

GOVERNMENT PROPERTY AT HOT SPRINGS, ARK.

TESTIMONY

TAKEN BEFORE THE

COMMITTEE ON EXPENDITURES IN THE INTERIOR DEPARTMENT,

RELATIVE TO

Certain things connected with the Government property at Hot Springs, Ark.

JUNE 17, 1884.—Recommitted to the Committee on Expenditures in the Interior Department and ordered to be printed.

[House Ex. Doc. No. 89, Forty-eighth Congress, first session.]

Letter from the Secretary of the Interior, transmitting a copy of the original contract and other papers touching the work of improving the Hot Springs Creek, in the town of Hot Springs, Ark.

JANUARY 23, 1884.—Referred to the Committee on Appropriations and ordered to be printed.

DEPARTMENT OF THE INTERIOR,
Washington, January 21, 1884.

SIR: I have the honor to acknowledge the receipt of a resolution of the House of Representatives, dated the 14th instant, requesting a copy of the original contract and all subsequent modifications thereof, if any, and any other papers on file in this Department touching the work of improving the Hot Springs Creek, in the town of Hot Springs, Ark., together with the amount of money expended thereupon, the balance, if any, of the appropriation for that purpose remaining unexpended, the condition of the work, and any suggestions touching the completion thereof which the Department may deem proper to make.

I transmit herewith copies of the papers referred to. The plan of the improvement contemplated in the contract, with the subsequent modifications, embraces the straightening and deepening of the creek along the front of the Government reservation, and confining it between walls of arched masonry and the laying of iron pipe along the wall for the collection of hot water from springs developed in the course of the work.

In the sundry civil appropriation act approved August 7, 1882, an appropriation of \$33,744.78 was made for building the wall and for other improvements upon the reservation, and there was also in the Treasury, available for such payment, about \$44,000, a fund which had arisen from the sale of lots from the reservation, as provided in the seventh section of the act of June 16, 1880. (21 Stat., 288.)

The work under the contract has been prosecuted with due diligence. The contractor has earned for work performed up to the first of the present month \$79,020.21, of which, by the terms of the contract, 10 per cent. (\$7,902.02) is to be reserved until the completion and acceptance of the whole work.

The payment of the amount due will exhaust the funds available for the improvement of the creek, and the contractor has therefore been notified to discontinue further operations.

Excavation has been made and the side walls completed over 2,400 feet of the 3,000 feet contemplated by the plan, and 400 linear feet of the archway is complete. There remains, to close the work, 600 feet of side walls and 2,600 feet of archway to be built,

the laying of the iron pipe, the filling in at the side of the walls and over the archway, necessary to secure the completed masonry and raise the street and reservation front to grade, and the concreting of the bed of the creek. For this purpose it is estimated that the sum of \$84,500 will be required, which amount, if appropriated, should be made available at once in order that the work may be resumed at the earliest practicable date.

Delay in the further prosecution of the work would result in great inconvenience to the public, and the unfinished structure would be liable to injury or destruction by freshets in the creek. It is also believed that it would materially increase the expense of the improvement if by reason of suspension of the work for any considerable period it should become necessary to enter into a new contract for its completion.

Very respectfully,

H. M. TELLER,

Secretary.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

No. 1.

UNITED STATES ENGINEER OFFICE,

Little Rock, Ark., September 18, 1882.

SIR: In compliance with your instructions, under date of April 26, 1882, and in accordance with a general project submitted by me May 9, 1882, and which received your approval June 6, 1882, I have the honor to submit the following report relative to the improvement of that portion of the Government reservation at Hot Springs, Ark., through which Hot Springs Creek runs.

The improvements for this part of the reservation contemplated by your instructions have in view, first, a proper disposition of the sewerage and the rainfall, which now find their way into the bed of Hot Springs Creek above the lower limit of the present Government reservation; and, second, a means of distributing the hot water that now flows from the various springs within the reservation in such a manner that it may be utilized to the greatest advantage. The sewerage is that which results from the habitations that are found above the lines mentioned and upon the slopes that drain into this creek. The rainfall to be considered is the greatest amount that is likely to occur within a given time upon the drainage area of the creek above the lower reservation line. Within the limits contemplated in the present plan of improvement the creek runs through a narrow gorge, which gradually widens as it falls from its upper to the lower limit. Its natural bed, which was originally rocky and much obstructed, has been encroached upon from time to time by the rock and earth that have been excavated from the adjoining slopes in order to make places for buildings and room for roadways to accommodate the traffic that takes place through the gorge. In consequence of this encroachment and the rough and obstructed character of the creek channel it is at times unable to carry away the storm waters that fall into it. It overflows its banks, to the great inconvenience of the inhabitants, and not unfrequently to their pecuniary detriment. This is a state of affairs which, of course, calls for a remedy; but there is another aspect of this creek that is yet more deplorable. In consequence of the habitations that have been built upon its banks it has necessarily become a common open sewer into which all their refuse, both liquid and solid, is eventually deposited. Along the slopes of the hills, on the west bank of the creek and above the houses that are occupied as habitations, stores, offices, &c., are to be found the privies belonging to these, the contents of which find its way down the slope and under the houses to the creek.

During the summer season, in fact we may say the greater portion of the year, there is not sufficient water running in the bed of the creek to wash these deposits away. The result is they decompose in the very midst of the people, giving forth odors and gases that are not only very offensive to the nostrils, but detrimental to the health. Within the present season several cases of sickness have occurred that can be attributed to this source alone. Until the cause is removed there may be expected to grow more numerous. For certain classes of diseases, experience has proven in hundreds of cases that the efficacious effects of the waters of Hot Springs are most wonderful, probably such as could be derived from no other known source. While this is the case for some diseases, great care should be taken that it does not become the seat of others that by simple sanitary precautions can be avoided. In its state of nature it is doubtful if a more healthful locality than this can anywhere be found.

The consideration, therefore, of first importance, is the sanitary aspect of our problem.

To enable me to devise a systematic plan for the improvement desired, and at the same time one that could be added to, as the wants of the reservation from time to

time required, a good map of the locality was a first desideratum. This I have had made. Although it is not as extensive as would be desired for use as a basis for all future improvements, yet for our present purposes it is sufficient. It shows, by horizontal contours, lines from one foot to three feet apart vertically, the shape of the channel of the creek, and the slopes adjoining for a considerable distance up. On it are also located the principal hot springs, with their heights above a datum plane, together with the principal buildings within the area covered. The survey extends from the southern boundary line of the reservation to the junction of the creeks at the upper end of the gorge, a distance of about one thousand yards. On this is projected my proposed plan of improvement. A tracing is herewith submitted and forms a part of this report.

From the most reliable sources of information accessible I ascertained that the drainage area of Hot Springs Creek above the contemplated improvement amounted to about $3\frac{1}{2}$ square miles. Over this area a rainfall at a rate of $1\frac{1}{2}$ or even 2 inches per hour for a short time may be expected to occur. Adopting the last figure, and supposing that two-thirds of this amount finds its way through the gorge within the hour, I find that an approximate discharge of 3,000 cubic feet per second is to be provided for. The most economical method that occurs to me for doing this, and at the same time provide greater facilities for communication along the line of the creek, is to straighten somewhat its tortuous course and confine it between parallel masonry walls. From near the head of the gorge to a point opposite the Arlington Hotel, the bed of the stream is to have a fall of 1 foot to 80. The walls are to be 8 feet high and 17 feet apart. From the foot of each wall to the point midway between the two the bed falls 1 foot. From the point above mentioned to the lower line of the reservation the slope of the bottom is 1 on 120, and the walls 20 feet apart; otherwise the conditions are the same. The foot of each wall I have placed a little more than a foot below the general wall of the present bed of the creek. This is to insure that its foundation be upon bed rock. Should this not be found at this depth at all points, the foundation must be carried further down. In all cases it should rest upon bed rock. The walls should be 3 feet thick, built of granite, cut and laid in courses, and backed with concrete. The cement used in making the mortar and concrete should be of a good standard quality. A good quality of granite can be found along the line of the Hot Springs Railway, and can be obtained at reasonable cost. So far as I have yet been able to learn, this is the only stone suitable for building these walls that can be found in the neighborhood.

Whilst the excavations are being made for the foundations of these walls, and for the channel-way between them, especially along the foot of the slope of Hot Springs Mountain, a considerable quantity of hot water may be developed. This, together with that which is now going to waste from springs in, and slightly above the bed of, the creek, it is proposed to collect into a 6-inch iron pipe to be laid along the foot of the wall nearest the Hot Springs Mountain. By this it is to be led to a wall placed at some convenient point behind the wall, and from there pumped to a reservoir at some higher level.

For the disposal of the sewerage it is proposed to divide two lines of vitrified earthenware pipes, 12 inches in diameter, one to be placed just behind each of the walls, and to have a fall essentially the same at the bottom of the creek. They should for convenience be about 5 feet below the top of the walls. At intervals of about 50 feet a 6-inch wye should be provided so as to facilitate the connections with the house drains. At intervals of 300 or 400 feet, means for ventilation should be provided by simply allowing the interior of the drain to communicate with the open air. There is no danger of these openings becoming a nuisance to their vicinity if they are only made frequent enough. The theory of the success of a small drain-pipe is that the current within should carry away beyond the limit of habitations all decomposable matter before decomposition sets in. Frequent openings in the drain course down and up, drafts which keep the air within them comparatively pure.

These pipes should be carefully laid. The ground beneath them should be well packed, to insure that no settling can take place. They should have both below and above them a thickness of at least 6 inches of clay, and all other necessary precautions should be taken to insure that they are well laid. These pipes are to extend throughout the whole length of the walls. The lower ends at present will terminate at the southern boundary of the reservation, to be continued on beyond the city limits, as the authorities of the city of Hot Springs may deem expedient.

The upper ends, so far as the present plan proposes, will terminate with the walls. The pipes should, however, be at once carried farther up the two streams, so as to receive the sewerage from the habitations in those localities. Their dimensions could be made smaller as they go higher up.

The system of water works that is now being inaugurated in the city of Hot Springs will make this system of sewerage exceedingly applicable and comparatively inexpensive.

In this connection there is one point that cannot be too strenuously insisted upon,

which is this: All liquids and soluble wastes of whatever nature whose natural out-flow is down this creek should be made to go at once into one or the other of these pipes. This would include wastes from baths, water-closets, kitchens, laundries, and every other source. All solid matter should be as rigidly excluded from them. The insoluble wastes should be carted away and disposed of through some other source. Under no circumstances should they be allowed to enter the creek. That channel should be reserved for the surface drainage only, in a state approximating to its natural purity as near as possible.

In order to provide as wide a space as possible for the traffic along the line of the creek, I propose that the space between the walls shall be covered over, and on this covering shall be placed from 2 to 3 feet of earth and rock, the street pavement and sidewalks then laid upon this. This will bring the surface to an economical street grade, and at the same time give place for much of the earth and stone that will be excavated from the neighboring slopes in making foundations for buildings.

Under the conditions that are imposed the most economical and at the same time durable device for spanning the space between the two walls will be in my judgment a series of wrought-iron beams placed at intervals from wall to wall, and these intervals filled in with low brick arches.

These beams should be 15 inches in depth, and placed at intervals of 6 feet. Where the distance between the points of support is 17 feet the light variety, 50 pounds per foot, can be used, and where the distance is greater the heavy, 65 pounds per foot, should be adopted.

The brick arch covering the space between two adjacent beams has a rise of 8 inches and a thickness of 13 inches. This should be made of the best quality of hard brick, laid with Portland cement mortar.

During the process of constructing and filling in, provision should be made for allowing the surface water to enter the creek by passage-ways at intervals under this covering.

The present needs of the street do not require that the channel be covered throughout the whole extent of the walls. From the upper end down to a point opposite the first bath-house south of the Arlington Hotel I have provided in the following estimate for this covering.

What remains below can safely be left until the exigencies of the traffic require the increased space.

As to the order in which the work should be done, I would suggest that inasmuch as the sanitary features of the problem should take precedence over all other, after the excavation for the channel-way has been made down to grade, the walls should be commenced and built up at least 4 feet. Behind these the sewer-pipes should be laid throughout their whole lengths. The iron pipe to collect the hot water developed during excavation should also be laid behind the eastern wall as high up as the Arlington Hotel. This done, the walls should be completed and covered, commencing just below the Arlington and carried up as far as funds available will suffice, or to completion in that direction. This being done the walls may be completed below, ready for the covering. The filling up to the street grade I have made no estimate for, as it is possible that property owners who desire to build on these slopes will promptly avail themselves of this opportunity to dispose of their excavated earth and rock.

From the most available data at hand I estimate that the cost of the proposed works of improvement should be approximately as follows:

Excavation, approximately, 9,000 cubic yards, at \$1.25 per cubic yard..	\$11,250 00
Walls, granite masonry, 3,100 cubic yards, at \$18 per cubic yard.....	55,800 00
Concrete, 1,900 cubic yards, at \$3 per cubic yard	15,200 00
Covering, wrought-iron I beams, 15 inches depth:	
176—17 feet 6 inches long, 50 pounds per foot.	
9—18 feet 6 inches long, 50 pounds per foot.	
9—19 feet 6 inches long, 50 pounds per foot.	
36—20 feet 6 inches long, 65 pounds per foot.	
Total weight 219,070 pounds, at 5 cents per pound in place	10,953 50
Brick arches, 1,430 cubic yards, at \$12 per cubic yard.....	17,160 00
5,560 feet sewer-pipe, in place, at 50 cents per foot	2,780 00
1,200 feet 6-inch iron pipe, at \$2 per foot.....	2,400 00
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	115,543 50
Add 10 per cent. for contingencies, &c.....	11,554 50
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	127,098 00

With regard to the collection and proper distribution of the hot water, I have made no estimates for improvements under this head. The present mode of distributing it

Improvement of the Government Reservation,
Hot Springs, Arkansas.
DRAINAGE, SEWERAGE AND HOT WATER
 Plan proposed by Captain THOS. H. HANDBURY,
 Corps of Engineers, U. S. A.,
 under the direction of
 The Hon. Sec. SECRETARY OF THE INTERIOR
 1882.

Scale of Map 7 1/2 inch to 50 feet.

NOTE: The plan of reference of this correspondence to be not below the top of a red granite boundary stone located at this point.

U. S. Engineers Office,
 Little Rock, Ark.
 September 17, 1882.
 Sent to the Hon. the Secretary of the
 Interior with reference of this date
 Thos. H. Handbury
 Captain, Corps of Engineers, U. S. A.

(On the back): Map referred to in
 letter of Captain Thos. H. Handbury,
 Corps of Eng'rs, U. S. A., to Secretary
 of Interior, dated Sept. 18, 1882.
 (No. 1.)

is very primitive and unsystematic and must in time be remedied. The supply is in such great abundance that no serious inconvenience is yet felt arising from this manner of distribution. On account of this fact, and also on account of the bearing which the location of the Army and Navy hospital that Congress at its last session directed to be established here will have upon the subject, I have refrained for the present from making any plans or estimates looking to its better collection and distribution.

The locations of all the principal springs are shown upon the map, together with their heights above datum plane.

From actual measurements of their discharges, I find that their aggregate flow each twenty-four hours closely approximates to 500,000 gallons. Of this about 175,000 gallons comes from springs in and near the bottom of the creek; the balance from the spring above. All issue from the west slope of Hot Springs Mountain.

The iron pipe that I have provided for in the plan and estimate submitted is designed to collect the hot water that would otherwise go to waste in the creek. The whole of this amount of water, 500,000 gallons, can very easily be collected, and, if necessary, at a reasonable expense be placed high enough to be delivered by gravity into the upper houses of the valley.

This amount is sufficient to furnish 20,000 people each with 25 gallons per day of the purest water that flows from or on the face of the earth.

In the collection of the data necessary for preparing the plans and estimate herewith, I am under many obligations to General B. F. Kelley, the superintendent of the reservation, for valuable and courteous assistance.

Very respectfully, your obedient servant,

THOS. H. HANDBURY,
Captain, Corps of Engineers, U. S. A.

The SECRETARY OF THE INTERIOR,
Washington, D. C.

No. 14.

UNITED STATES ENGINEER OFFICE,
Little Rock, Ark., November 6, 1882.

SIR: I have the honor to acknowledge the receipt of your communication of October 13, 1882, requesting my views as to the practicability of covering the creek at Hot Springs, Ark., with an arch of granite or some other suitable material, and as to the advantages and disadvantages of that plan as compared with the plan of walling up the banks and covering the creek with short arches of brick between iron beams, submitted by me under date of September 18, 1882.

After thanking you for your kind expression of appreciation of my services to the Department of the Interior, I beg leave in reply to submit the following:

In my study of this branch of the problem submitted to me there were three projects that presented themselves for its solution after the necessary data had been assumed. These data were, the probable maximum amount of water to be disposed of and the natural slope of the bed of the creek.

Having selected the most favorably course for the bed of the creek, and assumed its slope corresponding as nearly as practicable to the average natural slope, the projects were:

1st. To arch this course over with a semi-cylinder of masonry of sufficient diameter to give the requisite waterway.

2d. To provide two parallel walls of requisite height sufficiently far apart to admit of the passage of the maximum amount of water and to cover the space between these with an arch of masonry.

3d. To provide parallel walls as in the second project, but to cover the space between with short arches of brick between iron beams.

In each case it was proposed to make use of only the most durable material, put together in the most substantial manner.

Either of these projects seemed perfectly feasible. Which to select would depend upon its relative applicability to the situation and cost. By a comparison of their relative merits and cost it soon becomes manifest that the third and one proposed was the most proper, all things being considered.

In providing an artificial water-way through the valley of this creek the vertical limits through which we are at liberty to carry our structures are very contracted. If we wish to go down we are soon met by solid rock, very difficult and expensive to excavate, while on the other hand if we wish to go up our works soon rise above the

level of the basement floors of the permanent buildings of the valley; in other words, above street grade. Bearing this in mind, we can now proceed to a comparison of the relative merits of the three projects.

In estimating the probable cost of this improvement, according to the plan I have submitted to you, it will be noted that I provide for covering the space between the two parallel walls only from the upper end down to a point opposite the first bath-house south of the Arlington Hotel. This distance measures 1,374 feet, leaving 1,410 feet yet to be covered. Estimating the expense of covering this at the same rates, the cost would be \$32,794.50, which, added to \$115,543.50, the amount given in my report of September 18, would make the total cost of the improvement, according to this project, with 10 per cent. for contingencies added, \$163,171.80.

Let us now suppose that we cover the water-way with a semi-cylindrical arch. We have assumed that in all cases we have to provide for a discharge of, approximately, 3,000 cubic feet of water per second. With this form of conduit throughout the distance (1,274 feet), where the slope is 1 foot in 80 feet, the required area of cross-section should be, approximately, 125 square feet, giving a span of 20 feet and 6 inches. Throughout the distance (1,510 feet) where the slope is 1 foot in 120 feet, the area of cross-section should be, approximately, 190 feet, giving a span of 22 feet.

The thickness of the arches, if made of granite, should be at least 18 inches, and if of brick or second-class masonry not less than 24 inches. In the first case it would contain 5,654 cubic yards, and in the second 7,625 cubic yards, no account being taken of the additional thickness required at the haunches of the arch. Estimating the granite arch at \$20 and the brick at \$15 per cubic yard, which are certainly very low figures for good work of this class, the cost of the arch alone, in either material, will closely approximate \$115,000. Were the bottom of the water-way to remain, as in the proposed plan, the top of the arch would be thrown at least 3 feet above the height at which the iron beams are fixed. The depth of the covering over the arches should not be less than that provided for in the case of the beams, which would throw the surface of the street much above the basement of the houses. It would be necessary, therefore, to lower the bottom of the water-way at least 3 feet. This, together with the additional width, will require about 10,000 cubic yards of rock excavation over and above that in the plan proposed. This would cost at least \$2 per cubic yard. On this supposition we have the cost roughly estimated by this plan as follows:

Arch.....	\$115,000 00
Excavation.....	31,250 00
Sewer pipes.....	2,780 00
Iron pipes for hot water.....	2,400 00
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	152,430 00
Add 10 per cent. for contingencies.....	15,243 00
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	167,673 00

It will be noticed that my estimate of the total cost of covering the whole distance with iron beams and short brick arches, resting on the parallel walls, is \$60,908.

Suppose, instead of this method, we cover the space between the parallel walls with a flat arch of masonry. The rise of this should not be less than 2 feet. Its thickness, if made of cut granite, should be at least 20 inches, and if of bricks, 30 inches. With the first material we would have about 4,000 cubic yards of masonry; with the second, 6,000; the cost of which in either case would be about \$80,000, a sum greatly in excess of the one just mentioned.

In addition, in order to withstand the thrust of the low flat arches, the thickness of the parallel walls, which are 3 feet, would have to be increased to probably 5 or 6 feet. Without carrying the estimate of the cost of the improvement by this method farther, it is readily seen that it will be vastly in excess of that by either of the other two.

From this comparison of rough estimates, it appears that the improvement can be effected by the method proposed at a much less expense than by either of the others. Aside from the question of expense, there are other points in its favor which will readily occur to you. A principal merit is that the work can be suspended at almost any stage of its progress without material detriment to that already completed, a desideratum of great importance where funds for carrying on an improvement are available only in periodic installments.

Very respectfully, your obedient servant,

THOS. H. HANDBURY,
Captain, Corps of Engineers, U. S. A.

The SECRETARY OF THE INTERIOR,
Washington, D. C.

No. 2.

Articles of agreement entered into this eighth day of May, eighteen hundred and eighty three (1883), between Henry M. Teller, Secretary of the Interior, of the first part, and George H. Bardwell, of the city of Washington, District of Columbia, of the second part:

This agreement witnesseth, that, in conformity with the proposal and specifications hereunto attached and which form a part of this contract, the said Henry M. Teller, for and in behalf of the United States of America, and the said George H. Bardwell, for himself, his heirs, executors, and administrators, have mutually agreed and by these presents do mutually covenant and agree to and with each other as follows, viz:

That the said party of the second part has agreed and by these presents doth agree with the said party of the first part, for the consideration hereinafter mentioned and contained, and under the penalty expressed in a bond bearing even date herewith, to furnish and deliver the materials and perform the work required in the improvement of Hot Springs Creek at the Government reservation at Hot Springs, Garland County, Arkansas, as set forth in the specifications hereinbefore mentioned. And that the party of the first part shall pay to the party of the second part, for such material and labor, at the following rates, namely:

For excavation of rock in place, one dollar and fifty-four cents (\$1.54) per cubic yard.

For excavation of earth and loose rock, thirty-four (34) cents per cubic yard.

For granite masonry, eighteen dollars and forty-five cents (\$18.45) per cubic yard.

For concrete, five dollars and seventy-four cents (\$5.74) per cubic yard.

For sewer pipe, 12-inch, vitrified earthenware, forty (40) cents per lineal foot, laid.

