamber, had found caution for payment of any costs of the suit in payment of which they might be subjected.

But the Lord Provost's views were very different when he snapped his fingers in the face of his constituents, and resolved in defiance of them to cling to office during the remaining year of his official life. His purpose was to coalesce with the members of the trust from Leith and Portobello, and any stray member from Edinburgh whom he could lure from the path of duty, in order to get his own personal question of individual liability defended at the expense of the trust. He remained in office, not to defend or benefit the trust or the ratepayers, but to endeavour, at their expense, to defend his own pocket, and the pockets of his late colleagues. That this is no uncharitable insinuation founded on the sayings and doings of a muddle-headed man will soon be made apparent.

The interdict process was debated by counsel before Lord Gifford on 21st, 25th, and 28th November; and on 6th December 1871, he pronounced the following judgment:—

Recals the interdict granted *ad interim* by the interlocutor of 31st August 1871: Suspends the proceedings complained of interdicts; prohibits, and discharges the respondents in terms of the prayer of the Note of Suspension; declares the interdict now granted to be perpetual, and decerns; finds the suspenders entitled to expenses, and remits the account thereof, when lodged, to the Auditor of Court, to tax the same and to report.

There was appended to this judgment a long and elaborate note, shewing the grounds on which the Lord Ordinary proceeded, and citing a number of authorities in support of them. The substance of the note may be condensed as follows, his lordship's expressions being adhered to as much as possible.

This is a very important case, involving large sums, and the decision of which adversely to the respondents, may give rise to serious questions of personal responsibility.

The case is also one of very general interest as affecting the duties, powers, and responsibilities of public and statutory trustees. The entire *bona fides* of the respondents in their whole actings was very strongly pressed on the Lord Ordinary, but he has not been able to find that mere *bona fides* on the part of the Trustees is sufficient to exclude consideration of the great question, whether the costs and

expenses of promoting the Bill to obtain a supply of water from St Mary's Loch, are, or are not to be defrayed from the statutory funds in the hands of the respondents as trustees under the Edinburgh and District Water Works Act of 1869.

In the debate before the Lord Ordinary there was not much conflict between the parties as to the *general principle*, or the *general rule of law* applicable to cases like the present; the great contest and the great difficulty arises in the application of an admitted principle to the peculiar circumstances of the present case, to the position of the respondents as trustees, and to the duties incumbent on them as such.

In general it may be said that trust funds can only be applied to trust purposes; that in every case the powers of trustees are limited by the constitution of the trust; and that they cannot divert the trust funds, or any part thereof, to purposes either opposed to, or different from the purposes for which the trust was created. Of this principle there are multitudes of illustrations, applicable to every different kind of trust; but it is always in each case a question,—What is the real purpose of the trust, and what are the powers incidental thereto, which are either expressly, or by implication vested in the trustees? And to determine this question, the nature, constitution, and circumstances of each particular trust must be looked to; and, as these vary in each case, the general principle will vary in its application.

In all cases, besides the powers *expressly* conferred upon trustees, there are many powers which are held as implied, and which, from their nature and variety, must almost necessarily be left to implication, and the real difficulty often is to draw the line, and determine the limit of these implied powers; and when the power claimed and exercised by trustees is peculiar or abnormal in its character, the difficulty is greatly enhanced, and a very careful consideration may be required to determine whether it is or is not fairly within the trust.

Now the promoting or opposing a bill in Parliament may be said to be in some respects an extraordinary act on the part of trustees. Not that it is an uncommon or unusual thing for trustees to do, for trustees of various descriptions both promote and oppose bills in Parliament every day; but the procuring of *new legislation*, or of powers which the legislature alone can give, is not, in general, an object for which a trust is constituted; and unless there be express power to go to Parliament, it will require in general a pretty strong implication to justify trustees in doing so at the expense of the trust.

When the object of a bill promoted by the trustees is to obtain an increase or alteration of *their own powers*, or to change or subvert their own constitution, a strong case must be made out before the expense of such an unsuccessful attempt can be charged against the proper trust funds. For it can never be presumed that trustees are appointed for the very purpose of altering, amending, or it may be entirely subverting their own powers and constitution.

Applying these principles to the present case, the Lord Ordinary thinks, on a consideration of the whole statutes held by the respondents, that the respondents' trust was not constituted or created for the purposes of obtaining new or additional supplies of water, that is, new sources of supply, but solely for the purpose of administering the existing supply, that is, the supplies and sources of supply which by the statutes are now vested in the respondents. He has consequently felt himself compelled to disallow as a charge against the Trust, that is, against the assessments which the respondents levy, the costs of the unsuccessful measure which the respondents promoted in last session of Parliament.

Avoiding all detail, and all minute criticism of clauses, the Lord Ordinary will shortly indicate the grounds upon which his opinion rests.

1. The Act of 1869, under which the respondents are incorporated, does not by any express provision authorise them either to bring in new sources of supply, or to make application to Parliament for powers to do so.

2. The respondents' Act of 1869 does not even narrate that the supplies or sources of supply thereby vested in the respondents were insufficient or inadequate, or that it was expedient to get farther or additional supplies.

3. It is true that there are some expressions in the Act of 1869 which might point to additional supplies. These expressions, however, are ambiguous. They may mean either "supplying" and providing from *existing sources* handed over to the trustees, or from *new sources* not yet obtained; and the Lord Ordinary thinks, on a purview of the whole statutes, that the former meaning is that truly intended.

4. The vesting clauses of the statute are confined to the estates, subjects, and sources of supply which belonged to the old company, and it is one of the inductive clauses of the statute that it is expedient to transfer the old undertaking to a new

and public trust. Additional powers, no doubt, may be and are expressly conferred upon the new trustees, but all this is only for the administration and management of the old estate.