The following alterations, additions, and erasures, made in red ink upon the face

For 6-inch iron pipe, ninety-four (94) cents per lineal foot, laid.

of the specifications hereto attached, are to be read and considered as a part of the same; after the last word (foot) of paragraph numbered three (3) of the specifications, the words "this bed must be smooth and free from projections" to be added. After the word walls, in the first line of paragraph four (4) the words "to be a granite facing backed with concrete," to be inserted. After the word "courses," where it first occurs in line three of paragraph four (4) the words "not less than one foot wide," to be inserted. The word "end" in line five, and the word "level" in line six, of paragraph four (4) to be erased. And after the last word (inch) of said paragraph (four) the words "the horizontal joints and top of the wall, when finished, to conform to the grades given above for the bed of the stream. All stones must be laid on their quarry bed." In paragraph seven the word "well" to be inserted after the word "circular" in line three, and after the last word (away) of said paragraph (7) the words "all sewer pipes to be true and straight, without cracks, and free from any defects whatever."

If the party of the second part shall, by freshets or other force or violence of the elements, and by no fault of his own, be prevented from either commencing or completing the work at the time agreed upon in the contract, such additional time may in writing be allowed him for such commencement or completion as, in the judgment of the party of the first part or his successor, shall be just and reasonable; but such allowance and extension shall in no manner affect the rights or obligations of the parties under this contract, but the same shall subsist, take effect, and be enforceable precisely as if the new date of commencement or completion had been the date originally herein agreed upon.

The Secretary of the Interior shall have and exercise the right to make any change or modification he may deem advantageous or necessary in the character and quantity of the work, whether of material or labor, increasing or diminishing the whole cost of the work. And no claim whatever shall be made against the United States for or on account of any modification or change in the projected work, either as to material or labor, as would diminish the cost of the work. Nor shall any claim be made upon the United States for any extra work or material performed or furnished or alleged to have been performed or furnished by the party of the second part under or by virtue of this contract, and not expressly bargained for and specifically included therein, unless such extra work or materials shall have been expressly required in writing by the Secretary of the Interior, and the prices thereof determined in accordance with the provisions of this contract.

The party of the second part shall be allowed to deposit, and to erect sheds for the protection of, the material required in the work hereby contracted for upon a portion of the Government reservation, if any vacant portion thereof be deemed by the Secretary of the Interior available for that purpose, the location to be designated by the Secretary of the Interior. And the party of the second part hereby agrees to vacate and to remove from such portion of the reservation as may be assigned to his use for the purpose above mentioned all material of every description, and all rubbish, &c., resulting from such use, within ten days after the completion of the work, or, if di-

rected to do so by the Secretary of the Interior, prior to the completion of the work, within twenty days after the receipt of written notice to that effect. And if the party of the second part shall fail to remove such material and rubbish as stipulated above, the Secretary of the Interior may cause the same to be removed, and deduct the expense thus incurred from any money found to be due to the party of the second part under this contract.

Neither this contract nor any interest therein shall be transferred by the said George H. Bardwell to any other party; and any such transfer shall cause the annulment of the contract so far as the United States are concerned. All rights of action, however, to recover for any breach of this contract by the said George H. Bardwell are reserved to the United States.

No member of or delegate to Congress shall be admitted to any share or part of this contract, or to any benefit which may arise herefrom.

In witness whereof the undersigned have hereunto placed their hands and seals the day and date above written.

{ SEAL OF DEPARTMENT }
{ OF THE INTERIOR. }

H. M. TELLER,
Secretary of the Interior.

Witness to signature of H. M. Teller—

M. L. JOSLYN.

GEORGE H. BARDWELL.

Witness to signature of George H. Bardwell—

GEO. M. LOCKWOOD.

(Executed in triplicate.)

PROPOSAL.

WASHINGTON, D. C., April 23, 1883.

SIR: I hereby propose to furnish all necessary materials and labor required in the improvement of Hot Springs Creek, at the Hot Springs Reservation, Arkansas, and in a good, firm, and substantial manner, in strict accordance with the printed specifications furnished by the Department of the Interior, hereto attached, execute the work therein described at the prices set opposite the following items, respectively, which will be accepted as payment in full for all work to be done and all material to be furnished in the proper execution of the following:

Excavating rock in place.....	per cubic yard..	\$1.54
Excavating earth and loose rock	do.....	34
Granite masonry.....	do.....	18.45
Concrete masonry.....	do.....	5.74
Sewer pipe, 12-inch, vitrified earthenware.....	per lineal foot..	40
Iron pipe, 6-inch.....	do.....	94

— inclose herewith a bond, with two sureties, in the sum of \$5,000, certified as good and sufficient by the —, as a guarantee of good faith, and to cover the cost or damage to the United States in the event of — failure to enter into contract, with good and sufficient sureties, within ten (10) days after notification of the acceptance of this proposal.

Very respectfully,

GEO. H. BARDWELL,
Washington, D. C.

To the SECRETARY OF THE INTERIOR,
Washington, D. C.

SPECIFICATIONS FOR WORK TO BE DONE ON THE HOT SPRINGS CREEK, HOT SPRINGS, ARKANSAS.

1. The work embraced in these specifications is that required in the improvement of the Hot Springs Creek, at the Hot Springs Reservation, Garland County, Arkansas. It comprises the furnishing of all material and labor necessary for the straightening of said creek, to confine it between parallel walls of masonry and concrete, the construction of such walls and the laying of sewer and water pipes, with necessary connections, along the entire length of the walls.

2. The quantities of the several kinds of work and material are estimated as follows:

Excavation of rock in place.....	cubic yards..	3,000
Excavation of earth and loose rock.....	do.....	6,000
Granite masonry.....	do.....	3,100
Concrete.....	do.....	1,900
Sewer pipe.....	lineal feet..	5,500
Six-inch iron pipe.....	do.....	1,200

The quantities above given are to be considered as approximate only; the right is reserved to increase or diminish them as may be necessary, and the whole expenditure will not exceed \$100,000.

3. The excavations for the channel of the creek, for the foundations for walls, and for the sewer and iron pipes are to be made by the contractor, measurement for the same, for payment, to be made in excavation only. The surplus earth, rock, and other material from the excavation to be removed by the contractor and deposited in such place or places as may be designated by the person charged with the superintendence of the work on behalf of the Government.

From near the head of the gorge to a point opposite the Arlington Hotel the bed of the stream is to have a fall of one foot to eighty (1 on 80), and the walls are to be 17 feet apart. From the last mentioned point to the lower line of the reservation the slope of the bottom is to be one to one hundred and twenty (1 on 120) and the walls twenty (20) feet apart. From the foot of each wall to the point midway between the two the bed falls one foot. This bed must be smooth and free from projectoins.

4. The walls, to be a granite facing backed with concrete, will be three (3) feet thick and generally eight (8) feet high, but may have to be varied in height in order to reach bottom rock. In all cases they are to rest upon bed rock. They are to be laid in sound granite, cut and laid in regular courses not less than one foot wide and backed with concrete. The courses to be not less than one foot high, to be thoroughly bonded; not less than one-third of the stone to be headers, extending through the wall. The beds are to be dressed throughout, true and free from wind; the end joints to be squared for at least eight (8) inches from the face; the whole to be set in full beds of cement mortar; thickness of joints to be not greater than three-eighths of an inch. The horizontal joints and top of the wall when finished to conform to the grades given above for the bed of the stream. All stones must be laid upon their quarry bed.

5. The mortar used in the work to be composed of sand and cement in the proportion of one (1) barrel (of 300 lbs.) of cement and four (4) cubic feet of loose sand, thoroughly mixed dry, and a sufficient quantity of water afterward added to form a rather stiff paste; it will be used within one hour after mixing, and not at all if once set. Sand used will be clean, sharp, free from loam, vegetable matter, or other dirt. Cement shall be of the best quality, freshly burned, finely ground hydraulic cement, equal to the best Rosendale cement. Water used shall be fresh and clean, free from earth, dirt, or sewage. Tight mortar boxes will be provided by the contractor, and no mortar will be made excepting in such boxes, and in no case upon the ground.

6. Concrete will be composed of mortar and broken stone in the proportion of one (1) cubic foot of mortar, made as described above, and two and one-half ($2\frac{1}{2}$) cubic feet of broken stone. The broken stone to be thoroughly cleaned from dirt and dust by screening, drenched with water and immediately incorporated with the mortar. No gravel will be used in the concrete, only angular fragments of stone having rough faces obtained by fracture and measuring not more than two (2) inches in their largest dimensions. The concrete will be rapidly mixed and at once be laid and thoroughly compacted by ramming until the free mortar appears on the surface.

7. Two lines of sewer pipe are to be laid, one just behind, and about five feet below the top, of each wall, to extend throughout the whole length of the walls, and to have a fall essentially the same as the bottom of the creek. The sewer pipe will be of circular well-vitrified earthenware, twelve inches in diameter; the joints to be properly fitted with bands or sleeves and wiped and pointed inside and outside with cement mortar as the pipes are laid. At intervals of about fifty (50) feet of each line of pipe a V of six (6) inches diameter shall be inserted and securely closed with approved vitrified-ware cover or brick laid in cement mortar, as may be required. Also ventilators shall be inserted in each line of pipe at intervals of about three hundred (300) feet. These approximate distances between the lateral and surface connections to be varied, as may be required by the Secretary of the Interior. The pipes are to be carefully laid, the ground beneath them to be well packed to insure that no settling can take place, and to have above and below them at least 6 inches of clay, free from stone and well rammed. After the sewer pipe is built or laid they shall be covered, to the height of the wall, with earth free from stones or other rubbish, well packed by ramming, in layers not to exceed six (6) inches in thickness. Should there be a deficiency or proper material for refilling, the contractor will be required to furnish the same at his own cost, and all surplus if any, will be hauled away. All sewer pipes to be true and straght, without cracks and free from any defect whatever.

8. Iron pipes six (6) inches in diameter are to be laid along the foot of the wall nearest the Hot Springs Mountain in such manner as may be required on the part of the Government, for the collection of the water from the springs along the course of the creek and such as may be developed in the excavations for the work, with such connections as may be necessary for that purpose, and for the conveyance of the spring-water to a point behind the wall, to be designated by the Secretary of the Interior, the joints of the pipe to be perfectly secure and water-tight.

9. All loss or damage arising out of the nature of the work to be done, or from any unforeseen or unusual obstructions or difficulties which may be encountered in the prosecution of the same, or from the action of the elements, will be sustained by the contractors, who will be required, without cost to the Government, to remove from

the vicinity of the work all surplus material, earth, rubbish, &c., immediately after the completion of the work.

10. The work must be commenced within twenty days and completed within one hundred and eighty days after the execution of the contract. Failure to commence the work within the time specified, or to prosecute it thereafter in a satisfactory manner, and at a rate of progress necessary for its entire completion within the limits of time fixed by the contract, will be authority for the Secretary of the Interior to suspend the contractor for the work and employ other parties to complete it. All money due the contractor at the date of suspension will be retained until the work is completed, and be applied to the payment of any increased cost thereof, and any excess of cost over and above the amount so retained will be charged against the contractor and sureties, who will each and severally be held liable therefor.

11. The contractor must be prepared to do any extra work or furnish any extra materials that may be ordered by the Secretary of the Interior arising out of any modification in the plans or details that may appear necessary, and for such extra work and materials he will be paid at the contract rates for work of a similar character; or if the extra work or material should be of a class for which no rate is fixed by the contract, a fair price to be paid will be determined by the Secretary of the Interior. But no payment will be made for extra work or materials unless authorized in writing by the Secretary of the Interior.

12. An inspector or superintendent will be appointed on behalf of the Government, who will give the lines and grades of the work, and no work will be commenced until these are established. It shall also be his duty to point out to the contractor any neglect or disregard of the specifications of the contract. The contractor will be held responsible for the faithful execution of the contract, and upon all questions concerning the execution of the work in accordance with the specifications and measurements thereof the decision of the Secretary of Interior shall be final. All materials furnished and all work done shall be subject to rigid inspection, and such as, in the opinion of the Secretary of the Interior, shall not be in accordance with the specifications shall be immediately removed, and other materials furnished and work done that will be in accordance therewith. The contractor shall furnish the inspector with proper means and facilities for weighing the cement in barrels, the barrels after being emptied, and for measuring the sand and broken stone.

13. Payments on account of the contract will be made monthly as the work shall have been done and accepted by the Secretary of the Interior, the amounts of the payments to be in proportion to the extent of the work accepted, reserving ten (10) per cent. from each payment until the whole work shall have been accepted, when full payment will be made. And when the amount found to be due the contractor, including the reserved percentage, shall reach sixty thousand dollars (\$60,000) the Secretary of the Interior may, at his option, by notice given in writing at least twenty days in advance to the contractor, direct the suspension or discontinuance of all work under the contract, either for a stated period or indefinitely, as may be designated in the notice. And upon the giving of such notice all liability on the part of the United States under the contract shall cease, except for the payment for so much of the work as shall have been previously performed by the contractor to the satisfaction of the Secretary of the Interior. But no claim shall be made upon the United States for extra compensation or damages for or on account of such suspension or discontinuance.

No. 3.

HOT SPRINGS, ARK., *March 29, 1883.*

DEAR SIR: I see by the papers that some question has arisen as to the manner in which Hot Springs Creek is to be walled and covered under the contract recently made, and I venture in that connection to make a few suggestions, based on my own observation.

That part of the stream which is to be thus improved is a little more than a half a mile in length, and runs along what is known as Central avenue, through the principal bathing part of the town. I understand the engineers insist that the walls for the sides of this stream shall be constructed of granite with a finished face. The nearest granite to this place is 13 miles distant, and the cost of transportation very heavy. On the other hand there is a superabundance of very hard and enduring stone which can be taken out of the mountains along the creek and literally rolled into it. This stone, in my judgment, is even more durable than granite in water, and while it will not take a finish like granite, I am at a loss to conceive what objection that can be to a wall which is never to be seen. This stream is simply to become a large covered sewer-way, and the walls should be durable and strong without any expenditures on them for the sake of appearance, inasmuch as they are not to appear. The differ-

ence in expense between granite and the stone here on the ground would be very great. I am informed upon good authority that the difference would suffice to cover a quarter of a mile of the stream if the local stone here should be used for the walls. This is a most important consideration, and I beg you to give it your immediate and earnest attention.

Availing myself of your kind request to write you while here, I may do so again on some points that have occurred to me. This is destined at no distant day to be the foremost watering place on the globe, and it is well worthy the liberal aid and intelligent care of the Government.

With the greatest respect, I beg you to believe me always,

Very truly, your obedient servant and friend,

D. W. VOORHEES.

Hon. H. M. TELLER.

No. 4.

HOT SPRINGS, ARK., May 7, 1883.

DEAR SIR: I am spending three weeks here bathing, and among other things my attention has been directed to the culvert that is to be built over the creek, which is now very much in the way, and should be covered. The report is that it is to be built mostly of dressed granite, which is to be hauled some distance on the railroad, and is to cost about \$20 per cubic yard. If this be so I am satisfied that you are not well informed of the condition of things here. During my business life I have had a good deal of work done in stone masonry, building retaining walls and other walls, and I hazard nothing in saying that a wall as good, and as durable, for the proposed culvert can be built of the stone which is in vast abundance within a hundred feet of the stream, by the side of the culvert, for one-half the amount which the granite structure will cost.

The stone above mentioned has something of the appearance of sandstone, but on close examination it is found that a large proportion of it is a quartz formation. Where it has been exposed to the weather for an indefinite length of time there is no apparent evidence of decomposition. It is an excellent building stone, and a culvert properly built of this stone would last a thousand years. In quarrying there are a great many straight sides to it, so that by properly selecting the stone there is no difficulty in making the front of the wall straight enough and smooth enough for all practical purposes, with scarcely any dressing. And here let me ask, What necessity is there for dressed stone of which to construct a wall of this character which is never to be seen after it is completed, but is to be perpetually under ground? It seems to me all that is necessary is solidity and strength, and that can be had abundantly by using the rock which lies right at the place.

It may not be my business to interfere in this matter, but satisfied that you do not desire useless extravagance in expending the public money I have ventured to make such suggestions as strike me to be practical, and such as I am satisfied will be concurred in by every practical common-sense man who knows anything about the subject and who prefers the useful to the ornamental in a work of this character.

Allow me to add that I am informed these mountain streams, in times of freshet, sometimes become small rivers, and a culvert that is to convey one of them off should not be cramped for room.

I am, very truly, &c.,

JOSEPH E. BROWN.

Hon. H. M. TELLER,
Secretary of the Interior, Washington, D. C.

No. 5.

HOT SPRINGS, ARK., May 26, 1883.

DEAR SIR: I beg to call your attention to the improvement contemplated by the appropriation to wall in the Hot Springs Creek. Observation while here last year and on this visit satisfies me that the creek should be laid with stone floor, walled and arched over, in such way as to be used for part of the street.

I think the appropriation was properly made, and its judicious and economic expenditure would be important, first, to health; second, to personal safety; third, to convenience. There is no reason why the work should be costly.

There are no engineering difficulties whatever, and I believe the stone about here good enough for the purpose. If there is a good stone floor laid in cement with walls

sufficiently apart and sufficiently high to pass the volume at high flood, and the walls connected by arch, all laid in cement, there would be, first, a broadening of the main street, which is necessary; second, a splendid sewer ample for the entire village, with a swift stream of water to keep it clean.

Of course those who want to spend money would want sewerage separate, but there is no need for it.

In view of the fact that the Government has reserved the springs and space for bath-houses, and has appropriated this, as well as \$100,000 for an Army and Navy Hospital, I think it would be quite unfortunate if this appropriation for any cause is suffered to be covered back into the Treasury.

Yours, truly,

S. B. MAXEY.

Hon. HENRY M. TELLER,
Secretary of the Interior, Washington, D. C.

No. 6.

HOT SPRINGS RESERVATION, OFFICE OF SUPERINTENDENT,
Hot Springs, Ark., August 14, 1883.

SIR: In compliance with your request for suggestions in relation to the work to be done on the creek, under contract with George H. Bardwell, I desire to submit the inclosed plan, to be followed in place of that under which the work is now progressing.

The claim for preference for this plan is based on the ground of cheapness of construction and greater durability. The plan under which we are working calls for a concrete wall, with a dressed stone face, 3 feet in width and 8 feet in height. This is to all intents a retaining wall, and, if sufficient at the base, has double the quantity of material required at the top. It is to be covered in with a series of transverse flat brick arches, resting on iron girders, similar to those used in floors of our public buildings. The use of iron is sometimes advisable in a structure where it can be kept dry, but not in this case, where it is constantly exposed to dampness from the earth above, and from the vapors of the water in the creek, which must result in rapid oxidation of the metal, and consequently in its early failure, which will carry with it the destruction of the covering and necessarily of the road-bed above. This must occur at a comparatively early day, even if the side walls prove to be equal to the lateral pressure they will be called on to resist.

The cost of the covering, which is not provided for in the present contract, is estimated to be not less than \$60,000,000, and the conclusion of this contract without the covering adds but little to the improving of the creek, as the street cannot be graded nor the front of the reservation improved until this is done.

The plan submitted herewith calls for a wall 5 feet thick at the base and 5 feet high to the beginning of the arch, where it is 3 feet thick. The two walls to be joined by an arch 18 inches thick at the crown, and thickening towards the springs, as shown in the plan of the cross-section. The stones at the springs—"the skew-backs"—will be in one block, cut to the shape shown in the plan. All the other masonry, including the arch, to be of range rubble-work, laid in cement. It is clear that the side-walls will be far stronger as retaining walls than those of the present plan. The arch has ample strength to resist any pressure that can come upon it, and being of stone is practically indestructible.

The material for this work lies on either side of the creek, the nearest not 100 feet distant from it. It is of the best quality for durability, and can be had in any quantity, and of any dimensions that may be needed. I forward by express this day samples of the stone for your examination. That marked A and B is intended for rubble work. That marked C for the dressed skew-backs.

The area of this cross-section is 180 square feet, very nearly 20 feet more than the present plan. The entire height is 11½ feet, 20 inches more than that of the present plan. This may require a slight increase in excavation. The sewer and water pipes to remain as at present planned.

The relative cost of the work under the two plans is as follows:

Present plan, as per contract, walls	\$68, 101
Covering, brick and iron, estimated	60, 000
Total	128, 101

By plan inclosed, which includes concrete base for bed of creek, the cost is as follows:

950 cubic yards dressed stone, at \$18.45 per yard	\$17,527 50
6,412 cubic yards range rubble, at \$9 per yard	57,708 00
1,161 cubic yards concrete, at \$5.74 per yard	6,327 45

Total walls and covering complete	81,562 95
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Difference in favor of inclosed plan	46,538 05
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No account is made of sewerage, water pipes, or contingencies, as they are the same in either case.

I think the contractor will be glad to make the changes recommended in this plan and carry it out at the prices given. Contractors here would be glad to do it.

Mr. Smithmeyer, architect of the Army and Navy Hospital, is here, and to him I am indebted for valuable suggestions relating to the reservation. He is acquainted with the details of this plan, and at my request has consented to visit the Department and explain whatever this letter fails to cover.

Respectfully submitted.

SAMUEL HAMBLÉN,

Superintendent and Engineer in charge of Hot Springs Creek Improvement.

Hon. M. L. JOSLYN,

Acting Secretary of the Interior, Washington, D. C.

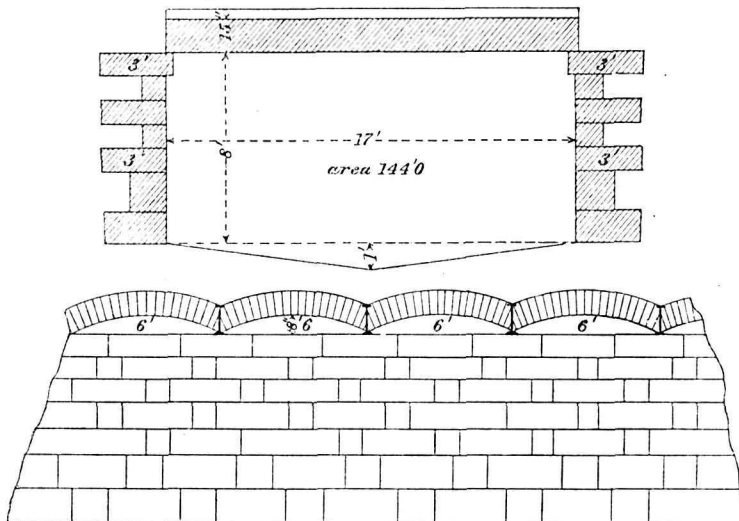
No. 7.

WASHINGTON, D. C., August 30, 1883.

SIR: In compliance with your request I have examined the two plans and specifications which were submitted to the Secretary of the Interior, for the contemplated work on the Hot Springs Creek, at Hot Springs, Ark., and I herewith submit the following report as the result of my examination.

I have first examined the one proposed by Capt. Thomas H. Handbury, Corps of Engineers, United States Army.

This plan contemplates the erection of two "parallel masonry walls," which are to be 8 feet high and 17 feet apart at the upper portion of the creek, and 20 feet at the lower; otherwise the conditions are the same. These parallel walls are contemplated to be 3 feet thick, built of granite, cut and laid in courses, and backed with concrete. The open space between these two parallel walls is to be spanned with a series of wrought-iron, light 15-inch I beams of 50 pounds per foot (for the 17-foot span), and of 65 pounds per foot for the 20-foot span. These beams are to be spaced at intervals of 6 feet, and the filling in of these intervals between the beams is to be done with 13-inch thick brick-arches, with a rise of 8 inches, thus:



Scale $\frac{1}{2}$ " to the foot.