5. And this leads to the remark, that the old Water Company had no express power by any of their statutes to promote bills in Parliament, or to get up schemes for obtaining new sources of supply, and no such power seems to be implied in any of the old Acts.

6. The respondents, by their statutes, have no power to make new works for bringing in new supplies, but have merely power to make and maintain works for distributing the existing supplies.

7. The same result follows from a consideration of the *funds* which the respondents are authorised to raise. These funds consist of—*first*, sums which the trustees may borrow; and, *second*, sums which they may raise by assessment. The moneys borrowed are only applicable to three purposes—1st, the mortgage debt of the old Company, and sums payable to the old Company; 2d, the expense of renewing “main pipes and conduits;” and, 3d, the expense of laying additional service pipes. The only other funds at the disposal of the respondents are the annual rates and assessments. Now, these assessments are only applicable to annual *charges and expenses*, or, as it is expressed in the Act itself, to sums “chargeable against revenue.” But the expense of a new Act for bringing in St Mary's Loch, and of all the engineering and other surveys necessary, can hardly be said to be a proper or equitable charge against revenue. If the Act had passed, these would have been a charge against capital.

8. One great difficulty—indeed, it may be said, *the* greatest difficulty—in the case arises from the duties imposed on the trustees by statute, and the penalties to which the trustees or the trust funds may be subjected for failure to discharge these duties. By section 35th of the Waterworks Clauses Act, the respondents are bound to keep in the pipes a sufficient supply of water “constantly laid on under pressure,” and to lay down pipes to every district within the limits of the Act, provided an undertaking is given to pay, for three years, rates not less than one-tenth of the expense; and by sections 36th and 43d, penalties are imposed for failure or neglect to supply water, or to lay down such pipes. The force of these clauses is intensified by the provision in section 4th of the respondents' Act of 1869, that no penalties shall attach for a period of five years from the vesting of the undertaking in the present respondents—that is, for five years from Whitsunday 1870.

The Lord Ordinary feels that these clauses do create great difficulty and embarrassment. They raise a very powerful argument in favour of the respondents, and they merit the closest and most anxious consideration. Taking everything into view, however, the Lord Ordinary has come to think that all these clauses must be held to be conditional, and as having reference to the estate and supply at the command of the respondents. The duty on the respondents as *public trustees* must be measured by the means at their disposal. The penalties are imposed in the event of “neglect or refusal” to supply, and it is thought that there can be no neglect or refusal when the statutory means, with which alone the respondents have to do, prove insufficient.

Without in the least disguising the difficulty, therefore, the Lord Ordinary feels himself compelled to interpret the penalty clauses as only applying to the case of the trustees failing or neglecting to use the means at their disposal.

9. On looking at the Bill promoted by the respondents, the Lord Ordinary observes that, among numerous new powers, power was asked to impose new and additional assessments. It is an additional reason for holding the promotion of such an Act to be *ultra vires* of the respondents, that they were seeking to impose *new assessments*.

The Lord Ordinary will conclude with one general observation. It was strongly urged upon him that it was extremely expedient that a public body of trustees like the respondents should be invested with the power of seeking out new sources of supply of water, and of obtaining Acts to bring in new supplies therefrom. To this it is a sufficient reply, that no such power has been conferred upon the present respondents, and that a power so great should not be held as conferred, except by express legislative provision. But the Lord Ordinary doubts extremely the expediency of vesting such powers in a public trust. The recent contest affords a very strong illustration of the hardships to which such powers might lead. A very large section of the community, claiming to be the great majority, opposed the Bill promoted by the respondents, and what the respondents now seek is, that these opponents shall not only be left to pay the whole expenses of their successful opposition, but

shall, in addition, be assessed in order to defray the expense of promoting the very measure which they defeated. Strong reasons of expediency might easily be urged why the expense of legislative proceedings and legislative contests should not be provided for by anticipation, but should be left to the legislature itself, and to the public spirit and personal responsibility of the promoters.

The Lord Ordinary's judgment, however, is not rested on grounds of expediency, but on a special consideration of the respondents' statutes. The grounds of the Lord Ordinary's judgment would not in the least apply to bills promoted by Town Councils or by other bodies who hold funds dedicated to general or public purposes. All he has decided is that the assessments imposed by the respondents are not applicable to promoting bills in Parliament for obtaining water from St Mary's Loch.

Before this judgment had been pronounced the term of office of all the trustees had expired, with the exception of the three Provosts, who were members *ex officio*; and while the Town Councils of Leith and Portobello had either re-elected all their former members, or at least others who were of the same opinions in reference to the water supply, the Town Council of Edinburgh had, as anticipated, appointed new trustees understood to be opposed to the St Mary's Loch scheme, and the mode of its promotion, in room of all the former trustees who had promoted it in Parliament. In consequence there was in the newly constituted water trust a decided majority opposed to the views and policy of the former trustees.

The judgment of Lord Gifford came like a thunderbolt on the members of the old trust who had promoted the Bill. Lord Gifford had, before his elevation to the bench, been the standing counsel of the trust, and (how it matters not), the dominant majority had got it into their heads that he had told Mr Marwick again and again that the Act of 1869 gave them full power to prosecute their Bill at the expense of the trust. They had therefore confidently reckoned on a judgment in their favour, and their mortification and rage were extreme when not merely an opposite judgment was pronounced, but an opinion was indicated that the possession by them of such powers as they claimed was inexpedient, as leading to great hardship in imposing on the ratepayers the expense of promoting the very measure which they defeated. Councillor Archibald of Leith took up the rôle of stump orator, *vice* Bailie Lewis, dismissed the service; and immediately on Lord Gifford's judgment being given he got Provost Watt and Bailie Pentland, both of Leith, to join with him in a requisition to the Lord Provost to call a special meeting of the trustees, to consider the course to be pursued in reference to it. The Lord Provost promptly acted on it, and the meeting was held on 8th December, when Mr Archibald, in a tirade of abuse of Lord Gifford, compared to which the worst of the harangues of Bailie Lewis was mild and gentlemanlike, and which was of course unreprieved by the Provost, moved that the trust should take the judgment to review in the Inner House, implying of course that this was to be done at the expense of the ratepayers. This was met by an amendment that no action should be taken by the trust. The amendment was carried by 11 votes to 8—one Leith member (Forsyth) declining to vote. The minority of eight who voted for defending individuals at the expense of the trust, that is, of the rate-

payers, was composed of the Lord Provost, and Councillors Wilson and Methven of Edinburgh, Provost Watt, Bailie Pentland and Councillor Archibald of Leith, and Provost Wood and Bailie Hunter of Portobello; and it may be mentioned that every one of these members was implicated, more or less, in the expenses connected with the promotion of the Bill, though Councillors Wilson and Methven had broken off before the measure reached Parliament.

The next movement took place in the Town Council of Edinburgh, where the Lord Provost, at a meeting on 19th December 1871, in pursuance of the sole purpose for which he had stated that he remained in office, moved that the judgment of Lord Gifford be remitted to the Lord Provost's Committee to consider and report. The motion was opposed, but on a division the remit was carried, there being a feeling that this was the proper mode of dealing with a matter to which the Council were not directly parties. But practically the matter was shelved, because from the state of the Court of Session Rolls it was pretty evident that the case if taken to the Inner House, would be disposed of before the Committee could make any report.

Another desperate attempt was made at a meeting of the water trustees on 29th December 1871 to get them committed to a reclaiming note to the Inner House. The Town Councils of Leith and Portobello, more anxious than their Edinburgh brethren to assist the old trustees, had, apparently in concert, recommended to the trustees "that a reclaiming note should be lodged by the present trust, with the view of enabling the Corporations of Edinburgh, Leith, and Portobello to reconsider the whole question of water supply, and the best mode of equitably dealing with the questions involved in the interdict case." A motion to that effect by Provost Watt was met by an amendment by Councillor Wormald to postpone consideration of these reports or recommendations until the Corporation of Edinburgh should report. The amendment was carried by 13 to 9, the minority consisting of the same members who composed the previous minority of eight, with the addition of Councillor Forsyth of Leith, who had formerly declined to vote.

Every card in the hand of the old trustees calculated to win the trick before the expiry of the reclaiming days having now been played in vain, they had no choice but to submit to fortune, and lodge a reclaiming note on their own account, which they did accordingly as individuals; but Bailie Cousin, Convener Robertson, and Councillors Wilson, Crichton, and Methven, the five trustees who had voted against the measure from the commencement of its promotion in Parliament, declined to join in it.

The decision of the First Division of the Court, affirming the judgment of Lord Gifford, was given on 8th March 1872. Three of the judges, the Lord President, and Lords Ardmillan and Kinloch expressed their concurrence in the views of Lord Gifford, while Lord Deas gave his opinion in favour of the contention of the old water trustees. The following extracts from their opinions, which went

into the question in detail, will sufficiently show their respective views :—

LORD KINLOCH—This case appears at first sight as if it occupied a somewhat wide field. In reality it lies within a very narrow compass. The necessity of much enlargement is greatly obviated by the able and elaborate exposition given in the note of the Lord Ordinary, in whose views I generally concur. I have arrived at the same conclusions as his Lordship, and this without much difficulty.

The Lord Ordinary presents an argument of great weight for holding that the respondents had their whole rights of administration confined to the springs and other sources of supply possessed by the prior Water Company at the time of the transference of the undertaking, and that they had no concern with the acquisition of any additional supply. Speaking generally, and with regard to the primary design of the Act of 1869, I concur in the Lord Ordinary's views. At the same time, I do not think it necessary to the determination of the present case to pronounce that the trustees were excluded from obtaining additional sources of supply where the acquisition of these did not require parliamentary authority, as, for instance, by voluntary contract with a landholder for payment of an annual consideration out of the rates. There is a great difference between making a voluntary contract in the course of administration, and making application to Parliament for compulsory powers. I desire not to preclude such a question. I equally desire not to prejudge it. I reserve my opinion on the point. I notice it now merely to say that in place of going on the assumption that the trustees were absolutely precluded in all circumstances, and by whatever mode, from obtaining additional sources of supply, I prefer resting my opinion on the broad general rule applicable to all trusts, statutory or private, that the trustees have no power to prosecute parliamentary action for obtaining new or varied powers at the cost of the trust funds. The application of this principle seems to me sufficient for the determination of the present case.

There has been much said as to the inexpediency of those vested with a public trust for the supply of water to a large town like Edinburgh being held destitute of power to go to Parliament to obtain authority for acquiring additional supplies. This would not in any view be sufficient ground for a judicial determination. But it must not be forgotten that there would be at least as great inexpediency in giving to such a public body the discretionary power of prosecuting every theory which, in however good faith, they may unwisely and dogmatically maintain, at the cost of the funds under their charge. It is probably on the whole safer and more advantageous, to throw them, for the cost of any scheme for extending or varying their powers, on the voluntary assistance of those beneficially interested. The public will seldom go long or go far wrong in a matter closely affecting their interests. There is infinite advantage in possessing a clearly settled rule for the guidance of trustees, public or private, in preference to every case being a matter of speculation or caprice, and unprofitable public strife.