According to Cooper, Hewitt & Co.'s book (1882), page 33, the "limit of elasticity" of iron beams is from 2.7 to 4.2 of the safe load given in their tables.

A 15-inch beam (light), 50 pounds per foot, 17-foot span, will, according to their schedule (p. 7), carry safely—

15.78 tons.
2.7 tons limit of elasticity.

11.046
31.56

42.606 tons.

Therefore 42.6 tons represent the maximum weight which may be put upon a 15-inch light beam 17-foot span, or, in other words, under this load the beam would be permanently disabled.

The beams in question are calculated to carry a brick arch 6 by 17 feet by 12 inches, or 102 cubic feet each, which, with 112 pounds per foot, makes—

112
102
—
224
112

11,424 pounds, or 5.7 tons.

This permanent load of 5.7 tons deducted from 42.6 tons leaves 36.9 tons, or 37 tons, which is the load at the weight of which the beams would be disabled; this divided by 6, the distance between the beams, leaves 6.37 tons, or $6\frac{1}{2}$ tons per lineal foot of sewer.

Six and one-sixth tons is equal to 12,400 pounds; divide this by 17 feet, the span : $17 \overline{)12400}$ 730 pounds.

119
—
50
51

Seven hundred and thirty pounds is the weight they can carry per square foot. Earth may be assumed at about 100 pounds per cubic foot, 4 feet of earth filling=400 pounds.

730 pounds per cubic foot of weight.
400 pounds of earth.

Leaves 330 pounds of resistance per square foot.

This weight would disable the beams.

The plan submitted by Samuel Hamblen, esq., superintendent and engineer in charge of Hot Springs improvements, proposes the construction of a stone arch, which on examining I find to be very well proportioned and perfectly well buttressed, so that it could only yield to the crushing of the masonry comprising the same.

Of the stones contemplated by him to be used in this work, and of which samples are in your office, I can say (from my own observation) that there seems to be an abundance of them, and that they are very handy to the work, and that those I saw were equal to granite, marble, or the hardest sandstones.

According to Professor Rankine, Civil Engineering Appendix, p. 769, this kind of stone can be crushed by 5,500 pounds of pressure per square inch. Rubble masonry, four-tenths of cut-stone.

The arch in question is 18 inches thick in its weakest section, therefore for 12 inches of width

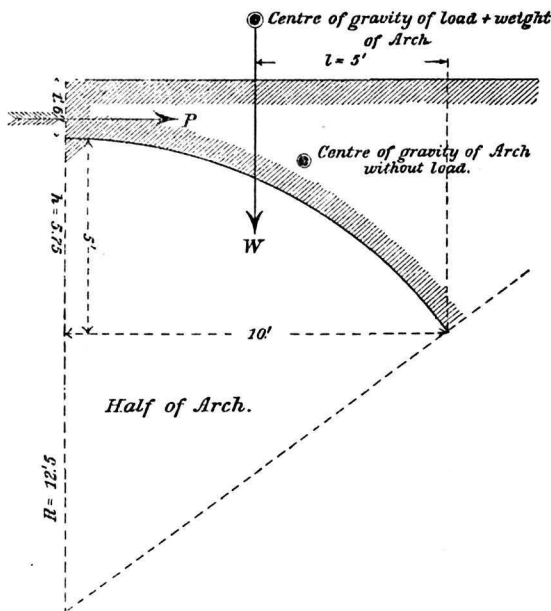
18
12
—
36
18
—
216=216 square inches.

Now $\frac{5500.4}{10}=2200$ = to crushing weight of masonry, comprising arch, per square inch.

216
2200
—
43200
432
—
475200

2000)475200(237 tons.

From Frautnine's Civ. Eng. Pocket Book, 1882, "Force in rigid bodies," I deduce:



The load W necessary to crush the key-stone of the arch (see figure) is found by allowing the horizontal pressure P to become a maximum, or equal to 237 tons for the cross-section in example, 18 inches high by 12 inches wide.

The conditions of equilibrium are that the weight of arch, plus load W , multiplied by its lever from center of gravity to fulcrum l is equal to the pressure P multiplied by its lever h .

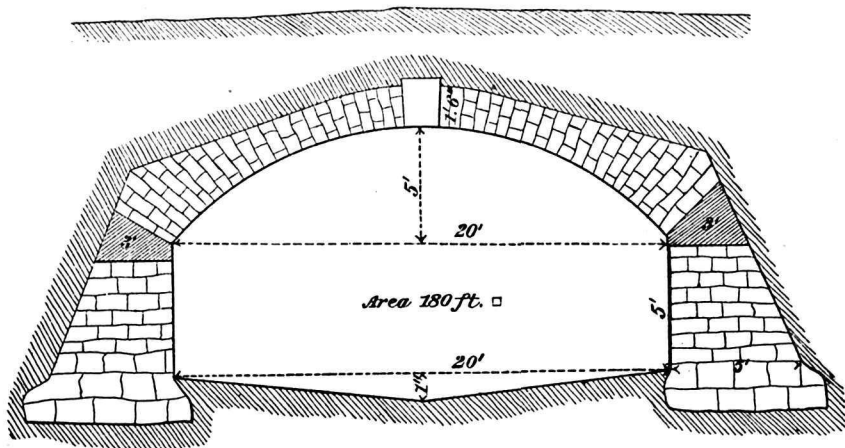
Hence we have—

$$W \times l = P \times h, \text{ or } W \times 5' = 237 \times 5.75.$$

$$W = \frac{237 \times 5.75}{5} = 272 \text{ tons, over 10 feet equally divided.}$$

Or 27.2 tons per running square foot equal a maximum load.

From the foregoing it must be obvious that this plan, which contemplates a rubble-stone wall of 5 feet height and 5 feet thickness at the bottom and 3 feet at the top



* The lever l will always be somewhat smaller than 5 feet, as the arch increases in weight toward the abutment; here the most unfavorable case is chosen.

(thus tapering), with heavy footing underneath, and which provides a cut-stone skew-back of 3 feet, butting against the spring of the stone arch of 2 feet 9 inches thickness, is preferable to the plan which contemplates a 3-foot cut-stone wall of equal thickness of the top and bottom and of 8 feet height; and that a stone arch of 2 feet 9 inches thickness at the spring and 18 inches thickness at the key is much preferable to a 15-inch iron beam placed 6 feet apart and filled in between the spaces with 13-inch brick arches, especially if the stone arch represents a crushing resistance of 27.2 tons, or 54,400 pounds to the lineal square foot, while the crushing resistance of the iron and brick construction plan is only 330 pounds to the lineal square foot, 165th the strength of stone. And when it is further considered that the stone arch is much more durable and cheaper, and that its capacity for passing water is 180 square feet, while the other plan affords a capacity of only 144 square feet, there seems to be no room for any argument left in favor of the iron and brick plan.

Very respectfully, yours,

J. L. SMITHMEYER, *Architect*.

Hon. M. L. JOSLYN,
Acting Secretary of the Interior.

In regard to the cost of rubble-stone work, such as Mr. Hamblen's plan (no doubt) contemplates, I feel scarcely competent to give an opinion, as I paid little attention to this matter when at Hot Springs; but judging from the cost of quarrying similar stone in other localities, and also from the cost of labor, as well as the cost of other building materials which necessarily enter into this work, such as cement, sand, &c., I should consider \$10 a yard a fair price for the work, including the skew-backs and ring-stones of the fronts of this sewer, which are calculated to be dressed stones.

J. L. SMITHMEYER, *Architect*.

No. 8.

DEPARTMENT OF THE INTERIOR,
Washington, September 1, 1883.

SIR: The Department deems it for the public interests to change the plan for the improvement of Hot Springs Creek, at the Hot Springs Reservation, in Arkansas, under your contract of the 8th of May last, and to cover the creek with an arch of range rubble masonry of stone, of the quality found upon the reservation, according to the plan set forth in the letter of the superintendent of the reservation, dated August 14, 1883, and the accompanying drawings, which are herewith submitted, the walls to be 5 feet thick at the base and 5 feet high to the beginning of the arch, where it is to be 3 feet thick, the walls to be joined by an arch 18 inches thick at the crown and thickening toward the springs, as shown in the plan of the cross-section which is herewith submitted. The stones at the springs—the skew-backs—will be in one block, cut as shown in the plan. All the other masonry, including the arch, to be of range rubble-work, laid in cement, the quality of the stone for the rubble-work and the dressed skewbacks to be subject to the approval of the superintendent appointed by the Department.

You will please submit a proposal for doing the work upon this plan, and of these materials. It is estimated that about 7,362 cubic yards of masonry will be required.

Very respectfully,

M. L. JOSLYN,
Acting Secretary.

GEORGE H. BARDWELL, Esq.,
Washington, D. C.

No. 9.

WASHINGTON, D. C., *September 1, 1883.*

SIR: I hereby propose to do the work of walling and arching the Hot Springs Creek, at Hot Springs, Ark., with rubble masonry, as per plans and drawings of work set forth in accompanying letter of superintendent and engineer of said reservation, dated August 14, 1883, from foundation to keystone of arch, complete, for the price and sum of \$10.50 per cubic yard.

Very respectfully,

GEORGE H. BARDWELL.

Witnesses:
GEORGE EWING.
L. C. CREASER.

Hon. M. L. JOSLYN,
Acting Secretary of the Interior, Washington, D. C.

No. 10.

DEPARTMENT OF THE INTERIOR,
Washington, September 1, 1883.

SIR: Your proposal of this date to do the work upon the improvement of the Hot Springs Creek, in Garland County, Arkansas, according to the plans and specifications contained in the letter of Samuel Hamblen, esq., superintendent of the Hot Springs Reservation, dated August 14, 1883, at the rate of \$10.50 per cubic yard, is accepted, and the original contract is modified accordingly.

Very respectfully,

M. L. JOSLYN,
*Acting Secretary.*GEORGE H. BARDWELL, Esq.,
Washington, D. C.

No. 10½.

[Telegram.]

DEPARTMENT OF THE INTERIOR,
*Washington, September 1, 1883.*SAMUEL HAMBLÉN, Esq.,
Superintendent of the Hot Springs Reservation, Hot Springs, Ark. :

Your plan for improvement of the creek is adopted. The change will be made from Monday, the 3d instant.

M. L. JOSLYN,
Acting Secretary.

No. 11.

DEPARTMENT OF THE INTERIOR,
Washington, September 4, 1883.

SIR: In view of the facts stated by you in your letter of the 14th ultimo, and in other communications from various sources upon the same subject, the Department has concluded to change the plan and the materials for covering Hot Springs Creek. The plan suggested in your said letter of the 14th ultimo has been adopted by the Department, and the work will proceed upon that plan from the 3d instant, as stated in my telegram to you of the 1st instant. Mr. Bardwell has agreed to do the work, with stone to be found on the sides of the creek, at the rate of \$10.50 per cubic yard, and his proposal has been accepted. Copies of the letters between the Department and Mr. Bardwell upon the subject are herewith inclosed for your information.

Very respectfully,

M. L. JOSLYN,
*Acting Secretary.*The SUPERINTENDENT OF THE HOT SPRINGS RESERVATION,
Hot Springs, Ark.

No. 12.

HOT SPRINGS RESERVATION,
OFFICE OF SUPERINTENDENT,
Hot Springs, Ark., October 19, 1883.

SIR: I have the honor to report that the work for the improvement of the Hot Springs Creek is now sufficiently advanced to call for provisions for conducting away the hot water now running to waste, and securing it.

By the plan under which the work was commenced a 6-inch pipe was provided. This pipe, in my judgment, will not prove sufficient for the purpose, as some single springs are nearly equal to its capacity, and a very large quantity of water will be developed as the work progressed.

I recommend, therefore, that a 12-inch pipe be substituted for the one provided for in the contract, and that the necessary arrangements be made with the contractor to insure the change.

Very respectfully,

SAMUEL HAMBLÉN,
*Engineer in Charge.*Hon. H. M. TELLER,
Secretary of the Interior, Washington. D. C.

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No. 13.

DEPARTMENT OF THE INTERIOR,
Washington, November 16, 1883.

SIR: You are hereby informed that in accordance with the authority reserved to the Secretary of the Interior in the contract made with you on 8th of May, 1883, for the improvement of Hot Springs Creek, at the Hot Springs Reservation, Arkansas, to make any change or modification deemed advantageous or necessary in the character or quantity of the material or labor contemplated therein, it has been determined not to require the furnishing and laying of the earthen sewer pipe and connections as provided in said contract.

The superintendent and engineer in charge of the work have reported it would seem desirable that the iron pipe for the collection and conveyance of the hot water from springs found along the course of the work should be of larger size than 6 inches, as required by the contract. You will please submit to the Department, as soon as practicable, a statement of the prices per lineal foot, at which you will furnish (and lay in accordance with the contract) extra-heavy cast iron soil pipe 10-inch or 12-inch, or wrought-iron pipe of the same dimensions (10 or 12 inch), in lieu of the 6-inch pipe.

Very respectfully,

H. M. TELLER,
Secretary.

GEORGE H. BARDWELL, Esq.,
Washington, D. C.

No. 14.

WASHINGTON, D. C., *November 19, 1883.*

TO THE SECRETARY OF THE INTERIOR:

I acknowledge the receipt of your letter of 16th instant, advising modification and change of material of contract of 8th of May last for improvement of Hot Springs Creek, at Hot Springs Reservation, Arkansas, and have to reply that I shall be prepared to furnish and lay, in accordance with the modifications of contract, and the requirements of the Department, the extra heavy cast-iron soil pipe, or the wrought-iron pipe, at prices as follows:

Extra heavy cast-iron pipe of 10 inches diameter, at \$1.80 per lineal foot.

Extra heavy cast-iron pipe of 12 inches diameter, at \$2.30 per lineal foot.

Extra heavy wrought-iron pipe of 10 inches diameter, at \$2.50 per lineal foot.

Extra heavy wrought-iron pipe of 12 inches diameter, at \$3 per lineal foot.

Or I will furnish and lay such as shall be officially designated at the cost of pipe at the works and 10 per cent. additional.

I am, very respectfully, your obedient servant,

GEORGE H. BARDWELL,
Contractor.

No. 15.

DEPARTMENT OF THE INTERIOR,
Washington, November 20, 1883.

SIR: Your letter of the 19th instant has been received, in reply to a letter of this Department, dated the 16th instant, requesting you to state at what price you will furnish and lay, in accordance with the specifications of your contract of the 8th of May, 1883, for work in the improvement of Hot Springs Creek, Arkansas, iron pipe of the dimensions stated in said letter, in lieu of the 6-inch iron pipe specified in the contract.

Your proposition to furnish and lay extra heavy cast-iron pipe of 12 inches diameter at the price of \$2.30 per lineal foot, is hereby accepted, and the contract modified accordingly.

The Department is informed by the superintendent and engineer in charge, that the work has reached a point requiring that the iron pipe should be furnished and laid at the earliest practicable date.

Very respectfully,

H. M. TELLER,
Secretary.

GEORGE H. BARDWELL, Esq.,
Washington, D. C.

No. 16.

WASHINGTON, D. C., November 21, 1883.

To the SECRETARY OF THE INTERIOR:

I hereby acknowledge the receipt of the Department letter of 20th November instant, accepting the proposal of my letter in reply of the 19th instant to furnish and lay extra heavy cast-iron pipe of 12 inches diameter, at the price of \$2.30 per lineal foot, in lieu of the 6-inch iron pipe specified in my contract of the 8th of May last, for the improvement of Hot Springs Creek arch, and agree to execute the contract as modified at the earliest practicable date by laying the pipe.

(Dispatched in duplicate.)

GEORGE H. BARDWELL,
Contractor.

No. 16½.

WASHINGTON, D. C., December 17, 1883.

I have the honor herewith to respectfully request that a price per yard be set for filling and covering of the arch over the Hot Springs Creek, on reservation at Hot Springs, Garland County, Arkansas. No price having been arranged for such work between the Department and myself, in original specifications, the progress of the work at this date requires an early understanding on point mentioned.

Very respectfully,

GEORGE H. BARDWELL,
Contractor.

Hon. H. M. TELLER,
Secretary of the Interior, Washington, D. C.

No. 17.

DEPARTMENT OF THE INTERIOR,
Washington, January 5, 1884.

SIR: Referring to your letter of the 29th ultimo, requesting that a price be fixed for covering and filling in the arch over the Hot Springs Creek, for which work no price is named in your contract with this Department, I have to request that you will state the lowest price, per cubic yard, at which you will do this work.

It will be required that the side filling be well packed with rock or gravel, and the arch covered to a depth of not less than 8 inches with clay or loam, free from stone and finished with a superstratum of gravel, the entire covering to be not less than 18 inches in thickness at the crown of the arch, and at all points to correspond to the grade of the street or the reservation front through which the work extends; the surface to be finished with material suitable to form a good road bed.

Very respectfully,

H. M. TELLER,
Secretary.

GEORGE H. BARDWELL, Esq.,
Washington, D. C.

No. 17½.

DEPARTMENT OF THE INTERIOR,
Washington, January 11, 1884.

SIR: The appropriation available for payment for work under your contract for the improvement of the Hot Springs Creek will be exhausted upon the payment of the amount due for work done in December, as per estimates of Superintendent Hamblen, just received.

I hereby notify you, as provided in the contract, to discontinue, until further notice, all work under said contract.

Very respectfully,

H. M. TELLER,
Secretary.

GEORGE H. BARDWELL, Esq.,
Washington, D. C.

No. 18.

WASHINGTON, D. C., *January 18, 1884.*

DEAR SIR: Your communication of January 5th in reference to filling in the arch over Hot Springs Creek received. In reply I would state that I will do all the work for the sum of 44 cents per cubic yard—rock and earth included, or for the sum of 24 cents per cubic yard for earth, and 84 cents per cubic yard for rock filling, all to be done as per specifications.

Very respectfully,

GEO. H. BARDWELL,
Per WALTON.

Hon. H. M. TELLER,
Secretary of the Interior.

TESTIMONY.

HOT SPRINGS, ARK.,
March 17, 1884—3 o'clock p. m.

Mr. Casey Young (chairman), Mr. John B. Storm, and Mr. Sereno E. Payne, constituting the special committee of three directed by resolution of the House of Representatives to investigate matters in respect to the work now being done upon the Hot Springs, Creek, &c., met at the above place and time for the purpose of proceeding with the investigation referred to.

The CHAIRMAN. The committee is ready to examine any witnesses that may be present in response to the notifications of the committee.

E. H. JOHNSON, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Mr. Johnson, we are here under this resolution:

"Be it resolved by the House of Representatives, That a special committee of three members, to be appointed by the Speaker, be directed to proceed to the town of Hot Springs, in the State of Arkansas, and make investigation in respect to the work now being done upon the Hot Springs Creek, on the Government reservation at that place," &c.

Now, of course, we do not know what particular part of this investigation you are acquainted with, and you will save us the trouble of asking many questions if you will indicate what particular branch of this subject you are familiar with. I will first ask you what is your profession?—Answer. I have spent probably eight or ten years of my life in civil engineering. I have been for the last seven or eight years in the book and stationery business. I was connected with the surveys and also with the construction department of the Saint Louis, Iron Mountain and Southern Railroad, and on the Little Rock and Fort Smith Railway. I was employed as an engineer by the Hot Springs Commission, and assisted in compiling the maps, &c., of that Commission.

Q. How long have you resided here in Hot Springs?—A. Nearly seven years.

Q. Are you acquainted with the work being done under the direction of the Government in the walling and arching of Hot Springs Creek?—A. I have noticed that work as it progressed from day to day.

Q. Are you acquainted with the plan and specifications after which it is constructed?—A. I have looked over the plans and specifications; yes, sir.

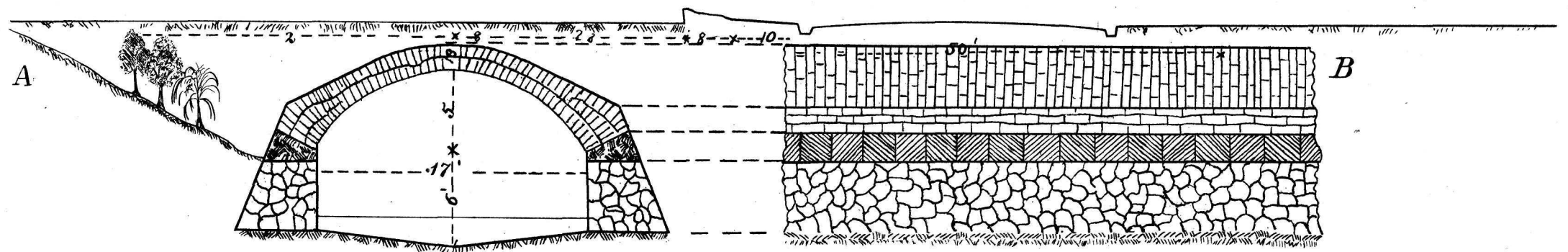
Q. Well, do you think they are proper ones for work of that character—a proper method of improving that creek?—A. I am satisfied that the work is not done as it should be done.

Q. Well, I ask as to the plan of the work. Is it a proper plan for a work of that character?—A. The plan submitted by Mr. J. L. Smithmeyer I consider the proper and best plan that could be adopted; but this present plan varies a little from that in not being as large and not being as well constructed.

Q. Well, what have you to say as to the plan itself, admitting the construction to be proper?—A. So far as the plan itself is concerned, I think it is sufficiently strong, although I am inclined to think that the opening is rather small.

Q. You think the plan a proper one, then?—A. Yes, sir.

Q. Have you noticed the work in regard to material used and the manner of construction?—A. Well, so far as the rock itself is concerned, the material of which it is made, I could not find fault; but it comes out in such irregular and poor shape that it is impossible to do with it a good and substantial class of work. It is a class of work which if done on the roads I have been connected with, on the Saint Louis, Iron Mountain and Southern, and the Little Rock and Fort Smith Railways, it would be



called second class, with this exception, that we used lime instead of cement on the masonry work. Of course there are many different grades of masonry. That which would be called first-class masonry in one kind of work would be probably no better than what we call third-class on other kinds of work.

Q. Now, the first material used was a blue-colored stone, having the appearance of granite. Do you regard that as good material for that class of work?—A. Yes, sir; I consider that first class.

Q. Afterwards a change was made and a different material used. Do you regard this stone which was substituted for the blue granite a durable stone?—A. I do not consider it as durable as the granite.

Q. And the objection you find is that good work cannot be done with this stone which was substituted for the first stone, because of the irregular shapes in which it comes out of the quarry?—A. Yes, sir; and the material they use for mortar is very little better than loam, and certainly unfit for any kind of masonry that is expected to stand for any length of time.

Q. Well, outside of that defect, is there any other objection to the work that you know of?—A. Well, I have never seen a piece of work of this character that was considered good at all that was not put down to the solid bed-rock and a clean, good level bed excavated for it, and the walls put on that. I know a number of places along there where that has not been done. It may be that it rests on the rock there, but it is an irregular surface. They should excavate down to a level surface and a good flat bed-rock foundation secured. The rock should be laid upon that instead of it being filled in with cement and spawls, and a bed made of that.

Q. Instead of blasting to a level surface they filled in the irregularities with gravel and cement. Is that what you mean?—A. Yes, sir; and it is certainly the loosest piece of work I ever saw done by any corporation or government. Now, that work may last a good many years. You no doubt have seen chimneys standing on the prairies after the house had been burned down, and this may stand the same way, but I do not consider it what might be called a permanent piece of work.