LORD ARDMILLAN—I have very carefully considered the important questions here raised, and the able and ample arguments by which the pleas of both parties have been supported. I cannot say that I have found the question free from difficulty. But I have, at the close of an anxious study of the Statutes, and of the law applicable to statutory trusts, arrived at the same conclusion as the Lord Ordinary, and very much on the same grounds as those explained in his Lordship's Note. I do not intend to state at any length the course of thought and reasoning which has led me to this opinion. The elaborate Note of the Lord Ordinary, and the opinion now given by Lord Kinloch, render such explanation unnecessary.

I need only mention, without explaining, the authorities, English and Scottish, referred to by the Lord Ordinary. These instruct that trust funds can only be applied to trust purposes; and in a statutory trust the purposes and powers of the trust must be found within the Statutes. The rule which I deduce from these authorities is that the costs of parliamentary procedure cannot be charged against a public trust where they are not incurred in the fulfilment of the declared or clearly implied purposes of the trust, or in the exercise of powers conferred expressly or by clear implication on the trustees. The decision of Lord Chancellor Cottenham, in the case of *Brighton v. North* Feb. 13, 1847, that trustees are entitled to the fair expense of defending the trust estate, by opposing a bill which would have led to injury to the trust estate, is a reasonable qualification, but not an exception to the

rule. That qualification is not, however, applicable here. The opposing a measure tending to injure the trust is a very different proceeding from that with which we are now dealing. I shall add no more. I quite appreciate, and feel the force of the suggestion, that it is hard to throw the burden of these costs on the trustees. It is so. I regret that no arrangement has been made, and that we are under the necessity of deciding the point. But, on the other hand, surely it would be hard if those who have voluntarily paid the cost of their successful opposition to this Bill were now assessed for payment of the cost of its unsuccessful prosecution. I feel that I have no other alternative, in accordance with my view of the statutes, and of the legal principles applicable to public trusts, than to express my concurrence in the opinions of Lord Kinloch and the Lord Ordinary.

LORD DEAS.—\* The law applicable to such a question as the present, he understood to be, that if trustees were applying for powers either inconsistent with the purposes of the Statute, or not fairly contemplated by the Statute, they went to Parliament at their own risk as regarded expenses; but, on the other hand that if, according to a fair and reasonable construction of their Act of Parliament—taking into consideration the circumstances in which it was passed—it appeared to have been contemplated, although not expressly said, that additional water was to be brought in, then the trustees were entitled to go to Parliament for those compulsory powers, without which they could not carry into effect that contemplated purpose of bringing in more water, and if they did so in good faith they were entitled to lay the expenses on the rates, whether the application was successful or not.

He agreed in the law laid down by the Lord Ordinary. He also agreed with him that there was no dispute here about the general law or general principle applicable to such cases, and that the only question was (as the Lord Ordinary fairly puts it) "What is the real purpose of the trust, and what are the powers incidental thereto, which are either expressly or by implication vested in the trustees?"

If what the trustees here did was done in accordance with the real purpose, or one of the real purposes of their trust, and with the powers conferred on them by implication, although not expressly set forth or specified, then the rule of law was with them; if not, then it was against them.

Or, to apply the Lord Ordinary's test in still more direct words to the case in hand: If it was the real purpose of this trust, or one of its real purposes, that an additional supply of water should be obtained from new sources, then the law was with them. If not, it was against them.

He was humbly of opinion that, upon a fair and reasonable construction of this Act of Parliament, the real purpose here just stated was sufficiently apparent; for, if this was conceded, it would not, he thought, be disputed, and obviously would not have been so by the Lord Ordinary, that the power to do what was necessary to carry out that purpose was necessarily implied.

He did not call in question the rule of law that if trustees went to Parliament for powers to change the purposes of the trust, or powers to do something not fairly within the contemplation of the trust, they went at their own risk as regarded expenses. Neither did he impugn the authority of any of the numerous cases cited.

"I rest my opinion upon the fair and reasonable construction of the Statute, and that construction leads me to the result that the trustees were entitled to go to Parliament as they did, and that, although their scheme was not sanctioned, they are legally entitled to lay the expenses so incurred upon the rates."

The LORD PRESIDENT--This is a question which depends upon a rule in law which is almost a self-evident proposition--namely, that trust funds cannot be lawfully used or expended, except for trust purposes.

After referring to the Act of 1869, and to the clauses of the Waterworks Act incorporated with it, some of which had been commented on by Lord Deas, his Lordship proceeded:—The result is, I think, clear enough that the trustees have no power vested in them to increase their supply by bringing in water from new sources, or of going to Parliament for the purpose of obtaining powers to enable them to do so. And while they have no power conferred on them to do that, they have no funds in their hands which can be lawfully applied to such a purpose, because every shilling of the funds they have is specifically appropriated. But the question is asked, If that be so, and if the rule of law applicable to such a trust is so strict in its application, how is an adequate supply to be got? how are the powers to be ob-

tained from Parliament for the purpose of bringing in an additional supply of water? The people of Edinburgh, or any other city similarly circumstanced, are placed in this unhappy predicament, that they can never have such a supply, because no body can go to Parliament except at its own risk or cost. I do not suppose the people of Edinburgh will be placed in any more unfortunate position than the people of Southampton were by a similar decision, to the effect that the water trustees could not apply any of the funds in their hands for the purpose of promoting a bill in Parliament for obtaining an additional supply. The case was decided in the year 1850, and it was by no means the first of a long series of cases to the same effect, and I am not aware that any practical inconvenience has ever been found to result from the existence of this rule,—for this very plain reason, that no party can approach Parliament except at his own risk in the way of expense, and those who obtained the Act of 1869 incurred that risk; and every party who goes to Parliament to get an Act constituting such a trust for the first time incurs that risk, and every statute obtained for the first time to supply a town with water is obtained at this risk. Was there any difficulty in getting such Acts, or getting them charged against the community? None whatever. But these parties must be careful to go to Parliament with such a scheme as is likely to obtain the sanction of Parliament, and as much as possible to disarm opposition in the community they represent. And if they take these precautionary measures, they will not only obtain their Act, but obtain it with a clause authorising them to charge it against the funds raised under its authority. It is in that way that all such Acts are obtained—that all persons who go to Parliament for powers, whether for the first time, or for the purpose of increasing or enlarging the powers already conferred, invariably go with this risk, that if they fail in obtaining the Act, they must themselves pay their own costs. I confess I do not view the operation of the rule of law leading to results of this kind with apprehension. On the contrary, I think it is most salutary indeed, and absolutely indispensable to prevent abuse.

The expenses incurred by the promoters in prosecuting the Bill are understood to amount to about £19,000. The expense of the opposition was about £9000, the whole of which was met by voluntary subscription. The complainers' expenses in the interdict process, in which the old trustees were found liable, were taxed at £103, 16s. 6d.

(2.) *Its Municipal Results.*—Referring to the attitude taken up by the promoters of the Bill after its rejection, which led to the adoption of the interdict proceedings, for the purpose of bringing them to a proper sense of their duties to their constituents, and referring also to the attitude of defiance which they still maintained, through their organs in the public press and otherwise, it is not wonderful that the electors of the city generally determined to put it out of the power of the St Mary's Loch schemers to elect a Water Trust in the following November who would follow in the footsteps of the old trustees; and in the months of September and October, the citizens began to gird themselves for the contest. Nor were the schemers idle, for they saw that upon the general effect of the elections would depend their existence as a party, and the continuance of the system of jobbery and deputationing which had characterised the period of their municipal predominance.

The first outburst of the storm took place at the ward meeting in St Andrew's Ward, to which attention has already been directed, and the more material incidents of which have already been narrated. On the day prior to that of the meeting, the Secretary to the Ratepayers' Committee published the letters of Dr Christison to the Lord Provost and Lord Wharmcliffe in June 1871, the precise terms of which had

not previously been given to the public. The electors of the ward, already irritated at the way in which their representatives had treated them in May preceding, in refusing to call a ward meeting that they might give expression to their opinions on the water question, were, by the publication of these letters, roused to absolute indignation. The meetings of this ward heretofore had been mere matters of form; but upon this occasion the electors turned out in such numbers as to crowd the place of meeting to suffocation, many persons having had to go away, not being able even to get into the lobbies leading to it. The substance of the meeting, and the resolutions of want of confidence in the representatives, and demanding their resignation, have already been narrated, which of course were disregarded by the Lord Provost and Councillor Mossman, who persisted in representing a ward which had publicly repudiated them. The retiring councillor, Mr Blackadder, wisely did not present himself for re-election, and Mr James Cowan, an active member of the opposition, was elected councillor, without a contest.

Prominence has been given to St Andrew's Ward, because the Provost happened to be its representative; but the action of St Leonard's Ward had far more significance, and engrossed far more of the attention of the citizens generally. From the time of the creation of this ward in 1856, it came to be looked upon as a safe seat for those radicals who made the loudest professions of public purity, and were the most clamorous orators in asserting the majesty of the masses against the wealthier classes, as if there was not a community of interest in all. But by this time the electors had discovered that these noisy patriots were not always models of municipal purity, and that other citizens who made no high-pitched professions of sympathy with suffering workmen and their wives and families, were nevertheless their truest friends, not from interested motives, but because it was in their nature and training. In particular, the electors of this ward had early seen that Bailie Lewis and his diminutive shadow, Councillor Mackay, were simply schemers, who traded upon their constituents, without even consulting their wishes, or paying heed to their representations; while they saw in Mr Colin Mackenzie a gentleman who, whatever his professions might be, understood as a business man the position of the municipal affairs of the city, and was at one with them in his views of municipal policy. Therefore, disgusted as they were with the conduct of their representative, Mr Mackay, who voted, as a rule, exactly as Bailie Lewis voted,—and disregarding the tory and Established Church opinions of Mr Mackenzie, as matters of no importance in the election of a Town Councillor, they applied to and got Mr Mackenzie to become a candidate for the representation of the ward, and carried his election by a majority of 1121 to 913 over Mr Mackay, who sought re-election; thus asserting the great principle, that sound business capacity, apart altogether from State and Church opinions, was the true qualification for a Town Councillor.