Q. Do you think there is any danger of the arch falling in?—A. Of course, it could not fall at present. It would be after a length of time that it would fall, through disintegration, and then piece by piece, and the falling of the arch would probably not occur for a great many years.

Q. What is the difference in cost of this bluestone and the material at present used?—A. I would not be able to judge as to the actual value of the stone, but I know that the same class of work which was done up here on the Little Rock and Fort Smith Railway, with the exception that we used lime instead of cement, the contractors, Messrs. McCarthy and Johnson, received \$5.70 a cubic yard, and it was sublet for \$4 per cubic yard.

Q. What sort of stone do you say they used?—A. Well, it was a granite stone.

Q. The same as this?—A. Well, it was not as dark.

Q. Was it the same quality of stone?—A. Yes; it was as good a stone. There might be this said in its favor, that the stone might be a little easier quarried. The rock found there was perhaps a little more convenient to the work.

Q. You say this work cost \$5 and what?—A. \$5.75 per cubic yard.

Q. And that was the contract price for this class of work on the Little Rock and Fort Smith Railway?—A. Yes, sir; for that class of work.

Q. What is the price here; did you ever examine to ascertain?—A. The contract price here is \$10.50. I do not mean by that that this work might not cost more than our work up there on the Little Rock and Fort Smith Railway. Prices for work vary in different localities, owing to convenience or inconvenience of labor and material.

Q. Do you know what it costs to transport this granite here?—A. I never ascertained, but I understand very good stone can be obtained a mile below here.

Q. And the original contract price was \$10.50 per cubic yard, was it?—A. Not for blue granite; for this work they are doing now.

Q. Well, what was the price for this blue-granite work?—A. \$18.25 per cubic yard.

Q. Would that be a fair price for that character of work?—A. Well, I had some of that same kind of work done under my house, which is as good as that done on the creek here perhaps, and I used the best quality of sand, and it cost me \$6 a yard.

Q. Where did you get the granite from?—A. I am not speaking in relation to the granite. I speak of the work they are now doing. My largest rock I laid for the foundation.

Q. Well, from where was the material got which was last used on the Hot Springs improvement?—A. That was taken from the quarry there about the central part of the work, opposite the Arlington Hotel, with the exception of the skewbacks. They are made of different material, which comes from this neighborhood—blue granite.

Q. Do you know the cost of getting out this blue granite and transporting it to the work here?—A. No, sir; I do not.

By Mr. STORM:

Q. The bed of this stream, as prepared, is it even, so as to facilitate the flow of water through the culvert?—A. I understand that was part of the programme. I never considered that the sewer opening was sufficient to do that. It may be in some places and not in others. I will tell you why: Right in front of the opera house, I believe, is the lowest place. The dotted line [referring to a sketch in witness's memorandum book] shows the bed of the creek near the opera house, and is intended to give the capacity of the opening at its minimum, which is practically the maximum capacity that it is able to discharge. They cannot excavate now, from the fact that the walls have been laid.

Q. But before the walls were laid, could not it have been made of sufficient capacity?—A. Yes; it would then have been done, but they do not intend to do that now, or they would not have laid these walls. At this point I have referred to, the culvert is not capable of discharging as much as at other portions of the culvert.

Q. But water passes through the smallest places in the culvert, does it not?—A. Yes, sir; and they have not given as large an opening there at the opera house as they have in other portions of culvert.

Q. Then the bed at that place is not excavated as much as it ought to have been?—A. No, sir; I should have endeavored to make the capacity the same all the way through.

Q. Can you describe the character of the rock being used here—which is now being taken out of the quarry near the works—what kind of rock would you call it?—A. I call it a granite rock.

Q. That which they are using now?—A. Yes, sir; granite quartz.

Q. What is the difference in the rock formerly used, in its appearance, and this rock being used now on this improvement?—A. The difference is in the shape in which it is gotten out. The rock that they are getting out and using now is taken out in all sorts of shapes, and thrown in the work there, you might say, almost indiscriminately.

Q. But the blue granite was quarried in regular blocks, was it not?—A. Yes, sir; solid pieces, and got out from the solid bed.

Q. But the rock taken out of this cut here near the improvement subdivides, does it not? Do not these stones have parallel veins running through them, causing them to break into cuboids in being dressed by a hammer, or from pressure?—A. They do not break up in any particular shape.

Q. Have you noticed that the stones in the arch now have iron veins running straight through them?—A. Yes, sir; and they look nicely there.

Q. Have you noticed that some have a vein or split right through them?—A. No, sir; I have not noticed that.

Q. Well, you would not consider stone like that as good as stone having no veins or splits in it, would you?—A. I consider a stone that comes out in layers better than when it is brittle and breaks into all sorts of shapes.

Q. From where is the sand obtained which is used on this Hot Springs Creek work?—A. Well, I understand that the material they used for mortar is obtained about a half or a quarter of a mile up Whittingdon avenue.

Q. But you do not think it contains sufficient silicate, as I understand you?—A. There is no doubt in my mind about that; good sand should be clear and clean, and free from dirt.

Q. Do you know what proportion of sand is mixed with the cement?—A. No, sir; I do not.

Q. Is there lime used with it?—A. I do not think so; all I have ever seen is simply the cement.

Q. You said in the beginning of your examination that you thought the plan should have been originally on a larger scale; did I understand you to make that statement?—A. I always thought the opening rather smaller than it ought to have been.

Q. I understand you to say that the walls rested on the native rock?—A. I do not know about that; they may have put in a foundation when I was not there; I have noticed it resting on the bed rock, though I never examined the foundation specially.

Q. But, so far as you know, the wall is all built up from the solid rock?—A. So far as I know.

Q. Then the walls cannot settle?—A. The walls cannot settle except in this way: I saw them putting in slate spawls and small stone, and this soft material, in falling out, will leave the wall so that it is liable to settle and fall.

Q. Is the wall filled at the back, so as to prevent it from spreading, if you know?—A. I do not think there is any danger from the pressure of the arch.

Q. But you think that if there is any difficulty it will be in the falling out of the mortar and spawls, which will weaken the masonry?—A. Yes, sir; the danger will be from the mortar and spawls falling in. There is no doubt about that, because this last freshet washed out a good deal of it.

By Mr. PAYNE:

Q. Cannot you get plenty of good sand here?—A. Yes, sir; I got all I wanted when I was doing work of this kind.

Q. What distance does it have to be brought?—A. About 6 miles.

Q. What is it worth here?—A. The summer I got it I think I bought it a little more reasonably than it could usually be purchased for. I made a contract with a man whose teams were doing nothing. Some of it I paid \$3.50 for.

Q. Was any of that sand used in the construction of this work?—A. Well, I could not say. I do not think that sand was used. If it has been used I have not observed it.

Q. You said that the ends of the arch looked nicely. Now, what do you mean by that?—A. I mean the ends of the arch looked better than almost any cross-section that might be observed. I do not think, though, that it is what it ought to be.

Q. Do you mean that the ends are better than that portion of the arch which is covered?—A. Yes, sir.

Q. In what respect?—A. The stone is better shaped.

By the CHAIRMAN:

Q. Another branch of our inquiry is directed to the management of the hot water privileges, the renting of bath-houses, &c. Can you give the committee any light upon that subject?—A. Before we leave this subject of the Hot Springs Creek improvement I would state that I should like to have an investigation made in regard to the quantities of material returned and the estimates of work done.

Q. Do you mean the estimates that have been accepted by the officers of the Government upon which payments have been made?—A. Yes, sir.

Q. Well, if you know anything about it, state all you know to the committee. We are here to make a fair and full investigation of these matters.—A. I will say that so far as the excavation is concerned, I have not anything at all upon which to base any estimate, except the estimates made by Captain Handbury. His estimates have been largely exceeded, and the estimates paid for are far in excess of his, although I do not think the channel of the creek has been changed from what the original plan called for. I went over and measured up the stone work on the 28th day of January. I think that was two or three weeks after the work had been ordered to be stopped. I could not measure correctly, because to measure accurately a man would have to do it every day as the work progressed. But as near as I could get at it there were about 4,000 cubic yards of masonry. I admit that I made an error of perhaps 10 per cent., but there have been over 5,000 cubic yards returned.

Q. Do you think you made a mistake of as much as a thousand cubic yards?—A. I do not think I could have.

Q. This measurement you made embraces the walls and arch, does it?—A. Yes, sir; up to the 31st of December there were about five thousand cubic yards returned, and I made my measurement a month later. There has been considerable laid since the 31st of December, and there has been considerable work laid since I made my measurements. The Secretary's letter stated that the appropriation had been exceeded on this last estimate of the 31st of December. As I read the letter of the Secretary of the Interior in this printed report, I see that he ordered the work to be suspended, but it has not been.

By Mr. PAYNE:

Q. At what date did you make your estimate?—A. I made my measurement on the 28th of January. There is one little piece of work I could not get at, which connects with the Arlington Hotel. It may be fifty or a hundred cubic yards. I do not know exactly what the amount is, and will not be positive about that, and I do not give that as reliable. My estimate, as I have it here in my memoranda book, is as follows:

39.2
1.3
1.3
21.5
21.5

34.8 Area of cross section multiplied by 555 feet, length of arch completed on or about January 28, 1884, and divided by 27, is equal to cubic yards.... 1,743

SUMMARY.

	Cub. yds.
Masonry completed from lower extremity of reservation to a point beyond Ozark bath-house.....	552
Masonry completed from near Old Hale bath-house to point where cross-section of arch is taken	536

	Cub. yds.
Arch work completed	1, 743
Masonry completed from upper end of finished arch near Beldon block to Rock- afellow's bath-house	886
Masonry completed on Whittington avenue	121

Total 3, 838

Q. Do you knew how much work has been done since you made your estimate?—
A. I do not.

Q. Well, if you know how much work was done when you made your measurement, you could tell how much has been done since, couldn't you?—A. Yes, sir; I could approximate it.

Q. Did you make any estimate of what proportion of the entire job had been completed when you made your measurement?—A. No, sir; I did not. I hadn't any idea what it was.

By the CHAIRMAN:

Q. How long has it been since that arch was covered?—A. They covered it all the time; they were dumping in dirt every day.

Q. How long since they commenced covering it?—A. They commenced covering—I presume, I cannot tell positively—I think about the 1st of January; perhaps before that.

By Mr. STORM:

Q. This year?—A. Yes, sir.

By the CHAIRMAN:

Q. How long was the work suspended under the order of the Secretary?—A. I should judge a couple of weeks.

Q. Was it suspended altogether?—A. Yes, sir; though they may have done a little work. I know that according to Captain Handbury's own statement, he contemplated excavating a foot into the solid rock. The amount of excavation of earth and loose rock returned is nearly fifteen thousand cubic yards. Captain Handbury's estimate for the same work is six thousand cubic yards, although I do not think the channel of the creek has been changed in any way. The amount of excavation of solid rock returned is 9,300 yards, while Captain Handbury's estimate is 3,000 yards for the same, and as I said, Captain Handbury's estimate contemplated going into the rock a foot, and, in many cases they have not done that.

Q. And you say that has not been done?—A. I know it has not been done all the time.

By Mr. STORM:

Q. What is meant by concrete work?—A. The concrete work is the filling.

Q. Do you mean the leveling up to get a good foundation?—A. That is not the concrete work that they contemplated. The concrete work intended was the filling back of the wall in the original plan, composed of broken stone and cement.

Q. What is your opinion as to the quality of the cement used?—A. I am unable to say. I never felt able to judge cement without first making a test.

By the CHAIRMAN:

Q. Well, is there a sufficient proportion of cement; is there too much or too little?—A. I never examined that but once or twice, and that was when they were mixing the mortar up on Lincoln avenue, which was done in such a way that I could scarcely determine. They would throw in a shovelful of cement and then a lot of sand, and I could not get at it.

By Mr. STORM:

Q. From your experience as an engineer, what proportion of cement and sand do you think would make a good mortar or cement?—A. good proportion is 1 in 3.

Mr. PAYNE. The proportion specified in those specifications, I believe.

Mr. STORM. I just want his opinion about it, so that we may get it down. I understand him to say one part of cement and two parts of sand.

The WITNESS. Yes, sir.

By the CHAIRMAN:

Q. Do you know whether that proportion has been observed in the prosecution of this work?—A. Well, my opinion is that it was not, although I would not like to state it positively. At the time I noticed them mixing the mortar they were not using that proportion.

By Mr. PAYNE:

Q. In making this measurement, how did you get at it, the work of course being partially covered?—A. The way I arrived at it was simply this. I took a cross-sec-

tion at the lower part there, and from my observation the walls would not average more than this cut shows [referring to a diagram in witness's memoranda book]. The depth of the wall there is about 5½ feet, 3 feet at the top and 4 feet 8 inches at the bottom. The ends of the wall now show very much like that end of the arch [indicating on memoranda book]. I measured the arch in a number of places, and I found it to be about 18 inches at the crown of the arch and 2 feet at the spring of the arch.

Q. Is that the average you used in your estimates?—A. That is the average I used.

By the CHAIRMAN:

Q. Eighteen inches at the crown and 2 feet at the spring?—A. Yes, sir.

By Mr. PAYNE:

Q. And the side walls?—A. I call it 3 feet on top, and the height generally I call 5 feet at least.

By the CHAIRMAN:

Q. Are you accustomed to measuring such work as that, Mr. Johnson?—A. Well, sir, I had two divisions of road on the Little Rock and Fort Smith Railway to measure, and I have measured a good deal of work. As I said before, no man can go over that work without the assistance of a man who has been engaged on the work and determine accurately the quantities there. That is an impossibility. The only way I could measure that masonry is for somebody to uncover and expose it to view. As regards the excavation, no one in the world could determine that positively, without the figures of the man who did it.

Q. Have you a copy of the estimates that were sent in?—A. Yes, sir.

Q. Will you leave them with the committee?—Yes, sir.

Q. Where did you get those estimates?—A. I wrote for them and had a copy sent, and I made a copy from that.

Q. Were they sent to you direct from the Interior Department?—A. Yes, sir. I think you will find them correct. They are marked "copy," but I do not suppose there will be any trouble about establishing their accuracy.

Q. You received them through the mail in response to a letter to the Department, did you?—A. Yes, sir; and I hand the same to you.

The estimates referred to are as follows:

UNITED STATES ENGINEER'S OFFICE,
Little Rock, Ark., July 5, 1883.

I certify that during the month ending June 30, 1883, the following work was done and accepted by me, for which payment should be made under the contract for improving the Hot Springs Creek at Hot Springs, Arkansas, entered into on the 8th day of May, 1883, between the Secretary of the Interior and George H. Bardwell, viz:

Excavation "earth and loose rock," 2,676 cubic yards.

THOMAS HANDBURY,
Captain, Corps of Engineers, U. S. A.

(Signed in triplicate.)

DEPARTMENT OF THE INTERIOR, *July 9, 1883.*

Approved.

H. M. TELLER,
Secretary.

Estimate of work performed and material furnished under contract of George H. Bardwell, for the improvement of the Hot Springs Creek, in Hot Springs, Ark., to July 31, 1883.

Amount previously certified to be due contractor.....	\$909 84
Less reserved percentage	90 98

Net amount previously certified	818 86
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Labor performed and material furnished during the month of July:

Excavation of rock in place, 1,018 cubic yards, at \$1.54 per cubic yard....	1,567 72
Excavation of earth and loose rock, 795 cubic yards, at 34 cents per cubic yard	270 30

Total for month	1,838 02
Less reserved percentage	183 80

Net amount due contractor	1,654 22
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I certify that the above estimate is correct.

SAMUEL HAMBLIN,
Superintendent Hot Springs Reservation and Engineer in Charge of Work.

Estimate of work performed and material furnished under contract of George H. Bardwell, for the improvement of the Hot Springs Creek, in Hot Springs, Ark., to August 31, 1883.

Amount previously certified to be due contractor.....	\$2,747 86
Less reserved percentage	274 78
Net amount previously certified	<u>2,473 08</u>

Labor performed and material furnished during the month of August:

Excavation of rock in place, 417 cubic yards, at \$1.54 per cubic yard.....	642 18
Excavation of earth and loose rock, 2,145 cubic yards, at 34 cents per cubic yard.....	729 64
Granite masonry, 212 cubic yards, at \$18.45 per cubic yard.....	3,911 40
Concrete, 92 cubic yards, at \$5.74 per cubic yard	528 08

Total for the month	5,811 30
Less reserved percentage	581 13

Net amount due contractor	5,230 17
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I certify that the above estimate is correct.

SAMUEL HAMBLIN,
Superintendent, &c.

Estimate of work performed and material furnished under contract of George H. Bardwell for the improvement of the Hot Springs Creek, in Hot Springs, Ark., to September 30, 1883.

Amount previously certified to be due contractor.....	\$8,559 16
Less reserved percentage	855 91
Net amount previously certified	<u>7,703 25</u>

Labor performed and material furnished during the month of September:

Excavation of rock in place, 1,586 cubic yards, at \$1.54 per cubic yard....	2,442 44
Excavation of earth and loose rock, 2,172 cubic yards, at 34 cents per cubic yard.....	738 48
Granite masonry, 161 cubic yards, at \$18.45 per cubic yard.....	2,970 45
Rubble masonry, 381 cubic yards, at \$10.50 per cubic yard.....	4,000 50
Concrete, 142 cubic yards, at \$5.74 per cubic yard	815 08

Total for the month	10,966 95
Less reserved percentage.....	1,096 69

Net amount due contractor.....	9,870 26
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I certify that the above estimate is correct.

SAMUEL HAMBLIN,
Superintendent and Engineer in Charge.

Estimate of work performed and material furnished under contract of George H. Bardwell, for the improvement of the Hot Springs Creek, in Hot Springs, Ark., to October 31, 1883.

Amount previously certified to be due contractor.....	\$19,526 11
Less reserved percentage.....	1,952 61
Net amount previously certified	<u>17,573 50</u>

Labor performed and material furnished during the month of October:

Excavation of rock in place, 1,992 cubic yards, at \$1.54 per cubic yard. .	3,067 68
Excavation of earth and loose rock, 1,950 cubic yards, at 34 cents per cubic yard.....	540 60
Rubble masonry, 1,446 cubic yards, at \$10.50 per cubic yard	15,183 00

Total for the month	18,791 28
Less reserved percentage.....	1,879 12

Net amount due contractor.....	16,912 16
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I certify that the above estimate is correct.

SAMUEL HAMBLIN,
Superintendent and Engineer in Charge.

Estimate of work performed and material furnished under contract of George H. Bardwell for the improvement of the Hot Springs Creek, in Hot Springs, Ark., to November 30, 1883:

Amount previously certified to be due contractor	\$38,317 39
Less reserved percentage	3,831 73

Net amount previously certified	<u>34,485 66</u>
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Labor performed and material furnished during the month of November:

Excavation of rock in place, 1,860 cubic yards, at \$1.54 per cubic yard	2,864 40
Excavation of earth and loose rock, 3,140 cubic yards, at 34 cents per cubic yard	1,067 60
Rubble masonry, 1,265 cubic yards, at \$10.50 per cubic yard	<u>13,285 50</u>

Total for the month	17,214 50
Less reserved percentage	<u>1,721 45</u>

Net amount due contractor	15,493 05
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I certify that the above estimate is correct.

SAMUEL HAMBLIN,
Superintendent and Engineer in Charge.

Estimate of work performed and material furnished under contract of George H. Bardwell for the improvement of the Hot Springs Creek, in Hot Springs, Ark., to December 31, 1883:

Amount previously certified to be due contractor	\$55,531 89
Less reserved percentage	5,553 18

Net amount previously certified	<u>49,978 71</u>
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Labor performed and material furnished during the month of December:

Excavation of rock in place, 2,475 cubic yards, at \$1.54 per cubic yard	3,811 50
Excavation of earth and loose rock, 2,370 cubic yards, at 34 cents per cubic yard	805 80
Rubble masonry, 1,689 cubic yards, at \$10.50 per cubic yard	17,734 50
Concrete, 198 yards, at \$5.74 per cubic yard	<u>1,136 52</u>

Total for the month	23,488 32
Less reserved percentage	<u>2,348 83</u>

Net amount due contractor	21,139 49
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I certify that the above estimate is correct.

SAMUEL HAMBLIN,
Superintendent and Engineer in Charge.

By Mr. PAYNE:

Question. Are you interested in this matter as a citizen, or are you an applicant for the position of engineer and superintendent of this work?—Answer. Well, sir, the question was brought to me several times whether I would take the position, and I said what I say here, that I could not afford to refuse a position like that, but I would not turn over my hand or ask anybody for the position.

Q. Then you are not an applicant, and never have been?—A. No, sir; and I will tell you what I think about it. I wish to say that I think this Hot Springs Reservation should be turned over to the War Department.

Q. The question is, have you ever been an applicant for the position of engineer and superintendent of this work?—A. No, sir; neither directly nor indirectly, and no man can accuse me of it. If a position like this was offered me I would not throw it overboard, but I have not made any application for it, and would not turn my hand to get it.

By the CHAIRMAN:

Q. Are you interested in this Hot Springs Creek improvement as a property holder?—A. I am; I own probably thirty or forty thousand dollars' worth of property here; that is, the firm does.

- Q. Do you know anything about the management of bath-house privileges here?—
 A. No, sir; I do not.
 Q. Do you know whether the public interest requires any change in this respect?—
 A. I do not know anything. Of course I can hear a great deal.