This principle was still more markedly asserted in the case of St

Bernard's Ward. The retiring Councillor, Mr Somerville, certainly did not as a public man occupy an honourable position, or one recommending him for re-election, for he had pledged himself to the ward, in a public meeting of which he was chairman, either to give effect to their opinion as to the water question, or to resign his seat; and he had broken his pledge and done neither. A large body of the electors therefore determined to oppose his re-election. Like the electors of St Leonard's Ward they determined to take the best man they could get, irrespective of his opinions in Church or State. Mr Macdonell of Morar, a whig and a Roman Catholic, had taken an active part in the opposition to the Bill, and as personally he was a gentleman of high honour and a good business man, they applied to him to become a candidate. He hesitated until he was presented with a requisition showing that there was a reasonable probability of his election, on receiving which he agreed to come forward. Of course all the stock cries against the possibility of a Roman Catholic being a good citizen, which unreasoning multitudes have been repeating generation after generation, though in every transmission with diminished effect, were raised to prejudice Mr Macdonell; and doubtless they had the effect of blinding the judgment of many of the narrow minded sectarians of the ward to the proved faithlessness of Mr Somerville, and gave him a somewhat better chance against Mr Macdonell than he could possibly have had against any Protestant of even average respectability. But the great heart of the ward was sound in determining to assert that business capacity and personal character, irrespective of either imperial politics or religious opinions, constituted the true qualifications for a Councillor, and on these grounds the ward of St Bernard's, having in it as few Roman Catholic voters as any ward in the city, elected the Roman Catholic Mr Macdonell in preference to the Protestant Mr Somerville, by a majority of 539 to 492. The writer of these pages claims the credit of having been to some extent instrumental in bringing Mr Macdonell before the electors of Edinburgh, and so aiding in breaking down the sectarian prejudices which have hitherto kept the citizens of Edinburgh so far apart from each other, and but for which the promotion, with any chance of success, of such a monstrous job as that which they associated themselves together to oppose, would have been absolutely impossible.

Another ward, that of St George's, deserves notice for the mode in which it asserted the same principle. The somewhat radical ward of St Leonard's dismissed an advanced liberal for misrepresenting their municipal opinions, and elected a tory because he agreed with them in these opinions. The conservative ward of St George's applied the same principle in exactly the opposite way. They had in public meeting declared against the Water Bill, and Bailie Skinner, who was, like the majority of the ward, a conservative, promoted the Bill in defiance of their opinions. They also resolved to find another representative on his retiring in rotation. Throwing politics altogether out of view they requested Mr Mansfield, an avowed whig, to come forward, and on his

mentioning that he differed in politics from those who sought him, he was answered that they did not care what his politics were—it was enough that he was at one with them in reference to the administration of the municipal affairs of the city. Bailie Skinner offered himself for re-election, hoping probably that many of the old tories of the ward would support him in preference to the whig, Mr Mansfield. If this was his hope he was wofully mistaken, for the conservatives, almost to a man, voted against him, and brought in Mr Mansfield by the significant majority of 736 to 266.

It is unnecessary to give any special account of the elections in the other wards. In Broughton Ward an attempt was made to oust Mr Durham, an opponent of the scheme, but it signally failed, the retiring Councillor being returned by 449 votes against 228. The same thing was attempted in Newington Ward against Mr Muirhead, also an opponent of the scheme, but he was returned by 916 votes against 696.

In another contested ward, St Cuthbert's, Mr George Roberts was elected in room of a supporter of the scheme, by a majority of 972 votes against 725 for his antagonist.

In only two wards (both contested), viz., Canongate and George Square, were the supporters of the scheme returned, both by considerable majorities; but in neither of these wards was the sitting member returned because of his water predilections, the elections having turned more upon personal than public considerations. In the Canongate in particular, Mr Copland, a complete stranger to the ward, and a conservative to boot, was announced as a candidate, only by his formal nomination at the last possible hour on the Thursday preceding the election, and yet he polled no less than 764 votes against Mr Cranston's 1041, showing that had he been earlier in the field, the result might have been different. In the other ward (George Square), Mr James Paterson, the opposition candidate, was personally unpopular with the labouring classes, from an active part which he had taken some years previously against the working masons in a dispute about wages and hours of working, between them and their employers; and to this cause is undoubtedly to be attributed the return of the retiring Councillor by the large majority of 1068 votes over 779, in a ward comprising a very considerable number of the labouring class.

In the uncontested wards Councillor Methven, an opponent to the scheme, was returned for Calton; and in St Luke's, St Stephen's, (St Andrew's being already noticed), and St Giles, Mr John Boyd, Mr Henry Lees, and Mr Adam W. Black, all opponents of the scheme, were respectively returned, replacing supporters of it.

The Guildry re-elected Mr John Russel as Dean of Guild, and the Convenery of the Trades re-elected Mr Daniel Robertson as Convener, both of these gentlemen being opponents of the scheme.

The general result in the Town Council of the elections, was that eight supporters of the scheme were replaced by eight opponents, there being thereafter in the Council 28 declared opponents of the St Mary's Loch scheme, and only 12 avowed supporters, the remaining member,

Bailie Marshall, though a supporter of the scheme, having, since his ward (St Leonard's) declared against it, maintained a position of neutrality.

The importance of this victory however is not to be measured merely by the defeat of an obnoxious scheme, and the return of a decided majority opposed to the promotion of it, or any other scheme, without laying all the details and information regarding it before the inhabitants, and obtaining the approval of at least a substantial majority of them. Up to this date petty partisanship and sectarian squabbles, more bitter than any other because they professed to be in the cause of religion, had kept the citizens apart from each other in distinct classes, each regarding the other with feelings of distrust, which such men as the authors, the subscribers, the publishers, and the disseminators of such productions as the Working Men's Water Catechism fostered for purposes of their own. This want of cohesion among the citizens made them like a loose heap of twigs, powerless in detail, and incapable of helping each other, or who looked with suspicion on any one class which came forward to express sympathy with another. But for this mutual repulsion of the various classes of the citizens, it has been already remarked that such a palpable job as the St Mary's Loch scheme, opposed as it was to the opinions of every class, could never have been promoted with any prospect of success. But the job was too monstrous for human endurance, and the pressure of a threatened calamity induced the inhabitants to forget for the time their mutual distrusts, and to consult together to devise the means of averting what all felt would be a common calamity. When they thus came to meet on common ground, to promote a common cause, each class found that they had greatly misunderstood the other. The wealthier classes found that their less independent brethren were men of like feelings with themselves, and in particular, that the working men were by no means the men to be petted and made tools of, nor were they the levelling democrats which they had been represented to be. The working men on the other hand found that the aristocrat of the New Town was by no means the selfish ogre which they had been taught by their leaders to believe him ; and once brought together each found that the other had qualities which he lacked, but which were all necessary for the well-being both of the State and the City. The moment this was seen, and the citizens had not acted long in concert before it was seen, the loose heap of twigs became a compact bundle, bound together by mutual interest ; and by realizing, to some extent, the hope expressed by Mr Colin Mackenzie in one of his letters, in the words of one of Lord Macaulay's Lays of Ancient Rome,

" Where none was for a party,  
And all were for the State ;"

they made their power felt at the November elections in the manner already mentioned. It only remains for them to lay this lesson to heart, and to allow no evil one to sow tares among them while they sleep, or are off their guard.

The price which they have paid for this drawing together of the hitherto divided classes of citizens has been a costly one, being no less than £9000, for the liquidation of which they had no resource except voluntary subscriptions. But if all the elements of distrust and disunion, hitherto the pest of the community, and the weapons of ingenious schemers, shall be once and for ever eliminated from the city, this great result will have indeed been cheaply purchased.

In bringing this narrative to a close, the writer has to regret the length to which it has run. But during its preparation the indications have been frequent and strong that the water schemers yet maintain that they were right and the citizens wrong, and that they are on the watch for an opportunity of reviving their defeated scheme. Nay, as this narrative is being finished, the Lord Provost, and also Bailie Lewis and other members of the Town Council who were formerly water Trustees, and the City Clerk, have, without the sanction of either Town Council or Water Trust, but with the active assistance of Mr Duncan M'Laren, M.P., (who, by the way, was sent to Parliament to represent the citizens, and not a mere section of them,) been actively promoting a Bill introduced by Mr Leeman, one of the members for York, which was originally intended to apply to England alone, but was afterwards at their instigation intended to extend to Scotland also. The object of this Bill is to give corporations and public trustees greater powers of spending public funds in jobbery and deputationing, freed of responsibility to the ratepayers; but its chief virtue in the eyes of its Edinburgh supporters is that it contains a clause to operate retrospectively for three years, under which they hope to be enabled to defeat the judgment of the Court of Session as to the costs of their Bill, by getting discretionary power given to a Secretary of State, if they can induce him to exercise it, to throw the liability for these costs on the funds of the ratepayers, and all this without a word of previous notice to the parties whose legal right as to things past and gone has been ascertained and adjudged. In these circumstances the writer felt the necessity, when he was giving a narrative of the contest, of going into details so far as to shew the community the true character of the promoters and of their proceedings, so that every citizen, when asked, as must ere long be the case, in one form or another, to express an opinion as to who ought in equity to bear the expense of promoting the late scheme, may be enabled to answer the question for himself.

## APPENDIX.

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### 1. LETTER, PROFESSOR CHRISTISON to the LORD PROVOST.

*Edinburgh, June 28, 1871.*

MY DEAR LORD PROVOST,—When we last met, about three weeks ago, I told you I meant to enquire into the quality of the water of St Mary's Loch, for my own satisfaction ; and that I should willingly communicate the result, whatever it might be. It will take me a long time, with my scanty opportunities of leisure, to finish an investigation, which I saw from the first was not a very simple one, but which becomes more complex as it opens up. But I think I ought to communicate to you what I have already ascertained.

I went to St Mary's Loch on the 12th inst., and spent that afternoon, and most of the 13th, in examining the Loch and its neighbourhood. There had previously been an excessive drought for six weeks, during which there was no fall of rain, except three or four times a sprinkling sufficient to water the grass. I presume therefore, that the water was in its most favourable state.

I find the water has a yellowish-brown colour, not such as to attract notice when the examination is made in a superficial manner, but quite decided when the water is compared with our now perfectly colourless Edinburgh water ; or with the water of Glasgow, which is not entirely devoid of colour ; or when it is placed in a water caraffe on a white table cloth ; or when a white porcelain dish is sunk in the Loch itself. In the latter case, the basin becomes invisible at  $10\frac{1}{2}$  feet, while in some rivers I have distinguished individual pebbles at 16 feet.

I found, generally, two water fleas (*daphnia pulex*) in every tumbler I filled, sometimes one only, seldom none. There were also a few minute fleecy particles of dead organic matter, but no other visible living thing, except the fleas.

The water has no action on lead. I have subjected it to a severe test, and find no variety, none of the "caprice" spoken of by a witness before the House of Commons' Committee. I have another test remaining. But it requires a long time. I do not anticipate, however, any different result. The water of Glasgow acts most powerfully on lead in favourable circumstances. I knew this from actual trial,

before Glasgow thought of appropriating Loch Katrine, and I have now confirmed my former observation. Moreover, I know that in some Glasgow houses dangerous action has been observed.

The bottom of the Loch is everywhere very soft, and composed of loose vegetable matter, of the kind which would become peat, were it possible to empty the Loch, and drain the bottom.

In deep places, the water at the bottom last winter has not begun to rise, and therefore cannot flow out at the outlet. Whether it can yet rise during our warm season is doubtful; but this could be settled in October.

The "silver strand" consists entirely of stones covered with the same short thready water-weeds, which are seen on the stones within the water line. The latter stones are dark greenish brown, and make the Loch look dark and deep, when only a few feet in depth. The dry stones are pale dirty grey, because the weeds, in drying up in the sun, cling firmly, and put on that colour.