GEORGE M. FRENCH, being duly sworn, was examined as follows:

By the CHAIRMAN:

- Question. Where do you reside, Mr. French?—Answer. At Little Rock.
 Q. What is your profession?—A. I am a civil engineer.
 Q. How long have you been engaged in your profession?—A. Twenty-eight years, except during the war, when I was in the Army four years.
 Q. Are you acquainted with the work done on the Hot Springs Creek under the direction of the Government?—A. I am.
 Q. Are you acquainted with the plan and specifications under which it is being done?—A. Only as I have seen the work done.
 Q. Well, from your observation of it, without regard to the method of carrying on the work, do you consider the plan and specifications proper for a work of that kind?—A. The plan itself is perhaps proper enough, although I would not regard that plan as being applicable to this creek.
 Q. What we want to know is whether the plan under which this improvement is being prosecuted is a proper one for this particular work?—A. I do not think it is.
 Q. Will you please state to the committee the objections to it?—A. In the first place, there isn't capacity enough to take off the water.
 Q. You think the culvert is not ample to carry off the great volume of water which at times must pass through it?—A. No, sir.
 Q. Is there anything else that occurs to you with reference to the plan itself?—A. Well, I do not know as to the plan.
 Q. Have you noticed the method of conducting the work, as to the material used and the workmanship?—A. Yes, sir.
 Q. What is the character of the material used?—A. Very inferior character.
 Q. Does that have reference to the stone work?—A. It does.
 Q. Well, there are two characters of stone; which do you refer to?—A. The granite that it was proposed to construct it of at first is a good quality of stone.
 Q. And you think that would be a proper material to be used for work of that character?—A. Yes, sir; that portion of the work is all right.
 Q. You mean so far as the granite was used?—A. Yes, sir; so far as the granite was used.
 Q. Well, how about the other stone which was substituted for the granite?—A. I should not want to use it in such work as that.
 Q. Well, what is the objection to it?—A. In the first place, it is rock that is full of iron seams, and whenever it is saturated with water and freezes, it falls to pieces.
 Q. Have you ever made any experiment with this stone to demonstrate that fact?—A. No, sir; I have made no experiments, but I have seen the stone here as it was taken out of the quarry and put in the work.
 Q. Geologically speaking, how is that stone classed?—A. I do not know enough about geology to classify those things, but it is a conglomerate stone; I do not know what you would call it; it is not a slate, although the surface of the quarry is a slate formation, I think; but after you get down into the bed it is a flinty rock.
 Q. Is it by reason of its flinty or slate formation liable to crumble and break?—A. The surface has a slate formation, but after you get down under the surface it is a flinty, brittle stone, and full of iron seams.
 Q. And you think that when exposed to the water and it freezes that it will break away from the wall?—A. I think that when it gets wet and a freeze comes, it will break.
 Q. Well, being that kind of stone, do you think it proper to put in an arch like this arch of the Hot Springs Creek work?—A. I do not; I think if you will take a sledge hammer and hit that rock you can break it into small pieces.
 Q. That can be done with almost any rock, cannot it?—A. You cannot take granite rock and smash it up in that way.
 Q. Aside from the character of material used, is this work being constructed in a proper and workmanlike manner?—A. No, sir.
 Q. Well, what are the objections to it?—A. I do not know what the plans and specifications call for, but there ought to be headers and stretchers in the wall and a perfect bond by the cement; the mortar and rock should be put in in such manner that the bond would be lengthwise and lateral.
 Q. Has that been done in this work?—A. If it has I have failed to observe it.
 Q. Have you noticed the work close enough to see if that was the case?—A. I noticed the manner in which the rocks were set and the manner of setting, and I have seen these rocks that were put in there with these iron grapples. I have stood and

watched them put the stone into the work, and during my observation last summer I saw them set the stone up with the largest face to the front.

Q. The exposed face, you mean?—A. Yes, sir; and the rock was held in position and backed up with small rocks and mud.

Q. Held in place with mud or cement, do you mean?—A. Yes, sir; after they were put in position they were held in place with this mud. I have seen that done.

Q. Well, as to the character of cement used; what sort was it?—A. No sand was used. The sand that they used is this dirt with coarse gravel in it; and I think if it were subjected to water it would all wash away.

Q. Is it your opinion that a good cement could be made out of that material?—A. No, sir; I do not think so.

Q. Well, was the cement used in sufficient quantities; too large or too little?—A. Well, sand must be used with cement. You cannot make good cement mortar without sand.

Q. Well, what will be the result of work done in this way; I mean by the use of these imperfect materials?—A. Well, the result, in my opinion, will be that this stuff called cement will be washed out by the water; the water will dissolve it and it will be washed away. This mortar will not harden as cement mortar ought to, and surface water will work its way through, and then this part of the work will fall out.

Q. And the result will be that the arch will cave in?—A. Well, when one rock goes another will follow.

Q. Do you know anything about the reasonable cost of constructing that work out of the materials that are now being used?—A. Well, I heard men say that understood stone masonry that they would like to have the contract of doing this work at a price much lower than the present contractors are getting.

Q. At what price was that?—A. They said that they would like to do this work at \$6 a yard, and they could make money out of it at that.

Q. Have you ever made any estimate or measurement of this work on the Hot Springs Creek improvement?—A. Yes, sir.

Q. Well, when was that done?—A. Well, I have a memorandum here of the time when I did it [referring to memoranda book]; here it is. The 28th of January.

Q. What was the result of that measurement?—A. I will tell you in a moment. (Looking over memoranda book.) This measurement included the completed and finished work on the creek, and included the portion of the arch which was not then finished, but which has been finished since, in front of the Arlington Hotel and just below it. The measurement commenced here down at the lower end [indicating] and went clear up to the upper end. At the time this measurement was made there was no arch on the upper end. Did you want to know the quantities.

Q. Yes, sir; the committee wants to know what the whole work amounted to?—A. Three thousand eight hundred and eighty-five cubic yards and four-tenths.

Q. That was on the 28th of January?—A. Yes, sir.

Q. Are you sure that measurement was accurately made?—A. Yes, sir.

Q. Do you think it is exact?—A. It is as exact as could be made at the time. The only reason why it is not absolutely exact is because, perhaps, some parts of the wall were not reached, but I think I made a sufficiently liberal allowance for that.

Q. Do you think you came within a thousand yards of the true amount?—A. I think I came within a hundred yards of the true amount.

Q. Do you think it possible that there could have been 5,000 cubic yards instead of 3,000?—A. No, sir.

Q. Do you know whether any work was done between the 31st of December and the 28th of January?—A. I do not know. We had pretty bad weather about that time, and I don't think any work was done. I was not here all the time, but have been here backwards and forwards, and I could not say whether or not. My impression was that there was work done at that time, but I won't be certain about it.

Q. Are you accustomed to measuring such work as that?—A. Yes, sir.

Q. Have you any acquaintance with sewerage?—A. Yes, sir; some.

Q. Well, do you think this stream of water would be sufficient to carry off, without endangering the public health, the sewerage of this town?—A. I do not think it ought to be used as a public sewer.

Q. Do you think it would be hurtful to the citizens of the town and to invalids visiting here?—A. Yes, sir.

Q. Can you give the committee any reasons for that belief?—A. Well, the escape of sewer gas would be very unhealthy.

Q. Do you think that sewer gas would be generated in a vacuum as large as that?—A. Yes, sir; and it is generated in this creek during the summer time.

Q. In the open creek?—A. Yes, sir. It is not properly called sewer gas, but there is generated an offensive odor which is very unhealthy. Sometimes it is not so strong as at other times.

Q. Have you ever investigated the subject of sewer gases?—A. No, sir.

Q. This is a subject which is attracting a good deal of attention, and I did not know but what you might have looked into it.—A. Only in a general way.

Q. Are you of opinion that sewer gas is generated in an open stream of water?—A. This is not much of a stream in summer time.

Q. What is the volume of that stream; how much is the flow to a minute?—A. Without any raise? Without freshets?

Q. Yes, sir; the ordinary flow.—A. That is a very small stream in the summer time.

Q. Do you know about the volume of flow per minute?—A. I do not.

Q. What is the fall to the mile?—A. I haven't any idea of the fall; I never ran levels to ascertain the fall.

Q. It is a rapid stream, isn't it?—A. When it has a large quantity of water in it.

Q. At all times doesn't it move with a good deal of velocity?—A. No, sir; it is generally stopped up.

Q. Do you know how many feet fall there is, say, for instance, from the park down to the Arlington Hotel?—A. I do not know; I have notes that will tell; I could easily tell by running levels.

Q. And you do not know the flow of the creek?—A. No, sir; not positively.

Q. Were you here as early as 1870?—A. No, sir; I was here in 1875. I built the big iron bath-house in 1877.

Q. Then you were not here until after the fire occurred?—A. I was here before.

Q. Were you here when the row of houses stood over the creek?—A. Yes, sir.

Q. The houses were pretty thick from the Arlington Hotel down to Malvern Crossing, were they not?—A. Yes, sir.

Q. Was not the creek the only sewer the town had?—A. Yes, sir.

Q. Did any sickness result from that cause?—A. Not that I know of particularly.

Q. Did any inconvenience result from it that you know of at that time?—A. I know there was a good deal of talk about the bad odors.

Q. Did not two or three hotels stand over the creek?—A. Yes, sir; the Hot Springs Hotel and the old Hoff House stood over it.

Q. Could you give us any information about the management of the hot water privileges; whether anything is needed to meet the public requirements in that respect?—A. At the present time?

Q. Yes, sir.—A. I have paid very little attention to it since General Kelley left. I was interested in this matter when he was here. I had three bath-tubs put in the French Hotel, and paid rent to him for them.

Q. We are here to inquire into the public property, the hot water privileges, the bath-houses, and matters of that sort, and to inquire if the public interests require any change. Now, what do you know with respect to these matters?—A. Well, I was interested in that big iron bath-house, and I know we had a lease from the Government and paid at first \$5 a tub for rent, and afterwards it was reduced to a dollar and a quarter. There are forty tubs in that house.

Q. Well, everybody can get a bath that wants to, can't they?—A. Yes, sir; I think from my observation that they can.

Q. And you know of and have heard no complaint on that subject?—A. No, sir; no complaint.

By Mr. STORM:

Q. You spoke about bad odors arising from the creek. As I understand you, your fears are confined to that portion of the stream below the culvert which is not covered.—A. Yes, sir, if the arch was air-tight, and there were no air-holes, I think there would be no escape of gas, and there wouldn't be much trouble about it.

Q. Is there any filth running into the stream now?—A. I suppose all this surface drainage from the upper end of the town runs into it.

Q. Do you know whether any water-closets are connected with any main that runs into the stream?—A. I think the Waverly water-closets are situated over the creek.

Q. Are there any waste-pipes running from water-closets to the stream?—A. I do not know whether the Arlington Hotel waste-pipe runs there now or not. It used to.

Q. How long ago?—A. Before this work commenced here on the creek.

Q. All the water from the bath-tubs runs into it, doesn't it?—A. Yes, sir.

Q. The water from the bath-houses alone could not make the stream foul, could it?—A. No.

Q. It wouldn't make it very clean, would it?—A. No.

Q. Where does the foul odors come in, the last year or two, if the Arlington waste-pipe does not connect with the creek?—A. Every time it rains there is, of course, more or less filth washed down from the sides of the hills above the arch, and this filth of all sorts, which gathers on the surface of the ground, passes through the creek. This creek is the natural watershed of this whole strip of land.

Q. But the fact of this filth passing through the creek would not leave any stench along the banks, would it?—A. Well, in the summer time, after a rain storm, the

stream goes down rapidly, and, with a hot sun on it, there are very bad odors generated from the filth left upon the banks.

Q. But the odors which you noticed some time ago were when these privies were over the stream?—A. I think you will notice it any time in hot weather; and if you are here when the hot weather comes again you cannot help but notice it yourself.

Q. Is the filling in of the street here any part of the contract for covering the culvert?—A. I do not know what the contract is.

Q. Where does the ground come from with which the street is filled in?—A. From these bath-house excavations made here recently, and the excavation on the side of the hill here, which has been sold to the city, I understand, for 25 cents a yard.

Q. Twenty-five cents a yard for what?—A. For work they are putting on the street, and the city pays that price for it.

Q. Do you know what it costs the contractor for filling over the arch with dirt?—A. I do not.

By Mr. PAYNE:

Q. Do you know what it can be obtained for?—A. I have a general idea of about what such work is worth.

Q. How much a yard could it be obtained for here?—A. On the side of the hill where the excavations are made for putting in this work, the contractor got the dirt free and was paid for taking it away, and it ought not to cost anything. If I was doing this work I wouldn't pay anything for filling.

By the CHAIRMAN:

Q. Do you mean to fill up the street?—A. Yes, sir; to fill up anywhere.

Q. Well, the Government doesn't pay anything for filling up the street, does it?—A. Well, we were speaking of this dirt and the price of taking it out.

Mr. STORM. Now, on the 18th of January, 1884, the contractor writes: "Your communication of January 5 in reference to filling in the arch over Hot Springs Creek received. In reply I would state that I will do all the work for the sum of 44 cents per cubic yard—rock and earth included—or for the sum of 24 cents per cubic yard for earth, and 84 cents per cubic yard for rock filling, all to be done as per specifications." It does not appear whether the Secretary accepted that or not, but there is the original offer.

By Mr. PAYNE:

Q. In measuring up this work, what thickness did you allow for the lateral walls?—A. Mr. Johnson and I measured the work together. He held one end of the tape and I held the other end. We took these measurements every 50 feet and oftener.

Q. How did you measure the thickness of the lateral wall?—A. We took them wherever they were exposed and got the regular slope and calculated in that way.

Q. How much did you make it?—A. Well, sir, it ranges all the way from 2.7 feet to 3 feet. For instance: There it would be 3 feet [indicating on sketch in memorandum book]. The width would run from something over 2 feet to about 4.7 feet, or nearly 5 feet at the bottom; and then the height would run from about 4 feet up to 5 or 6 feet, as you see here [indicating]. We allowed this to be the uniform slope, and averaged it in that way.

Q. Do you remember how many square feet of surface was in the entire wall, arch and all?—A. The sectional area, or area of cross-section, is about 84.63 feet.

Q. Does that include the arch?—A. That includes the arch—that is, the cross-section of completed work.

Q. And you think it would not average more than that?—A. No, sir. At the point where this measurement was made the wall was $5\frac{1}{2}$ feet high, 3 feet on top, and 4.8 feet at the bottom. The arch is irregular in thickness from the spring line of the arch to the crown of the arch.

Q. Suppose the mortar used in the work to be composed of sand and cement in the following proportion: One barrel of 300 pounds of cement and 4 cubic feet of loose sand, thoroughly mixed dry, and a sufficient quantity of water afterward added to form a stiff paste. Now, how many cubic feet of work would a barrel of cement make?—A. If you tell me the size of the barrel I could tell you.

Q. Please state whether, in your opinion, the sand used on this work is clean, sharp, and free from loam, vegetable matter, or other dirt.—A. The sand I saw piled up there, what they called sand, is not what I call sand at all. It was principally dirt, with some loose gravel in it from the size of a pea to a small pebble. When this is put in a trough and the water is thrown in there is nothing left of it but a few pebbles. There is no sand about it.

Q. Will you state whether that masonry work on this improvement is what is denominated range rubble work?—A. That is a term I am not familiar with.

By Mr. STORM:

Q. What is this rubble work?—A. Rubble masonry is generally the cheapest class of work. It is a wall built of rough stone.

By Mr. PAYNE:

Q. I suppose the common foundations to houses is rubble work?—A. Well, they generally prepare under the foundation wall the rubble work.

Q. Do you know where this granite is obtained?—A. Yes, sir.

Q. How far is that from here?—A. I think it is about $3\frac{1}{2}$ miles; about that distance. I was down there once and examined it.

Q. Do you know what it is worth delivered here per cubic yard fit for this improvement here?—A. Do you mean dressed granite?

Q. Well, delivered first without being dressed; suppose it was delivered rough and then dressed here.—A. Well, sir, I wouldn't want to undertake to quarry that granite out and bring it here in wagons and deliver it as it comes from the quarry for less than \$8 or \$9 a yard.

Q. Undressed?—A. Yes; quarried and delivered here in blocks; I think it is worth all of that, and perhaps \$10.

By the CHAIRMAN:

Q. Now what do you think it is worth a square yard to quarry this granite, deliver it here, dress it, and put it in the work?—A. I do not think that the first cost could be done with any margin for profit for less than \$16 or \$18 a yard.

Q. And you think that is the very lowest it could be done for?—A. Yes, sir; and you could not make a cent out of it for less.

By Mr. PAYNE:

Q. Do you think you could use this granite and do the work according to the specifications at that price?—A. It could not be done for that money according to the specifications; I made some estimates by request of different parties here, as to what it was worth to get the stone; the idea then was to get it from the Diamond Jo Quarry. I know what it costs the company to get it out, because I had charge of the work there on the railroad, and I know pretty well what it is worth to quarry this stone and to deliver it.

By the CHAIRMAN:

Q. What did it cost the railroad to do that masonry work along its road?—A. That work put up in those culverts, to say nothing about the hauling of the granite on the cars, cost about \$16 a yard.

Q. Now, to construct the work on the Hot Springs Creek improvement, in accordance with the plans and specifications, what would be a reasonable price?—A. That work on the railroad was put up, however, with ordinary mortar, and not cement.

Q. I am asking about this contract. What would be a reasonable price for this work, conforming strictly to the requirements of these plans and specifications, taking into consideration that the stone was taken out of this quarry and brought here and put into the work?—A. Well, sir, a reasonable price, leaving a margin for the contractor, would be I think from \$22 to \$24 a yard.

Q. That you consider would be a reasonable price?—A. Yes, sir.

Q. Did you make estimates for parties that desired to bid upon this Hot Springs Creek work?—A. Yes, sir; but not on this stone now being used, but on the granite of the Diamond Jo quarry.

Q. What is the difference in the cost of the granite taken from the Diamond Jo quarry and the granite taken from this other quarry?—A. I do not think there would be very much difference in the cost of the stone, and the difference would simply be in the hauling of it. This granite near the town would have to be hauled on wagons.

Q. And the other has to be transported by railroad?—A. Yes, sir.

Q. Now, what do you think it would be worth to do this work according to the second specifications with the stone now used?—A. I never saw the second specifications.

Q. What would be the difference between the cost of doing this Hot Springs Creek work with granite and the stone now being used out of the mountain here?—A. I think that using the rock picked up loose on these side hills and putting them in the work in the manner they are now put in, there would be a difference in the cost of at least \$13 or \$14 per yard.

Q. That would bring this present work down to about \$6 a yard?—A. This work could be done for about \$8 a yard with a good, fair profit.

Q. Do you think contractors here would have taken the job at that price?—A. Yes, sir; I heard some say they would like to get it at \$6 a yard. I do not think, however, there was any opportunity for them to bid upon this last contract. It was not advertised, and nobody knew there was to be a contract let until after the work commenced on it.

By Mr. STORM:

Q. Were you living about here when this first contract was advertised?—A. Yes, sir; I was living at Little Rock, and was here frequently.

Q. Do you know anything about any notice being given as to what kind of material should be used in the construction of this culvert?—A. Yes, sir.

Q. What was it?—A. It required granite and hydraulic cement mortar, with good sharp sand. The plan was drawn out and the dimensions of the rock given, I think. I think the size of each layer was given, and also headers and stretchers were provided for, and it was specified how the work should be backed up.

Q. And you examined the plans and specifications, I suppose, with a view to bidding upon the work for those parties who requested you to do so?—A. Yes, sir.

Q. And all bids that were made were based upon the fact that granite should be furnished for this work and laid in hydraulic cement according to the plans and specifications prepared by the Interior Department?—A. Yes, sir. I know that some parties were awarded the work under the first advertisement for, I think, \$16.50, or some such price, per yard. I do not remember exactly what their price was, but I think it was \$8 a yard for putting in this concrete backing, and they came out here, looked around, and examined the rock and character of the work, and concluded to surrender their contract. The work was afterwards advertised, and some other parties bid it in for nearly the same price originally put in, and the work, I think, was constructed on that last proposition, and then they went on and got out this granite that you have seen up here and put in 100 or 200 feet of that wall, and for some reason or other that work was changed. It was said to be changed by order of the Secretary of the Interior.

Q. I understand you to say that if you used the same sand that is now used, the same rock, and do the work in the same manner as it is now done, you would do it for \$6 a cubic yard?—A. Eight dollars a cubic yard, I said.

Q. Well, you would do it as it is now done for \$8 a yard, would you?—A. Yes, sir.

Q. As to the preparation of the bed of the stream, before the walls were laid, was that right and proper, in your opinion?—A. I do not know what the specifications were in this last contract.

Q. I ask, that in order to give an easy flow through the culvert of the stream of water, has the preparation of the bed of the culvert been sufficient for that purpose? Take the bed of this culvert as now prepared at those places which are finished, is it properly prepared?—A. If done in accordance with the first plans it would be prepared properly. In the first specification it was intended to excavate out to the center in concave.

Q. Well, has the bed of the culvert been so prepared?—A. I could not tell where the arch is over the stream. Outside it looked very rough and irregular between the walls; but whether that is finished yet or not I do not know. There is a good deal of it in that condition, however.

Q. Can that be done after the arch is put in?—A. Well, I made an estimate of a sectional area under the old plans prepared by Captain Handbury, and also under this changed plan. The sectional area under the new plan below the Arlington Hotel has been diminished 11 and 21-100 per cent. There has been an increase of 6 and 49-100 per cent. above the Arlington by the new plan, on account of diminishing the walls on the other plans. I understand they now are less than what they were to be in the first place.

Q. Did you make any examination as to the quantity of excavation of earth and rock?—A. I did not make any estimate, because it was impossible, from the fact that the surface had been dug out and distributed. If I had the original level lines before the earth was disturbed I could give you an estimate of the quantity of excavation.

Q. You have no data, then, which would enable you to get at the quantity of excavation of earth and rock?—A. It would be impossible unless the man who made the original cross-sections at the time the work was laid out gave me the figures. I suppose that they could be obtained from Captain Handbury's survey.

By Mr. PAYNE:

Q. If this arch was covered to a depth of 18 inches above the crown, do you think that frost would be apt to penetrate the arch?—A. No, sir.

Q. Then the masonry work of this culvert is not apt to be affected by frost?—A. I do not think there is frost enough here to affect anything but exposed places. I know that when these same rocks that are taken out of the quarry on the hillside here are exposed to the frost they crumble up into cubes. Whether the frost would affect them that way in the wall or not I do not know, but I should think where exposed they would crumble and fall out.

By Mr. STORM:

Q. What effect would the warm water have on this arch in passing under it?—A. I do not think the effect would be different from that of any other water passing through the culvert.

Q. I wish to ask you some questions in regard to the capacity of this culvert. I think you stated that, in your opinion, it was not sufficient?—A. I did.

Q. On what did you base that opinion?—A. From the amount of rainfall that occurs here and from seeing it pass off through the creek.

Q. Have you ever measured any of these high-water cuts?—A. No, sir.

Q. Then your opinion is given simply from your observation?—A. Yes, sir.

Q. What do you make the area of that opening, say in front of the Arlington Hotel, provided it is properly excavated below or above?—A. Do you mean at that particular point [indicating on sketch]?

Q. At either point, provided it is properly excavated.—A. The sectional area of opening now for the water-way below the Arlington Hotel, under the new plan, is 153 $\frac{3}{4}$ % of a foot.

Q. Under the old plan what was it?—A. It was 173 $\frac{3}{4}$ % of a foot.

Q. In what did the difference consist?—A. In the height of wall.

Q. Your calculation, then, makes the area larger above and smaller below?—A. Yes, sir.

Q. Now, I wish to ask you a question or two in regard to the quality of stone. Do you know of any other stone of the same quality as that in the quarry where this stone is being taken from, in this vicinity?—A. It can be found all around here in these hills.

Q. What would you class that stone to be?—A. As I said before, I do not know that that comes under any regular class. It is a sort of conglomerate rock, which is full of veins and seams, falling or breaking into cubes.

Q. Then you would call all this stone on the mountain here the same as that taken out of the quarry opposite the Arlington Hotel?—A. Yes, sir; generally.

Q. Have you known that stone to be used for any other purpose, except on this creek?—A. Yes, sir; the best of it is got out and used on buildings here.

Q. Do you know what buildings?—A. Well, I do not know whether it was got from that same place or not, but about the same character of rock was used in the Gaines building.

Q. Do you know what quality of rock was used under the opera house?—A. No, sir; I was not here when that building was put up. I was away that summer.

Q. You say that this same stone was put under the Gaines building. What is the depth of that foundation?—A. I don't know. I just saw it being used there and did not notice the depth of the foundation.

Q. What would you judge it to be?—A. The depth of the foundation?

Q. Yes, sir; how high is the foundation wall?—A. Up to where the bricks go on?

Q. Yes.—A. Well, there is a subbasement in the back end.

Q. What is the thickness of that wall?—A. I do not know.

Q. Of what does the superstructure consist?—A. Brick.

Q. How much of it; that is what I want to know?—A. The building is a three-story brick.

Q. Do you know under whose direction that building was constructed?—A. I do not.

Q. Did you ever test this material which has been used with the cement in place of sand?—A. I have examined it by taking it up in my hands.

Q. I mean did you make an actual test of it?—A. I never have; though I examined it closely several times.

Q. In regard to the excavating. The question was asked you as to the cost of filling in, and what would be the cost of excavating to obtain gravel and other material of that sort in this vicinity, and the cost of filling in the street, say from the Arlington Hotel north; what does that material in the mountains consist of?—A. That is pretty much all rock; there is not much soil there.

Q. What would it be worth to take that rock out which is used in this creek work?—A. That depends upon how far you had to go into the mountain before you got the rock.

Q. You stated it was nearly all rock. I say take it north of the Arlington Hotel.—A. It would cost from 75 cents to a dollar a yard to blast it out.

Q. And the earth required, what would it cost to obtain that?—A. Oh, I suppose 20 cents a yard.

Q. In the measurements that you made of this work did you find in all cases the center of the channel cleared out?—A. No, sir.

Q. How did you obtain accurate measurements there?—A. I did not measure the center of the channel.

Q. How did you find the amount of masonry in the walls along the points where the channel was not cleared out?—A. Wherever we found an opening we measured and got the uniform slope, both front and back, and in every place where we found an opening we would take all the dimensions. For instance, if the wall was 3 feet wide on top and the height 4 feet and the bottom 4.3 of a foot, and it had a uniform slope, we discovered that and took that as the basis of the calculation.

Q. How did you measure that portion of the work which was put up under the first plan?—A. That was torn down when we measured it. The top was pulled off.

Q. Did you take that into consideration in your calculations?—A. Yes, sir, the whole thing.

Q. Did you ever make an excavation on the reservation?—A. Yes, sir; where the big iron bath-house now stands, which was built in 1877.

Q. What effect did that excavation have upon the water?—A. Well, it was a very successful operation, so far as the development of hot water was concerned. It was unexpected on our part, though. We got a much larger supply of hot water.

Q. What was the amount of increase?—A. My estimate at that time was that we increased the total flow, by reason of that excavation there, from 10 to 15 per cent.

Q. What do you mean by increasing the flow of hot water by reason of this excavation?—A. By digging up the rock and letting out springs that had no visible outlet before.

Q. Do you mean that you found a volume of water below the surface?—A. We found a spring that had sunken down about 12 feet.

Q. What caused the sinking of that spring?—A. We found that was only a portion of a larger vein of water that had not come to the surface. By walling this spring in with brick walls and putting in a pipe I raised it higher than the original flow. I think it flows out now in a pipe that lays at an angle of 30 or 40 degrees.

Q. Then you think the result of this excavation was an increased flow of water?—A. Yes, sir; the excavation proved very favorable, and very materially increased the total flow.

Q. What has been the effect of the blasting below the mud-hole?—A. I am informed that the blasting there had sunk that spring.

Q. Then the blasting was not so favorable there?—A. No, sir; and I considered it a very risky operation anyhow.

Q. Do you consider any blasting below these springs dangerous?—A. I do. I think blasting by the use of anything of an explosive character is dangerous. I think it is an experiment, and if it proves to be favorable it is all well enough; but if they should happen to get in a big blast there and sink that large body of water it would be attended with very serious results. I do not think this heavy blasting should be done, although it has been carried on here since 1877, I think. I understand now that the water has actually sunk from the original level 25 or 30 feet.

By the CHAIRMAN:

Q. Have all the springs sunken that much?—A. The higher ones have.

Q. Has that occurred since the blasting commenced in 1877?—A. Yes, sir; I am told that the sinking of these springs resulted from the blasting; I do not know that to be a fact, as I have not demonstrated it. In 1875 I made a topographical survey, from which a map was made and sent to Congress. On that map the elevations of all the springs were put down, and that map may be used now, and level lines may be run for the purpose of ascertaining whether it is true or not that these springs have sunk. I have heard considerable talk about these higher springs sinking, and it could be ascertained in this way if it is true or not.

Q. Did you know the condition of the mud-hole before this excavating commenced here?—A. Well, I had been there frequently and seen it; I was never in the water, but I have seen it.

Q. Do you know the amount of water that spring has furnished, say within a year?—A. When I first made a survey in 1875, my recollection is that that was quite a stream of water, and I got this idea from the digging around it. My recollection is that they increased the flow there by excavating, and we got a better mud-hole, a better quantity, and a better water. My experience with this water is that the larger the volume the hotter the water.

Q. I wished to know more particularly as to the quantity of water?—A. No, sir; I could not state as to the quantity. I know there was quite a small stream of water there.

Q. What effect would you suppose that blasting immediately near and around it would have on the mud-hole itself?—A. My idea of the hot water here is that possibly and probably it all issues from a large volume below, and is all one water, but as it comes to the surface it diverges and finds different outlets. There were seventy-five of these different springs varying in degree of temperature, and nobody knows where it comes from. The blasting around some of those springs might possibly reach this main volume, and might accidentally destroy the main vein, sinking it and losing the water entirely, and I think this blasting is a dangerous experiment.

Q. Did you ever know of any of these springs near the bed of the creek to be injured in that way by excavating or blasting?—A. I do not. There was quite a number of these springs along the line of the creek from the old Hale bath-house up to the Arlington Hotel in 1875. I do not know where they are now. They are not all there, and I do not know what has become of them.

Q. Is not the channel of the creek filled up at present?—A. Right there near the Magnesia Spring, I think the creek is filled up from the bottom with one stuff or another.

Q. Is not it also filled up above there?—A. I don't know.

Q. Do you remember what was known as the Weir and George bath-house?—A. Yes, sir.

Q. Do you know how this bath-house was supplied with hot water?—A. Yes, sir; I think it was supplied by a spring in the rear of the house.

Q. Do you know what became of that spring?—A. I do not. I suppose it is under some of these bath-houses.

Q. You stated that blasting had a tendency to sink the water. Has blasting been done up and down this creek to make a channel for the flow of water in the creek, and is not the bed of this creek composed of solid rock?—A. There is rock in it all along, slate rock. But the theory of using dynamite or giant powder in making excavations is not the proper one, and I do not think it ought to be allowed. I am satisfied that when we made that excavation for the big iron bath-house, it was the first time we excavated by blasting, and we did it with a great deal of care and a great deal of anxiety.

Q. Is it or not a fact that blasting has been done along the line of this creek for the last four or five or six months?—A. I think considerable blasting has been done about the bed of the creek. I do not know how much or how extensive.

Q. Is there or not a complete cave between these two bath-houses—where the blasting has been going on that the workmen can work through?—A. I never saw a cave there big enough for a dog to go through. I remember now that when building the brick bath-house they sent for me to assist them in raising the water. After they had experimented some time and spent \$5,000 in raising that water, they succeeded in elevating it 15 or 16 feet and then carried it down in that brick bath-house by a pipe. That is the only time that I had known them to go into that tufa. I think the removal of this tufa has a tendency to lower the water.

Q. Do you think the removal of that tufa is more detrimental than the blasting below in the solid rock?—A. I think it is just as dangerous one way as the other.

Q. Did not the Government have a hole blasted there, not long ago, adjoining the mud-hole?—A. Yes, I think they did some blasting there, and I believe Mr. Barnes was in charge.

Q. Did you hear anything about that blasting affecting the flow of the water?—A. No, sir; I know the water was flowing and persons were bathing there until two or three weeks ago.

Q. Do you know whether or not the water running into the mud-hole comes directly from the spring?—A. I think since the sinking of the spring the water is conveyed there by a pipe.

Q. I am talking about before that. Did not water go in there through pipes?—A. I never saw any pipes in there. I think the risk of these blasting operations is too great for the little profit that might accrue to private parties from the blasting.

SAMUEL WALTON, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Where do you reside?—Answer. Charlestown, W. Va.

Q. Is that your place of present residence?—A. Yes, sir. I am here very little. I am a native of Pennsylvania.

Q. Have you been long in this place?—A. I have been here since September last.

Q. Do you know anything about the character of work being done here on this Hot Springs improvement?—A. Yes, sir.

The CHAIRMAN. He is the contractor.

Mr. STORM. For what part of the work?

The CHAIRMAN. The whole of it.

By Mr. STORM:

Q. You are one of the contractors doing this work are you?

The WITNESS. Colonel Bardwell was the original contractor.

Q. I understand you have been called here to testify in regard to blasting this tufa near the mud-hole. What do you know about that?—A. That I know very little about. That was done one or two days while I was absent.

Q. You say that was done in your absence?—A. I think they worked there two or three days after I returned. I was absent about two or three weeks.

Q. Well, that place had nothing to do with your contract, did it?—A. No, sir; that was outside of the contract on the creek work.

Q. And that blasting was done there in order to furnish a place to build another bath-house?—A. I presume so.

Q. Well, in your opinion, what effect has this blasting on the springs?—A. I have not examined into the matter.

Q. From your experience, what effect would the blasting of this tufa have on the flow of hot water from these springs?—A. I cannot say how it would affect the springs. The holes being drilled down in the native rock, and giant powder being used in blasting, it might have a tendency to hurt the springs.

By Mr. STORM:

Q. Nobody knowing in which way the water is brought to the surface, is not it very dangerous to do any blasting except that which is absolutely necessary?—A. I should not think it would be necessary to blast in the tufa other than by using small charges of powder, and, if small charges were used, I should not think it would be dangerous.

Q. You do not know what purpose the tufa serves in raising the water to the surface, do you?—A. No, sir.

Q. There is a theory that the turfa is an incrustation formed by this water coming in contact with the atmosphere, and thus hardens, doesn't it?—A. I think so.

Q. And it is impervious to the water, is not it?—A. I think so. I never examined into this question.

Q. Why do you think it is not dangerous to blast this tufa, when you do not know what purpose it serves in bringing this water to the surface?—A. Well, if the tufa and the solid rock are entirely separated, and the spring proceeds from the solid rock, I do not see how the blasting of the tufa would affect the natural spring confined in the native rock.

Q. But as you do not know how the tufa is formed you cannot tell whether it would be dangerous to blast it or not?—A. No, sir.

Q. Do these springs run directly into the creek?—A. I notice quite a number of streams running parallel with the creek.

Q. Running clear down to the solid rock?—A. That I could not say. There may be some at right angles to the stream, but I have never examined the matter carefully.

Q. Do you know if these seams in the tufa are large enough to let the water run through them down at the bottom?—A. Those I noticed particularly are of sufficient width to let a large amount of water pass through.

Q. Do you know how long after you blasted down here the spring disappeared above?—A. I do not know. I heard it remarked that the water disappeared, but I did not pay any attention to it. The Arlington Spring was said to have gone dry, and the water we call the Arsenic Spring disappeared for a day or two and then began flowing again, and of course on that account I have not paid much attention to statements that the springs had disappeared. I have not been to the Mud Hole since the blasting.

Q. Would you advise any more blasting to be done there?—A. Well, if I was called upon, under the circumstances and in the condition of affairs at present, I think it would be more satisfactory to all the parties concerned to do the excavating without blasting. That tufa could be removed without blasting.

Q. You think it could be removed without blasting?—A. Yes, sir; it can be cut out.

Q. Is it true that the same volume of water flows from the Arsenic Spring to-day that did formerly?—A. I do not know and cannot answer that question. I never noticed carefully the flow of water there. I only noticed that the water was flowing and at one time dried up, but after a short time the spring began flowing again.

Q. The question is, was the volume of water as large subsequently as formerly?—A. I do not know.

By the CHAIRMAN:

Q. What is the effect of blasting by giant powder on the rock? Does the blast run upward or downward?—A. Downward.

By Mr. STORM:

Q. Have you ever heard of a spring drying up from the effects of cannonading on battle-fields?—A. I have heard of it.

Q. Would not the use of explosives in the vicinity of springs have a tendency of closing them?—A. Yes, sir.

Q. You had that effect here in one case, did you not?—A. I heard that the blasting damaged the Mud Hole.

Q. And this spring, known as the Magnesia Spring, was closed up by blasting, was it not?—A. I do not know; I heard so.

Q. This was the spring which formerly provided free baths, was it not?—A. Yes, sir.

Q. Do you know whether there has been a sensible lowering of the water in the last year or two of any or all the springs here?—A. I do not know the effect either way, because I have not been a hundred feet on that side of the reservation.

By Mr. PAYNE:

Q. I want to know if this tufa adheres to the rock?—A. Yes, sir; but it can be taken away with a pick.

Q. I only want to know if it adheres to the rock; that is all?—A. Yes, sir.

Thereupon (at 5 o'clock and 30 minutes p. m.) the committee adjourned until half-past nine o'clock to-morrow morning.

TUESDAY, *March 18, 1884*—9.30 a. m.

Committee met pursuant to adjournment.

J. W. JACOBS, being duly sworn, was examined as follows :

By the CHAIRMAN :

Question. What is your business ?—Answer. I am captain in the United States Army and assistant quartermaster.

Q. Are you stationed here on duty at Hot Springs ?—A. Yes, sir.

Q. What doing ?—A. Superintending the construction of the Army and Navy Hospital.

Q. Do you understand engineering ?—A. No, sir.

Q. Do you understand building ?—A. Yes, sir.

Q. Have you had occasion to notice the work being done on the Hot Springs Creek ?

A. No, sir; I do not know anything about it.

Q. Haven't you examined it at all ?—A. No, sir.

Q. Can you give the committee any information in respect to the work here ?—A. I could not, sir.

J. M. HUFFMAN, being duly sworn, was examined as follows :

By the CHAIRMAN :

Question. Where do you reside, Mr. Huffman ?—Answer. At Hot Springs.

Q. How long have you lived here ?—A. I have been here thirteen years.

Q. What business have you been engaged in here ?—A. I was formerly in the bath-house business, until after the fire, when I was burned out.

Q. Do you know anything about the Government work being done on the Hot Springs Creek ?—A. Yes, sir; I have been here all the time they have been doing that work.

Q. Have you noticed the material used ? Do you know whether it is proper material or not ?—A. I do not know as far as that is concerned. I do not know what the contract is. I know what the first specifications were, but have never seen the contract.

Q. Have you any acquaintance with work of that sort ?—A. Yes, sir; I have had some experience in that kind of work.

By Mr. STORM :

Q. You said that you knew what the first specifications were. I believe the specifications of the Government were changed in regard to the cement and sand. Was the sand used in this work, in your opinion, clean, sharp, and free from loam or vegetable matter ?—A. Well, sir, do I think it was sharp, clean, and free from loam or vegetable matter ? That is a pretty hard question to define in doing work. This sand that they are using is of the kind known as Talco slate formation, I should judge.

Q. And composed of gravel and dirt, is it ?—A. I do not know as you could style it dirt. Talco is a species of slate that is found in all mountainous countries, and you cannot say there is loam in it, because vegetation has no grain in it. Vegetable matter is burned out when the dry season comes.

Q. Talco has no grit in it, has it ?—A. I never worked that kind of material, and I could not say. I never tried it with cement, to know whether it would make a bond or not.

Q. Do you know whether the cement used was equal to the best Rosendale ?—A. That I do not know, because I have never examined it.

Q. Do you know how the concrete that was put in the back of the wall was made ?—A. I never took particular notice or paid any attention to it.

Q. Do you know the proportion of cement and sand ?—A. I do not, because I never took any notice of that.

Q. As to the manner of doing the work, have you anything to say in that respect ?—A. No, sir; because I think it is a very good job of rubble masonry. The mechanical part I consider well done.

Q. You think the mechanical execution good for rubble masonry, do you ?—A. Yes, sir; but I do not think the material good.

Q. You do not consider it what would be called range masonry, do you ?—A. No, sir; it is not range masonry. In range masonry the stone is nearly all the same size, and cut square.

Q. What have you to say about the durability of the stone used both in the side walls and in the arches ?—A. Well, sir, I do not know as I could give a correct opinion of that. I have never seen the stone used but little. I know this stone is full of seams, and is liable to crack. But they may stand there for years.

Q. Will the culvert itself, as a culvert, answer the purpose of carrying off the surface drainage, in your opinion ?—A. Well, sir, I do not think that any man can tell that, because we have never had any rains here that would justify an opinion on that.

Q. You think you would have to wait for a big flood to give an opinion as to that?—
A. I think I have seen two or three freshets since I have been here, and I do not think that that sewer would carry it off; but you cannot tell whether it can or not until we have a rain here that would test the capacity of the sewer.

Q. Do you know what the specifications provided as to the bed of the sewer sloping to the center, and about all obstructions being removed?—A. Yes, sir.

Q. Is the bed prepared according to your idea of the specifications?—A. Well, I have not seen the last contract as changed, and do not know anything about it.

Q. The only change in the specifications was the substitution of a different material of stone, but the preparation of the bed of the culvert and the concrete or sand or mortar were not changed in any of the subsequent plans. I only want to know whether the bed has been smoothed out so that water may pass through the culvert with sufficient velocity in comparison with the fall that that stream naturally has.—A. The only place I noticed was in front of the Arlington Hotel. I noticed that it did not slope there according to my understanding of the first contract. The other day I was up by Whittington avenue, and I noticed that the work was not quite to the slope required. But a person standing on the bank could not tell exactly from the eye, and I could not say positively whether the work is done according to the specifications or not.

Q. Was the granite that was used in the wall in the first place a good material out of which to build the wall and arch?—A. Elegant.

Q. You have lived here and been acquainted with the management of bath-houses for a number of years. Now, what have you to say, in the first place, as to the sufficiency of bath-house accommodations for the persons visiting here and the citizens?—A. Well, sir, I think that several more bath-houses would not hurt any, and I think they could all be utilized.

Q. Do you know if there is any complaint that there is not sufficient accommodation here for bathers?—A. I hear people talk a little about having to wait in the bath-house for quite a length of time before they are able to get a bath.

Q. Is there any complaint that the poor and indigent have not sufficient accommodations for bathing, as it was originally intended they should have?—A. I have not heard of that. I believe that as long as those mud holes were running there was no complaint. As I said to Mr. Barnes, if they kept on blasting I would not give fifteen cents for those bath-houses, because it would make the springs dry up.

Q. And that there would be no water to supply the bath-houses after they were built; is that what you mean?—A. Yes, sir.

Q. Then there ought to be some additional bath-houses to take the place of the mud holes or such places as have been resorted to by the indigent heretofore?—A. I think so. You see a person that will look at the formation of the tufa and notice the seams he will understand in a short time that this water comes from the primitive rock. This tufa has grown over the rocks year after year and makes the water run over it and in that way raises it. Twelve years ago the strongest and boldest spring we had was back of the Arlington, and now it is eight feet under ground, the sinking being caused by this blasting. I know that this blasting has dried up several bold springs on the hill.

Q. In your opinion, then, no blasting should be permitted?—A. Not if they want to keep the water at an elevation. I don't think they will decrease the supply of water by blasting, but make more of it, perhaps; but they will decrease the height of the springs.

Q. And that will necessitate machinery for hoisting it back at an elevation some time or other?—A. Yes, sir.

Q. What are the prices charged now in the bath-houses for bathing?—A. I do not know what they charge at the present time. I charged 50 cents, but I do not think they can charge that now, owing to the restrictions placed upon them by Secretary Schurz.

Q. They sell tickets in numbers of 21 for \$5, do they not?—A. I do not know, sir. I have been an applicant here for ten years for a bath-house site, as I was burned out.

Q. Have you succeeded in getting one?—A. No, sir; I have not been one of those fortunate individuals.

Q. Do you know of any reason why your application was not acted upon favorably?—A. Well, sir, through the connivance of the superintendent of the reservation. In the first place, when Mr. Hamblen was elected superintendent I thought he was friendly to me, and I went to him and told him about my application. I told him I expected word from Secretary Teller, and that when it came for him to notify me, and he said he would. I applied to him several times, and he always told me that he had received no word from Secretary Teller. After I had gone to him a great many times I sat down and wrote a personal letter to Secretary Teller, and directed it private. In reply I got this letter, which I will present to you, of Mr. Hamblen's. Here it is [handing letter to chairman].

Q. Did Secretary Teller send you this letter of May 30, 1833, which Mr. Hamblen wrote to him?—A. Yes, sir.

Q. You have no objection to this being made an exhibit in the testimony, have you?—A. Not at all, sir.

The letter referred to is, as follows:

HOT SPRINGS RESERVATION,
OFFICE OF THE SUPERINTENDENT,
Hot Springs, Ark., May 30, 1883.

SIR: Referring to your letter of the 22d instant, making inquiries in regard to the bath-house of Huffman & Hamilton, I have the honor to state that the bath-house was built by Baldwin & Terry, adjoining and connected with the Hot Springs Hotel, on ground leased to them by W. H. Gaines, and carried with it the use of one or two rooms of the hotel. It had a capacity of about twenty tubs. It was a box-house, built of rough material, like the other bath-houses of that period, was supplied with iron tubs, and was probably as good as the average at that time.

Huffman & Hamilton purchased the rights of Baldwin & Terry under their lease from W. H. Gaines, and operated the house some two or three years, until it was destroyed by fire on the 5th day of March, 1878. There now remains only the vapor trough, which is worthless for any purpose, and a small quantity of iron pipe—the connections of the main with some of the tubs. It is twisted and broken by action of the fire, and of little or no value.

I learn of no complaints of the manner in which their business was conducted.

On the plat herewith returned is indicated the site formerly occupied by this bath-house. The heavy line shows the vapor trough as it now stands with dimensions corresponding to the scale of the plat. This is all that remains on the ground to mark the site. The dotted line gives the outline of the building, which stood directly over the creek, which comes to the face of this, to the front of the city hall, and to the front of the bath-houses above. This line was obtained from an old plat on file in this office, showing the location of the old Hot Springs Hotel. I have examined the papers turned over to me by the late superintendent, and find nothing among them to show that the application referred to in your letter was ever made. I know from general report that Huffman & Hamilton desired a lease, but am not apprised of any steps taken by them to obtain it.

Very respectfully,

SAMUEL HAMBLIN,
Superintendent.

The Hon. SECRETARY OF THE INTERIOR.

Q. Do you know of anybody situated similar to yourself?—A. I heard of several. The morning after I was burned out I went up to General Kelley, then superintendent, and went to work clearing away the rubbish preparatory to rebuilding. He came down and said to me, "Colonel, I wish you would wait. I have got word from the Secretary not to let anybody build until the commission comes here." I told him I would like to build, but he said that he could not permit it. Then Secretary Schurz issued an order that there should be no more bath-houses built for the present. It was not but a short space of time after that when two or three leases were granted. I went to General Kelley about my bath-house, and he told me to file a petition and plans and I did file a petition and a profile of the house. Then the Ozark, Rector, and Rammelsburg bath-houses were built; and I asked him about these leases, and he said that that was all done at Washington. He told me that the bill gave me that site and nobody should encroach upon me.

Q. Well, who did finally get the lease of the site?—A. Mr. Gaines is here and he can tell you, but there is no house on it. The lease is granted to Mr. Gaines for the site adjoining this brick bath-house over here.

By the CHAIRMAN:

Q. What is a fair price for bathing people? What can these bath-house proprietors afford to do it for? What would be a fair remuneration for the money invested?—A. Well, I think 30 cents is a fair price.