I have made an analysis of the water, and find more organic matter in it than in ordinary waters used as drink, and rather more saline matter than has been observed in it by prior observers. The latter circumstance may be owing to the long previous dry weather.

My investigation is by no means ended. But I have done enough to satisfy me that the water of St Mary's Loch is doubtful in quality for the supply of Edinburgh,—

1. Because it requires filtration :—
2. Because, even after filtration, it will be so coloured, that I do not think any one would like to see it in a water caraffe on his dinner table :—
3. Because there is no certainty that such a water is safe to use habitually for a long time. It is known that similar waters, more strongly impregnated, tend to induce bowel complaints, and aggravate them greatly in epidemic seasons; and we cannot tell at present at what degree of impregnation this tendency does not exist :—
4. Because the statement of those who dwell near the Loch is, that the water is more coloured in floods, a statement, however, which should be tested by express scientific observation, which has not yet been done.

On the other hand, let me add,—

1. That I have no doubt of the immunity of the water of St Mary's Loch from the objection that it may act on the lead of pipes and cisterns :—

2. That I attach no weight to the hypothesis that such water is unsafe, owing to the small proportion of lime salts in it. This is a pure hypothesis, and opposed to many facts.

I have no present intention of making any farther use of this letter than giving your Lordship the information I promised. But I think it only fair to the opponents of the Bill that I inform their agent, Mr Brodie, that you "have received my opinion, and that it is not so favourable as I wished." You are welcome, however, to make any

use you please of my letter. But, if used for any purpose, I am sure your Lordship will use it entire, and not in part.

I continue to have a strong repugnance to being cited as a witness by either party. But, if the Committee of the House of Lords desire my evidence, and should be pleased to summon me, I will cheerfully appear any day from Tuesday the 4th, to Friday the 7th, inclusive, during my stay in London, on the business of the General Medical Council. I am, &c.

R. CHRISTISON.

The Right Honourable the Lord Provost of Edinburgh.

## 2. LETTER, PROFESSOR CHRISTISON to LORD WHARNCLIFFE.

40 Moray Place, Edinburgh, July 1, 1871.

MY LORD,—In consequence of the parliamentary rule which apparently allows a witness, before a Committee of either House, to declare in evidence what is known or thought by another who is living and accessible, the Lord Provost of Edinburgh has been allowed to represent erroneously, before the Committee of which your Lordship is Chairman, my opinion of the quality of the St Mary's Loch water, as a water suitable for the ordinary supply of Edinburgh and adjacent towns.

If the contradiction I now offer of this statement can be received by your Lordship and the Committee, I am far from wishing to put your Lordship or the Committee to any farther trouble; but if, as I fear may be the case, my denial be not admissible, then since it is plain, from the tenor of the examination and cross-examination of the Lord Provost before the Committee, that both the promoters and the opponents of the Bill attach to my inquiries and opinions relative to the quality of the water, an importance perhaps greater than they deserve, I submit to your Lordship that the real truth on that subject ought to be made known; and I have therefore humbly to request that for this purpose, the Committee will be pleased to enable me to appear before them, in such manner as may not appear to compromise the independent and impartial position which I have hitherto carefully adhered to in this matter.

Previous to the inquiry by the Committee of the House of Commons, when asked by the City-clerk, Mr Marwick, under authority of the Lord Provost, to make the necessary investigation for giving my opinion to the water supply trustees as to the quality of St Mary's Loch water, I declined to do so, on the double ground of my want of the necessary leisure, and my unwillingness to appear as a witness on a question which had become the subject of a keen and violent controversy in the city. But I stated to Mr Marwick, and subsequently to the Lord Provost himself, that I should probably make inquiry on my own account, and would willingly communicate to them the result,—

adding also, that at the time my impression was that the objections brought against the water would prove ill-founded.

Subsequently to the proceedings in the Committee of the House of Commons, I was again pressed by the Lord Provost to undertake the inquiry on the part of the water trustees, and at their charge; but I refused to do so, repeating my intentions already stated.

I commenced the inquiry, and soon obtained results less favourable than I expected. At my request, the Lord Provost and I met on Monday, the 19th June. At that interview, contrary to what has been given in evidence by him, not one word was spoken by me, nor indeed by his Lordship himself, that was favourable to the water.

On the 27th, having satisfied myself as to some points, I communicated my opinion on these to the Lord Provost explicitly and in detail by letter. It reached his Lordship in London by the morning post delivery of the 29th. It was crossed on the way by his Lordship's first day's evidence before your Lordship's Committee. I was greatly surprised to read in that evidence his statement that he knew my opinion was in favour of the St Mary's Loch water; because I never gave him authority to say so, and nothing has passed between us to entitle him to say so. I looked with confidence, however, to his correcting himself on receipt of my letter, which though favourable on some points, was unfavourable on others of quite as great importance. But, to my renewed surprise, with my true opinion in his possession, he repeated on the second day his statement of the first day.

I humbly submit to your Lordship that, whatever weight may be attached to my opinion by your Lordship and the Committee of which you are Chairman, a statement of it, altogether erroneous, unauthorised, and misleading, ought not to remain uncontradicted, as a part of the proceedings of a parliamentary Committee.

I shall be in London from the evening of Monday the 3d to the afternoon of Saturday the 8th, at the house of Dr Priestley, 17 Hertford Street, Mayfair. I have the honour to be,

Your Lordship's most obed. servt.,

R. CHRISTISON.

The Right Honourable Lord Wharncliffe.

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