Q. You consider that enough, do you?—A. Well, there is one thing a man must consider. Here is a watering place the year round, and at 30 cents a man could make a good profit on the investment.

Q. How many people can be bathed in one tub a day? What is a reasonable average?—A. Ten.

Q. That would be a fair average, you think?—A. Yes, a fair average. I have bathed in my house a good many more than that on an average.

Q. Is there any requirement or regulation as to the hours of keeping open the bath-houses?—A. There is very little bathing now after 4 or 5 o'clock, but in the summer time they bathe later than that. A great many people come here who wish to bathe before breakfast. Bathing commences in the morning at 7 o'clock until half past 9, and then they commence and bathe until half past 1. They then start bathing at 3 o'clock, and bathe until half past 6. Very few bathe after that.

By Mr. STORM :

Q. Well, that would give each bather an hour, according to your estimate ?—A. Some bathe quick and some slow, and generally there are people who won't be hurried.

Q. Do you know anything about the obtaining or getting of these leases ?—A. I do not know how they get them. I never succeeded in getting one myself. Some one over in Washington does it, I believe, whom I have never got on to yet.

By the CHAIRMAN :

Q. Are there any public needs at Hot Springs that have not been provided for in the way of personal accommodations in the bath-houses, hotels, &c. ?—A. I think one of the public needs is a good hotel.

Q. You think the hotel accommodations are inadequate, do you ?—A. I do not know whether they are inadequate, but I do know that a great many people go away from here dissatisfied because they cannot get the accommodations they are willing to pay for.

Q. You think you need more hotels and better ones ?—A. Yes, sir.

Q. How many first-class hotels are there here ?—A. That is a hard question to answer.

Q. Is there a hotel in the valley at which a fellow can get a good square meal, except the Arlington ?—A. Well, we leave that to those from the capital ; they ought to know ; they have been shifting around a little here, and I guess they have found out.

Q. What is the reputation of the Arlington as a hotel ?—A. I believe good.

Q. Regarded as a first-class hotel, is it ?—A. It is regarded so in the valley.

Q. Is its continuance on the public property a public convenience ?—A. Until there should be a hotel established to supply its place, I should think it is.

Q. Is there any hotel here that would supply its place if it were discontinued ?—A. I don't know that there is.

Q. Who built that hotel ?—A. Mr. Stitt, Mr. Rugg, and Mr. Foredyce.

Q. The hotel was built there at the time the property was adjudicated to the Government, wasn't it ?—A. I believe before the property was adjudicated to the Government.

By Mr. STORM :

Q. Do you know whether any improvements were on this property at the time of the assessment for improvements made here by the Commission of which Senator Cragin was the chairman ?—A. Yes, sir.

Q. Now, taking into consideration the privileges of the hotel there and the value of the improvements upon the ground, is \$1,000 a year rental reasonable for the Government to receive from that property ?—A. I should judge that it was very cheap.

Q. Suppose the lease of the hotel was sold to the highest bidder as it stood then, what do you suppose parties would have given for it ?—A. Well, I should judge \$15,000.

By the CHAIRMAN :

Q. Do you mean for the property ?—A. Yes, sir.

Q. The house ?—A. Yes, sir.

By Mr. STORM :

Q. As the improvements were then ?—A. Yes, sir.

By the CHAIRMAN :

Q. Mr. Stitt is a pretty good hotel keeper, isn't he ?—A. Very.

Q. Hasn't it acquired its character and reputation by reason of his ability as a hotel keeper ?—A. Yes, sir ; he is very careful of his guests and sees to them very well, sir. I am only speaking of that, judging by the way other hotels rent.

By Mr. STORM :

Q. Do you know what these bath-houses are charged for rent ?—A. None of them are rented.

Q. Well, they pay a certain amount per month for each tub to the Government and put up the house themselves, don't they ; that is, the lessees ?—A. Yes, sir.

Q. Well, suppose the letting was a matter of public competition, like the award of any contract to do public work, would more be given per tub than is now paid the Government ?—A. I think likely there would be, sir.

Q. With the same restrictions as to charges, &c. ?—A. Yes, sir ; and bath-houses which are private institutions, such as the Rector, the Rammelsburg, the Old Hale, and the Big Iron have no restrictions there for charity.

Q. I say, taking the restrictions as to charges—taking that into consideration—I ask, would they bring more than \$15 a tub ?—Yes, sir ; I think they would.

Q. How much more would they bring, do you think, if sold in the way indicated ?—

A. When the receiver came here I paid \$20 a tub. That was before the Commission came.

Q. Well, there was a profit at that rate, was there?—A. Well, I certainly should not have paid that much if I thought there was not.

Q. Can you give to the committee any estimate that is at all reliable as to the number of persons that could be bathed in any one of these houses you choose to designate in a year?—A. I did have the statistics for three years' bathing, but I have forgotten what it was. I think the largest number was thirteen thousand and odd people.

Q. How many tubs did you have in your bath-house?—A. Twenty. That was the biggest year's business I ever did, but then we did not have the same number of visitors then as now, and we didn't have any competition either.

Q. You say you did not have as many visitors then as you have at this place now?—A. No, sir.

Q. But to offset that you had less competition?—A. Well, we had a good deal then, and more than now. As the fellow said, each tub stood on its own bottom, and we got \$27.50 for twenty-one baths.

By the CHAIRMAN:

Q. You had a pretty fat thing of it, then?—A. We furnished the attendants and paid all the expenses. We had to keep a house different then from what they do now. We used to paint a house three times a year then, because the vapor soon makes a house look dingy. They don't do that now.

Q. Why don't they do it now?—A. Because their bath-houses are run by a pool, and if you don't take a bath in one house you will have to take it in another.

Q. What do you mean; is it that the bath-house proprietors have pooled their interests?—A. Yes, sir.

Q. Explain what you mean by that?—A. They pool the earnings as if they were all one house.

Q. Under one management, you mean?—A. Yes, sir: you might say under one management, and the same as if one man ran them all.

By Mr. STORM:

Q. And an agreement that no one bath-house shall bathe for any other price than that authorized by the pool?—A. Yes, sir; if the Old Hale takes in a hundred this week and the Big Iron a hundred and twenty-five, they get the pro rata of what each tub has made.

Q. That of course destroys all competition in prices?—A. Yes, sir.

By the CHAIRMAN:

Q. What was the quantity of water running into what was called the Mud Hole?—A. Well, I do not know; I never measured it; but it was sufficient to bathe a couple of hundred a day.

Q. Was it supplied by a pipe or from a spring?—A. From a spring that came out right under the rock.

Q. Was any of the water supplied formerly by pipes?—A. Only drinking water.

Q. The water for bathing came up from a spring at the bottom of the pool, did it?—A. Yes, sir.

Q. Have you seen it lately?—A. I saw it about a week ago.

Q. Is there any water in this Mud Hole now?—A. Some; not much.

Q. Do you know what caused it to disappear?—A. I judge that it disappeared on account of the blasting below.

Q. You think that the disappearance came immediately from the blasting below there, do you?—A. Yes, sir.

By Mr. PAYNE:

Q. Is any of the hot water used for any other purposes but bathing by any of the hotels or parties here?—A. I know that one pipe runs to the French Hotel and one to the Arlington and one to the Avenue.

Q. Do you know what this hot water is used for in these hotels?—A. I believe it is used in the Arlington for drinking purposes. I believe that this hotel here (Sumpter) uses it for drinking purposes. The Avenue uses it for purposes of bathing, as they have a bath house connected with the hotel, and I think they use the cold water for drinking purposes.

By the CHAIRMAN:

Q. Do pipes run from the springs to these different persons or hotels?—A. Yes, sir.

Q. But the water is supplied for drinking purposes only, isn't it?—A. I do not know.

Q. Does it run in larger quantities than is necessary for that purpose?—A. I do not know; I never examined to see what flow they kept up or not.

By Mr. PAYNE:

Q. Do you know whether the water is used for water-closets in any of the hotels?—A. I do not.

R. H. TAYLOR, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. What is your residence and occupation?—Answer. Hot Springs, and physician.

Q. How long have you resided here?—A. A little over seven years.

Q. Are you acquainted with the Government work now being done upon the Hot Springs Creek; have you observed it?—A. I have watched it; I cannot say I am acquainted with it.

Q. The committee is here charged with the duty, under resolution of Congress, of inquiring as to whether or not the plans and specifications for that work are proper ones, and whether or not the material being used is proper for a work of that character, and whether the workmanship is up to the requirements of the plans and specifications. Now, state to the committee in your own way what you know of this work.—A. As at present carried on?

Q. Yes, sir.—A. Well, as to the rock, I am no geologist. You must remember that my pursuits in life are in variance with the occupations that would qualify me to give an opinion as to the character of the work. I think the rock of a very inferior character; that is, the rock at present used. I base my opinion upon my observations of it as it was taken from the quarry. It is of a porous, seamy nature, that will absorb water and freeze, which, when thawed, will cause the stone to break and crumble. The dimensions of the rock, in my opinion, in many places, are not such as to be suitable for heavy work of that character. It is too small as compared with my idea of the original contract. The first contract called for granite, which is substantial and would last for ages, and if the work had been carried on in that way it would have remained for many centuries.

Q. What do you know about the sand and cement used? Are they the proper kinds of materials, and are they used in sufficient quantities?—A. I am unacquainted entirely with the necessary qualifications of such work. I only base my opinion upon its being inferior from a conversation I had with the superintendent. He showed me the work, and explained the cement, saying that when it had time to set it would require dynamite to separate it, as it would be a solid mass as firm and solid as granite; and yet when the change of contract came, requiring the removal of the granite to take the place of the cheaper rock, it was removed with no more force than ordinary stone. I did not see them use any exertion at all in removing it.

Q. You understand the method of sewerage proposed in connection with this work, and you will please state what your views of it are as a medical man, in respect to the health of the town in its effect?—A. The bricking up of that portion of the contract?

Q. No; what would be the effect of turning the sewerage of the city into the creek?—A. I think it would be very pernicious to use that creek as a public sewer, unless hermetically closed and carried to the river.

Q. You think the deleterious effects could be guarded against by carrying the culvert to the Ouachita River?—A. Yes, sir.

Q. Well, what would you submit in lieu of the present system of sewerage?—A. I think the original specification provided for the sewerage to be carried off by a system of lateral pipes. Otherwise we would be at the mercy of epidemic and indemic influences.

Q. Suppose the sewerage accumulated at a point opposite the Avenue Hotel on the east side of the valley down to Malvern Crossing was turned into that creek, would there be any more danger than now? Is not there just as much sewerage going in from the east side now as there would be when that tunnel is completed?—A. Yes; a little more, because the bath-houses will be increased and then there will be the sewerage from the Government hospital, and other houses that will be built near the creek. I think it will be all the way down to Malvern Crossing, after this improvement is completed, a densely populated street.

Q. It is pretty well populated now, isn't it?—A. Yes; and it will be more so in a few years.

Q. Now, do you think from the Arlington Hotel down to Malvern Crossing the street will be built up as thickly as it could be, taking into consideration the Government reservation, and would there be any more sewerage turned into the creek than there was prior to 1874?—A. Ten times as much.

Q. Is not it a fact that there were ten times as many houses on the east side in 1874 as there now are?—A. Yes; most of the town was on that side then.

Q. And did not all this sewerage go into the creek at that time?—A. Yes.

Q. Did any trouble result at that time to your knowledge?—A. I do not think so.

Q. Now, if the city put in sewerage for the west side of the valley parallel with the creek, do you think that the sewerage from the Government reservation going into the culvert would produce any serious results?—A. Yes, sir; after this work is built up and covered in there will be a necessary confinement and accumulation of gases and effete matter which would be injurious to health; there would not be sufficient running water to keep down the odors, and in my opinion the lives of those living immediately around it would be jeopardized.

Q. I will ask you whether or not in a space as large as this tunnel, with a creek of running water through it, gas would be generated?—A. It necessarily accrues in confined pipes, whether they have a large arch or a small one. There is no means of general escape as in the open air.

Q. What is the value of the Hot Springs as a health resort to the United States and the world?—A. It stands entirely alone, and, in my opinion, ahead of them all.

Q. In what does the values of its waters consist?—A. The curative qualities of these springs is a subject that has not been handled satisfactorily, and comparatively little known, except as to effects.

Q. Well, as to effects?—A. We have opportunity of seeing daily in diseases like syphilis, or in diseases of a general character like rheumatism, that these waters are marvelously simple, not only by quick elimination, but by acceleration of the vital forces and energies and the changing of them all. We see that. But the actual medicinal quality of the water has not been properly investigated. I have not the genius to examine and see, and I only take results.

Q. Are there any other waters in the world known to be as valuable?—A. I believe that the people are rapidly being convinced throughout the world that there is no such water elsewhere. I have had patients from Carlsbad who came here, and it must have been on account of the waters, for, of course, we do not claim superior knowledge over our medical brothers abroad.

Q. What is the average number of visitors to the Hot Springs annually?—A. I think I have seen the time when it was fuller than now, and sometimes there are 4,000 or 5,000 people here. There have been times, as you know, when there were upwards of 5,000 or 6,000 here.

Q. About what would be the aggregate number a year?—A. I think it very rarely runs below 1,200 or 1,500.

Q. But I mean how many visit here in the year?—A. Come and go?

Q. Yes, sir.—A. Well, I have never thought of that. I expect there would be 40,000.

Q. Now, doctor, what are the needs of the Hot Springs; what are the public requirements and the needs of the invalids visiting here, &c.?—A. I do not think the entertainment is sufficient, and I doubt whether the bath facilities are plentiful.

Q. Do you doubt whether or not there is a sufficient number of bath-houses, and if those that are here are properly managed?—A. As to the manipulation of them I know nothing, but they are crowded. I am satisfied of that, for I have patients who tell me that they wait three and four hours in the bath-house before they can get a bath.

Q. How many first-class hotels are there here?—A. I do not know what you call a first-class hotel. The Arlington stands at the head, then the Avenue, and then the Waverly.

Q. For the most part are those hotels crowded with visitors?—A. They are at present.

Q. For the most part are they able to accommodate all invalid visitors to the Hot Springs?—A. At seasons they certainly are not. At present I doubt whether you could get in either of these hotels. I have seen seasons in the year when the Arlington was reduced in the number of visitors and had ample room, but at present I doubt whether you could get a room there.

Mr. STORM. We know that by experience.—A. I doubt whether you could get in the Arlington for three weeks.

Q. Does the Arlington Hotel stand on the Government reservation?—A. Yes, sir; I believe it does.

Q. Does it rank as a first-class hotel?—A. I think it does.

Q. Do you think visitors could get along very well without it?—A. I do not. At present they could not get along without it unless they brought tents with them.

Q. You regard it as a public necessity, then, and as a public convenience?—A. At present, sir, I do.

By Mr. PAYNE:

Q. If the first plan had been carried out and sewer-pipes had been laid on each side of this arch, that would not have helped the difficulty, unless the sewer-pipe was carried below the city, would it?—A. Unless the sewerage is carried by the city or the Government further down, it will jeopardize the lives of those at the extremity in the same way as it would be injurious to health in this vicinity. It should be carried down to the river.

Q. And you think the only remedy now is in building the sewer down through the

city and extending it on to the river?—A. Or it could be obviated, in my opinion, by laying the pipes which carry off the sewerage down below the city.

By the CHAIRMAN:

Q. What is the medical value of what is known here as the Mud Hole?—A. Well, the waters of all the springs, with a very slight microscopic difference, are the same, in my opinion, and in the opinion of medical men the peculiar virtue of that water is not on account of its earthy composition but its inherent heat. Now the Mud Hole is, or was, far above any bath-house in the valley. The basin was a non-conductor and more water came into the Mud Hole than could be obtained in a tub. It came directly from the earth into the basin, and if the medicinal virtues were good on a small scale they were proportionately greater on a larger scale. The body would come in contact with probably a hundred times as much water in the bath there as in the confines of a tub.

Q. How was it supplied previously, and how many people bathed in it?—A. The quantities of water, up to recently, appeared to be ample. It flowed from the crevices in the bottom and boiled up, and appeared to be ample. The number of visitors there I only judge by the crowds I have seen going and coming. This bath was probably more generally spoken of than any other bath at any time.

Q. The popular belief was that there was more virtue in that than in any other bath, was it not?—A. It certainly was.

Q. Was it a place of great resort for bathers?—A. Yes, sir.

Q. What do you think will be the probable effect on the springs if blasting is permitted to continue at the base of the mountain for bath-house sites?—A. Experience has taught us that it has been disastrous. When I first came here there was a very beautiful spring known as the Big Iron, and it was the glory of the valley; but in blasting around it, it became perfectly dry.

Q. When did that occur?—A. That occurred, I think, in 1878.

Q. That was not the arsenic spring, was it?—A. No; that was the Big Iron. It was under what is now known as the Big Iron Bath House.

Q. And you were satisfied that the disappearance of this spring was due to the blasting?—A. There could be no mistake about it. It occurred in a moment, and the recent blasting at the base of what is known as the Mud Hole appears to have closed that in a moment, and the theory in my mind is perfectly clear that the supply of water is not lessened at all, because under that mountain there is, in my opinion, ample hot water for the world, but it formerly flowed in large quantities, as is manifested by the tufa. The water could not reach the present altitude if it were not for the presence of the tufa. The water coming in contact with the air forms the tufa. Of course it is a porous formation, and the water forcing to an outlet, it flows through the crevices and thereby attains a certain altitude. Now, if you blast and strike into the lower strata, you lessen the altitude of the water.

JAMES L. BARNES, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. What is your residence and occupation?—Answer. Hot Springs; deputy United States marshal, and in charge of the Mud Hole.

By Mr. PAYNE:

Q. How long have you had charge of the Mud Hole?—A. Since 1878.

Q. And that has been used partially as a bathing-place for poor people, I suppose?—A. Yes, sir.

Q. Under what system have you conducted this Mud Hole since you commenced, in 1878?—A. I had permission from General Kelley, the superintendent, to put up a building at my own expense, and give certain hours for free bathers, and certain hours for pay bathers.

Q. How was the time divided?—A. From 7 to 9 in the morning free for families, and from 9 until 11 for families that paid, and from 11 until 4 in the afternoon for men who paid, and from 4 to 9 at night free for men.

Q. How long did that system continue—those hours?—A. Well, now, during the pay hours I bathed a great many free, too; they were respectable people, but they were broke, and the doctors sent them to me and asked me to give them tickets; that system was kept up until January.

Q. What year?—A. This year; this last January. I had orders from the Department to make the place free at all hours; that is, during bathing hours.

Q. You may state whether the bathers are graded or not, as to those who paid and those who were unable to pay?—A. No, sir; they were all accommodated. I had instructions to grade the bathers. That is, those people who paid, to give them certain hours, and those not able to pay certain hours.

Q. Do you mean that since January you have had a different system?—A. Since January I have been running under that system.

Q. Free at all hours?—A. Free during bathing hours, from 7 in the morning until 9 at night.

Q. Have any bathers paid since January last?—A. I have had some to come in the morning before bathing hours. Some of these commenced bathing before 4 o'clock.

Q. The water is not so high there as it used to be, is it?—A. No, sir.

Q. When did you notice the falling of the water?—A. About two weeks ago last Saturday, I think it was.

Q. At that time were they blasting there?—A. Yes, sir.

Q. Where were they blasting?—A. In front of the pool, near the Magnesia Spring.

Q. Did you discover the failure of the water about the time it began?—A. I was not there at the time. It fell all at once, just from one blast.

Q. But you were not there on the premises at the time?—A. I had gone to the post-office, and when I came back, after the blast was made, I was informed by the man I left in charge that the men in the pool at the time the blast went off said the water stopped running in the bottom.

Q. Who was that, the watchman?—A. A man I have in my employ.

Q. What is his name?—A. Pete is all I know. He goes by that name. That night the pool did not fill up as it generally did.

Q. Well, before that, what volume of water was there running into the pool from the spring?—A. Well, from one-half to three-quarters at night. There were four or five springs in the bottom.

Q. Was there sufficient water without the use of the pipe?—A. We used no pipe except for drinking water and the douche.

Q. After the failure of the water you dug down some, didn't you?—A. Yes, sir; we dug down 3 feet.

Q. And found water?—A. Yes, sir.

Q. How does the flow of water now compare with what it was before?—A. I do not think it is quite as much, but I think when we get the pool dug out we will find as much water as before.

Q. But you have not found as much yet?—A. I do not know. I could not tell very well.

Q. This blasting was directly in front of the bath-house, was it not?—A. Yes, sir; south of the bath-house.

Q. How far from it?—A. About 100 or 150 feet from it, probably.

Q. And that blasting was done for the purpose of clearing away the rock and tufa for a new bath-house, was it?—A. Yes, sir.

Q. Had you ever noticed before this the effect of blasting on the water aside from the lowering of the Mud Hole Spring?—A. I do not know that I noticed in particular myself.

By Mr. STORM:

Q. Where that water now issues from the ground it cannot be used for bathing purposes in any of the bath-houses on the Government reservation; it is too low, is it not?—A. Yes, sir; too low.

By Mr. PAYNE:

Q. Previous to January, about how many people on an average did you bathe at your bath-house who paid?—A. I built the house in 1878, and from October, 1878, to July 1, 1879, I gave 12,035 free baths and 3,164 pay baths. From July, 1879, to July, 1880, I gave 22,681 free baths and 7,399 pay baths. From July, 1880, to July, 1881, I gave 26,735 free baths and 6,293 pay baths. From July, 1881, to July, 1882, I gave 37,024 free baths and 6,354 pay baths. From July, 1882, to July, 1883, I gave 44,269 free baths and 9,823 pay baths. The charges that were collected for pay baths were according to what the parties were able to pay. Of course we had a certain price, which was \$3 for 21 baths, and when a party said he could not pay that much I have sold tickets for what they could pay. I have sold 21 baths as low as \$1. I sold the tickets just according to what they were able to pay.

Q. Have you the figures from last July down to the present time?—A. No, sir; I haven't them with me.

Q. What has been the effect of the change of system since January?—A. I find a good many able to pay who prefer bathing there. I bathe 100 a day that are able to pay and 200 a day free. It is not the price they care for, and they are perfectly willing to pay the same price that the bath-houses charge.

Q. Do they consider that the best water here?—A. Some of them do; yes, sir.

Q. Is there any combination of the other bath-houses, or pool, that you know of?—A. They have a bath-house pool, I believe, sir.

Q. How long since that took place?—A. I do not know exactly; but about a year, I think.

Q. Has there been any change in the price of bathing since the pool was organized?—A. They used to charge 25 cents in most of the houses, and now they charge 30. They sold twenty-one baths as low as \$3 for quite a while.

Q. In other words, there was competition before the organization of the pool, and since then there has not been?—A. Yes, sir. I would like to state, too, that I was the first applicant for a bath-house lease, and it was granted to me by General Kelley. It was the first lease ever granted, and was signed by him, and not signed by the Interior Department. At that time he signed all leases, and they did not send them to Washington. This was for a lease of water to run off the reservation, and owing to the unsettled condition of property I failed to get any one to engage with me in the business, and, not having the money myself, I offered to sell the lease, and I offered to take \$1,000 for it. Some one went to General Kelley and told him about it, and he sent for me, took the lease out of my hands and revoked it, and I have never been able to get any lease since then.

Q. Did they permit any transfers to other parties or by other parties of leases?—A. No, sir.

Q. Were there any other parties that leased bath-house sites that were permitted to make transfers of their leases at that time?—A. Yes, sir; two or three months afterwards.

Q. I suppose there had been frequent transfers of these leases, had there not been?—Yes, sir.

Q. Suppose these privileges were put up to the highest bidder, how much would people be willing to give for the use of the water and the bath-house privileges per tub per month?—A. I suppose property on this side would bring \$300 a foot.

Q. You do not understand me. Suppose the privilege of leasing a bath-house was put up at auction instead of being let privately to individuals; suppose the Department advertised, and there was open competition, now how much rent do you suppose would be realized per month for each bath-tub?—A. I do not know hardly how to answer that question. They consider them very valuable; I know that. I do not know exactly what they would bring. I have known of a lease of a bath-house site to be sold as high as \$5,000, when it would cost \$10,000 to excavate the place.

Q. Did you say you knew of parties who obtained a lease, and before doing work on the site transfer it and receive a bonus of \$5,000?—A. Yes; and one of \$2,000 and one of \$2,500.

Q. What leases were they?—A. The one near the Magnesia Spring sold for twenty-five hundred dollars. The lease was granted to Mr. Burkstaff, and it was sold to Gaines & Smith for twenty-five hundred dollars.

Q. When was that?—A. This last summer.

Q. And that was for how many tubs?—A. I do not know what the lease calls for.

Q. Of course the lease itself will show that?—A. If Mr. Burkstaff was here he could tell you.

By the CHAIRMAN:

Q. Does he live here?—A. No, sir.

Q. Did he ever live here?—A. No, but he comes here every year.

By Mr. PAYNE:

Q. Do you know of any other lease where a bonus was paid for the transfer?—A. No, sir; only those I have spoken of. I know that one was sold to George L. Smith by Frank Stearns.

Q. Do you know what was paid for that?—A. Two thousand dollars, I think. He told me at one time, but I have forgotten.

Q. How long ago was that transfer made?—A. Last summer.

Q. And in both these instances the leases were sold before any work had been done on the site?—A. Yes, sir.

Q. Do you know anything else that comes within your knowledge that will aid the committee in this investigation?—A. Well, no; I do not know that I do.

By the CHAIRMAN:

Q. Do you know anything about the creek work, as to how that has been done?—A. No, sir; I do not; I am not an expert in that line.

Q. How many bath-houses are there here?—A. Eleven, I believe.

By Mr. PAYNE:

Q. Do you think that the present number of bath-houses furnish sufficient accommodation for the existing demands?—A. Well, business is increasing every year; you see how my business increased, and I suppose the business of the other bath-houses increased, too.

Q. Well, isn't there demand for more accommodations than you have at your place; isn't it crowded at times each day?—A. Well, when I get the old pool fixed up again I think I can accommodate them all.

Q. I am speaking of the accommodations before the water fell.—A. We never used but one, and now we will have two.

Q. In other words, you have to double your facilities?—A. Yes, sir; and I think

we will have ample accommodations then, unless we make it free at all hours, and if we do, that pool will not be large enough.

Q. Do you think that the other bath-house in connection with your present one will furnish sufficient accommodation for the demand?—A. I think so.

Q. Do you know whether any other springs have been damaged by blasting?—A. No, sir; I do not.

Q. What hours are considered the regular bathing hours?—A. From 7 o'clock in the morning until 6 o'clock in the evening.

Q. That comprises the hours in which persons may bathe, and not longer than that?—A. Yes, sir.

Q. What time do most people go to bathe?—A. Most people bathe in the forenoon, before dinner; from 9 o'clock until 1 o'clock.

Q. Who controls the bath-house association or pool; who does it belong to?—A. The Hot Springs Bath House is owned, I believe, by Alfred Gaines and George L. Smith; the Grand Central Bath House is owned by Smith and Rector and Gaines; the Big Iron Bath House is owned by Dr. Garnet; the Old Hale is owned by George L. Smith and Alfred Gaines; the Independent is owned by George L. Smith, Alfred Gaines, and Colonel Fordyce, and I believe by Major Latta; the Palace Bath House is owned by Colonel Fordyce, Major Latta, and Mr. Maurice; the Ozark is owned by Mr. Maurice, Major Latta, and Colonel Fordyce. The Brick Bath House is owned by George L. Smith, and these three new sites or leases near the Brick Bath House are owned by Mr. Gaines, or he has an interest in them, and the Mud Hole is owned by me; that is the old place.

Q. What three sites do you speak of?—A. Two are in front of the Mud Hole and one is just south of the Brick Bath House.

Q. How long since they were leased?—A. Last summer.

Q. I will ask you if one of these sites does not comprehend the site formerly occupied by the Huffman Bath House?—A. I could not tell. Mr. Huffman claims that it does.

ARTHUR K. TAYLOR, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside, and what is your profession?—Answer. I reside at Hot Springs, and am a physician.

Q. How long have you been practicing medicine?—A. I have been here ten years.

Q. How long have you been a physician?—A. Forty-two years.

Q. What is the value of the Hot Springs water as to its medical properties?—A. Our patients get well, but by what means we do not know.

Q. This is a place of large resort, is it not?—A. Yes, sir.

Q. Does the profession know of any other medicinal waters which have the same virtues as these of the Hot Springs?—A. No, sir.

Q. Do you know anything about the work done on the Hot Springs Creek, under the direction of the Government; whether the proper material is used and it is properly constructed?—A. I know that the first work done with blue granite was very excellently constructed. The remaining work has been done with smaller stone.

Q. Do you know whether the work has been done properly or not?—A. No, sir; I was absent some two months during the progress of the work.

Q. What will be the effect on the health of the town if the sewerage on the east side of the street is turned into the creek?—A. I believe that the Hot Springs Creek is the proper sewerage of the city, if covered and carried a sufficient distance out of the town.

Q. How far should it be carried?—A. It should be carried about a mile, as far down as the laundry.

Q. What distance is that?—A. It is about a mile and a quarter or a mile and a half from here to the laundry.

Q. And you think that if the sewerage is carried in a culvert that distance it will work no injury upon the health of the town?—A. I think that will carry it entirely out of the way of injury.

Q. Now, doctor, if the sewerage of the city on the east side of the creek, commencing say at the park, is turned into the creek as far as the reservation extends, do you think that would be hurtful to the public health?—A. Yes, sir; to the lower part of the city, I do.

Q. You came here what year?—A. In 1874.

Q. Where did you have your office then?—A. At the house built adjoining the Hot Springs Hotel.

Q. Was the rear of your office over the Hot Springs Creek?—A. It was.

Q. Was any other sewer used in the town at that time except the Hot Springs Creek?—A. I do not know of any other.

Q. Is not it a fact that a large number of houses, bath-houses, and hotels were situated directly over the creek?—A. They were all over the creek.

Q. Do you know of anybody that was affected by the sewerage which at that time was turned into the creek?—A. I do not.

Q. Well, if a sewer-pipe was run along the west side of the creek, and parallel with it, of sufficient capacity to carry off the sewerage of the west side of the town, do you think the turning of the sewerage on the west side of the reservation into the creek would be hurtful to the public health?—A. I do not know that it would particularly. It might in the lower end of the town. It would emit a stench that would be very disagreeable, and I think that it would be better to carry it down farther.

Q. This is a great health resort, and we want to know what would be best for the well-being and interest of the invalid persons who come here. Now, what is required here to meet their convenience, health, and comfort? You are a doctor, and you can tell us.—A. I look upon the sewer system as most important here.

Q. How about the bath-house and hotel accommodations and things of that sort?—A. We have a large number of hotels, but we have not yet accommodations for all the people who come here. Our principal hotels are generally crowded, and even this committee had to go from one hotel to another to find accommodations.

Q. Yes, sir; we are painfully aware of that. Go on doctor.—A. We have not as much accommodation as our visitation requires.

Q. Do you think the bathing facilities adequate to the demand?—A. Yes, sir.

Q. And the great need seems to be want of hotels, you think?—A. Yes, sir.

Q. What is the value of this Mud Hole as a bathing place, what is the principal value attaching to it?—A. My experience of ten years' observation leads me to state that I prefer my patients to go there rather than to any other place.

Q. Do you advise your patients to bathe there?—A. In peculiar diseases I always advise them to bathe there, and I believe that the principal virtue of that spring consists of the quantity of water. In a bath-tub our body displaces a large amount of water, and we get the benefit of only that small volume which is around us. In a pool we bathe in three or four thousand yards of water, while the stream is running all the time. The profession is inclined to believe that it is the electrical condition of the water that makes it valuable. Now, in the bath-tub we would lose all this electricity, because by touching the sides of the tub with a hand or foot the electricity would be taken out immediately.

Q. What do you think of this blasting here?—A. I was not here when that was done, and did not see it, but it seems to me that this blasting of the tufa, by separating it from the solid rock, would diminish the waters of not only one spring, but of all.

Q. Do you think it a safe process for excavating for bath-house sites here?—A. I think if they should adopt another plan it would be far preferable to blasting. I believe in our deeds from the Government it has been prohibited.

By Mr. STORM:

Q. How far down Hot Springs Creek below the post-office did I understand you to say this improvement should be carried?—A. About a mile or a mile and a quarter.

Q. That would leave the sewer opening at the settlement down there, wouldn't it?—A. No, the settlement is not immediately on the creek. There are very few houses down below the laundry; very few.

Q. But you think that the Hot Springs Creek is the proper sewerage, if arched and carried down about a mile below the city?—A. It does strike me that the natural sewer of this town ought to be that creek, and it ought to be covered over in such way as not to prove injurious.

Q. If the bed of the stream was smothered out and narrowed a little, and the walls raised 2 or 3 feet higher than they are now, and left uncovered, wouldn't that remedy the difficulty?—A. In a great measure it would, sir.

Q. The natural current of the creek, if unobstructed, would give a free flow of water, wouldn't it?—A. Yes, sir.

Q. Could not means be resorted to for flushing the stream periodically?—A. Yes, sir; we have water-works here sufficient for that purpose. The creek could be flushed in such way as to carry any *débris* in the creek down the stream. With that plan and a constant stream of water running it ought not to be annoying at all.

By Mr. PAYNE:

Q. I suppose that the town has become so large that you need additional means of sewerage?—A. If the sewage of the town is not taken away, we will be subject to some epidemic.

Q. Would not you regard it as rather an extravagant means of sewerage to build an archway over such a creek as this, and carry it two or three miles?—A. Yes, sir; it would be expensive.

Q. Could not you put in a smaller sewer and use it exclusively for sewerage, and

would not that answer the same purpose?—A. Yes, sir; if it was sufficient to carry off the water it would answer.

By the CHAIRMAN:

Q. What are considered the regular hours for bathing?—A. In summer season it ought to be much earlier than now. But any time from six until four o'clock; probably it may run up to five o'clock.

Q. About how many hours in the day would be embraced in the time of bathing?—A. From ten to twelve, say. I have patients who bathe at all hours. In the summer season I bathe them early. A majority of people bathe in the morning hours.

HENRY HECOX, being duly sworn, testified as follows:

By Mr. PAYNE:

Question Where do you reside?—Answer. Hot Springs.

Q. How long have you lived here?—A. Ten years.

Q. I suppose that during that time you have been familiar, more or less, with the springs and the Government property here?—A. Yes, sir.

Q. Have you ever been connected in any way with the management of springs or bath-houses?—A. No, sir.

Q. What has been your business?—A. My business has varied since I have been in Hot Springs.

Q. Have you had occasion at all to examine the Government work during the last year?—A. No, I had no occasion to do it.

Q. Well, have you examined it?—A. Yes, sir.

Q. Well, what do you say as to the plan; whether it is adequate or not for the purpose intended?—A. The only impression made on me was that I thought it very strange that the work was not built in accordance with the contract. I was a bidder on that work.

Q. Were you a bidder on the original specifications?—A. Yes, sir; and that was the only impression made upon me. I never examined any of the material. I am not an expert and am not capable of giving an intelligent opinion of the matter, and would not like to do so.

Q. But you are able to say what the stone work now being done is worth per cubic yard, are you not?—A. I know nothing in the world about it, sir.

Q. Did you employ somebody else as an expert to assist you in making your bid?—A. Yes, sir; and two very practical men.

Q. Did you make a bid for all the work?—A. Yes, sir.

Q. What was your bid, Mr. Hecox?—A. I do not recollect the exact amount. If I had a copy of our proposition I could refresh my memory, but I think Colonel Alexander can give it to you. I was associated with him, and perhaps he can give it to you.

By Mr. STORM:

Q. Colonel Alexander's work only extends to the excavation, doesn't it?—A. Yes, sir.

Q. Mr. Payne is now asking you about the masonry?—A. I say that Colonel Alexander was associated with me in our bid.

By Mr. PAYNE:

Q. And you are not able to state what any of the prices were on any of the work?—A. No; it has passed out of my mind.

Q. What stone did you base your figures upon?—A. Granite.

Q. Granite from where?—A. Well, the granite that was used here.

Q. This quarry about 3 or 4 miles from here?—A. No, we did not expect to get it here; we had the same identical rock in another quarry.

Q. And for sand, where did you expect to get that?—A. We made our calculation to get that from the river.

Q. How far is that?—A. Well, the nearest part of the river is about $4\frac{1}{2}$ miles where we expected to get our sand.

Q. What quality of sand was that?—A. Good, sharp sand.

Q. Free from dirt and soil?—A. Yes, sir; washed by the action of the water.

Q. Washed by the river?—A. Yes, sir.

Q. And the cement, do you recollect about that?—A. The cement was specified.

Q. Well, it was to be equal to the best Rosendale cement, wasn't it?—A. Yes, sir; I think that is what the specifications require.

Q. You do not remember what your estimate was for excavating per yard, do you?—A. No, sir; I do not recall.

Q. Did you make any estimate for filling in or covering the top of the work?—A. No, sir; I do not recollect that we did.

Q. What do you know in reference to the management of the springs here from ob-

servations you have made, if any?—A. Well, of course, this is my own judgment in the matter, and you can have it for what it is worth. It was during General Kelley's term as superintendent here that the first excavating by blasting was done by George M. French, when he built the big iron bath-house, and the largest spring that we had here then was known as the big iron spring. During the blasting that spring was tapped, but really nothing was lost by it, because they struck the source higher up as the outlet of the spring was near the creek. It occurred to me then that blasting was a dangerous process for making excavations. After that Major Nelson built the old Hale Bath-House, and he excavated more than Mr. French did in building the Big Iron.

Q. Did he blast, too?—A. Oh, yes; rather recklessly. I had a conversation with him one day, and with Colonel Hamblen here, who was then in the Engineer Corps of the United States Commission, and in conversation with Major Nelson he asked him if he did not think there was danger of losing the water by blasting, and he said "there is no doubt about it, but as I have commenced I will finish." Mr. Hamblen said he ought not to fire a shot at all. By his making that admission, then, it showed that it was his opinion that it was dangerous to carry on this blasting. It is the common remark here that some springs have been decreased and others lost by blasting. I never investigated it and do not know how true it is.

Q. But so far as you are concerned that has been in accordance with your observations?—A. Yes, sir.

Q. That the decreasing or lowering of the water follows blasting?—A. Yes, sir.

Q. And that has been general, has it?—A. Yes, sir. Now, I first saw these springs in 1863. They were all out then on the side of the mountain, and uncovered. They made such an impression upon me that I could afterwards see them, it made no difference where I was. It made such an impression that it would come before me like a panorama. I do not suppose to-day I could see one of those springs that were then on the side of the mountain.

Q. They have been covered, I suppose?—A. I do not know what has become of them.

Q. You said that you bid upon the work; who got the contract?—A. I think it was first awarded to A. P. Robinson, and then afterwards he declined, or did not file his bond. I think it was then given to Mr. Bardwell—I think that is the name; I met the gentleman here.

Q. Do you know whether he is still interested with any other parties in that contract?—A. I do not know anything about that.

Q. Do you remember the price per cubic yard that Mr. Bardwell took the contract at?—A. No, sir; I never knew. I was not interested in it, and considered myself out of it.

Q. Then you have no knowledge as an expert as to what it would be worth?—A. No, sir; none in the world.

Q. Well, is there anything else in reference to this inquiry that you could give us any light upon?—A. I am sure I do not know.

Q. Is it true that you were an applicant for a certain bath-house site that was leased to other parties?—A. Yes, sir; I made application, and it was approved by General Kelley and forwarded to Washington. The site is just south of the Palace Bath House, and at that time I believed there was an order, or it was so asserted by General Kelley, from the Interior Department not to grant any more sites, and I quietly awaited such time as they would grant further sites and renewed my application. The first knowledge I had of it, the site was leased and sold.

Q. How long after you made your application was the site leased to other parties?—A. Last summer, and it was between three and four years ago that I made my application.

Q. To whom was that site leased?—A. I understand that it was leased to Frank Stearns.

Q. Do you know whether he owns the lease now?—A. I only know by hearsay; yes, he told me that he sold it to George L. Smith; I recollect that now.

Q. Do you know what the bonus was, if any?—A. No, sir.

Q. Is it or not true that several citizens here have also made application anterior to these leases being granted and been refused?—A. Yes.

Q. Please name the persons.—A. General Walsh is one of the parties. E. H. Ellsworth is another, and John Huffman; some five or six, but I cannot recall them all.

Q. In your application was anything said about the prices you should pay?—A. Yes, sir.

Q. What was it?—A. The regular prices.

Q. Did you offer to pay \$5 per month per tub?—A. I do not recollect the exact price, but whatever it was I offered to pay. I had considerable trouble in getting my application approved, and had to meet all the objections, and, of course, I had to comply with everything that the Department required when I put in my application.

Q. Did you meet all these requirements and get your lease approved about four years ago?—A. Yes, sir.

By Mr. STORM:

Q. You were going to state your occupation and business here, and I think you were interrupted, and the stenographer has not got it down. Will you please state your occupation?—A. My occupation is that of a saloon-keeper.

Q. And you have no knowledge of masonry to give any opinion on the subject of material used here, I understood you to say?—A. No further than that this present material used is vastly inferior to the granite.

Q. Do you mean the stone taken out of the quarry near the work?—A. Yes, sir; but whether it will make good and permanent work or not, I could not tell you and I would not even venture an opinion on it.

Q. What was the price of a bath here anterior to the establishing of the Hot Springs Pool?—A. Well, there were different bath-houses and they had different prices. Several years ago before the fire, the fire destroying the Rector and the Huffman and the Hot Springs bath-houses I think they charged 50 cents each and in the Old Rector Bath-House and others they charged whatever they could get.

Q. Is it true that after the Palace Bath-House and the Old Hale Bath House and the Rammelsburg and other leading bath-houses were built, and before the pool was established, that they had streamers extending across the street, offering to sell 21 tickets from \$2 to \$3, and advertising in that way?—A. Yes, I recollect there was a thing of that kind, but I cannot recall which bath-house did it. I think all competition that existed was broken up by the pool. I recollect the circumstance that there was a lively competition before the pool was gotten up. It was the Independent Bath-House which would not go into the pool, and I now recollect that was the occasion for the competition.

Q. And then they all came down and ran each other; that is, put down the rates on each other, did they?—A. Yes, sir; it was pretty generally understood that they could not control the Independent.

Q. Is it or not true that the result of this fight was the forcing into the pool of the Independent?—A. I only guess at that.

Q. Did it or not go into the pool?—A. Yes; they got hold of it, but whether this was the object of the fight or not, I do not know.

Q. You spoke of blasting at the Big Iron and the Old Hale. I ask you whether that was in the tufa or in the natural rock?—A. It was the tufa. You see at the Big Iron they never struck rock at all, and it was only at the greatest depth that they struck rock in the Old Hale.

Q. Did the blasting in the building of these bath houses, in both instances, develop more water, or did it have the contrary effect?—A. I do not think it did in the Old Hale, but possibly it might have in the Big Iron. Yes, I am pretty sure it did in the Big Iron, but one thing I recollect more distinct than the rest, was the tapping of the Big Iron. It was the most important spring here and was really a curiosity. I I recollect that. I am inclined to think that they did get more water.

Q. Is it or not true, that the Big Iron Spring, which was the mammoth spring of the valley, is destroyed and useless to-day?—A. Oh, there is nothing of it at all. It was really a curiosity and ought to have been preserved.

Q. Is it or not true that the same body of water that was in the Big Iron was developed higher up?—A. Yes, sir; they found it higher up.

Q. Did they find the same vein of water higher up?—A. Yes, sir; and it was very abundant.

Q. Is it or not true that the volume of water they struck was at least 50 feet south-east of that original spring, and flowed entirely in a different direction?—A. Yes, in a different direction, but the flow where they tapped the vein of the Big Iron was nearly east from the original spring.

Q. Was or was not this new vein discovered about the time the old vein in the Big Iron disappeared?—A. Oh, yes. The minute that sprung up it failed to show down below.

MICHAEL DWYER, being duly sworn, testified as follows:

By Mr. STORM:

Question. Where do you live?—Answer. Hot Springs.

Q. How long have you lived here?—A. A little over eight years and nine months.

Q. What is your occupation?—A. Stone mason.

Q. Have you been employed on the work of improving the Hot Springs Creek?—A. I was employed but a few days last fall.

Q. Are you acquainted with the character of the material used in the work and as to how the work is done?—A. Yes, sir.

Q. First as to the material used, how is the stone?—A. The stone is good, sir, for good rubble masonry work.

Q. It answers the purpose, does it?—A. Yes, sir.

Q. How about the sand that is used?—A. That answers good, too.

Q. Is it good sand?—A. I have worked it, and it has a good bond.

Q. What proportion of sand and cement are used in the work; what proportion of sand to cement?—A. What I have used and have seen used is one to two and two and a half.

Q. Two and a half of sand and one of cement?—A. Yes, most of it two.

Q. Is the stone used there as good as the granite that had been first used?—A. No; it is not as good rock as the granite rock, but it is good for rubble masonry.

Q. What do you mean by rubble masonry?—A. Such work as you see in the walls of that creek.

Q. Yes, but Congress cannot see the walls of the creek. Just describe it.—A. Rubble masonry. It is not cut work.

Q. What do you mean by cut work? Very few members of Congress are masons.—A. If you get it down I will understand it. Different size stones.

Q. The stones do not lay in regular courses, do they?—A. No, sir.

Q. Where the stone is laid in regular courses it is called range masonry, isn't it?—A. Yes, sir.

Q. Are you acquainted with the stream?—A. Yes, sir.

Q. Is it large enough to carry off the water-flow?—A. I think so. Of all the water I have seen come through it, it has never been filled.

Q. Since the covering has been constructed has the flow of water been as great as prior thereto?—A. I think it has; except two years ago I believe the water was a little higher, but it came through then without any difficulty. Two years ago last spring the water was the highest I know of.

Q. Rubble work is composed of stones not dressed on the face, isn't it?—A. No, sir; it is dressed to a certain extent, but not smooth.

Q. The edge is cut, but not the face?—A. No, sir; not the face.

Q. What would you understand by range rubble work?—A. Having the stone a certain size and a certain-size course.

Q. Is this work constructed in what is known in masonry as range rubble work?—A. Well, it is not exactly, but it is mighty close to it, and just as good.

Q. Have you any experience yourself in the matter of the price of stone per cubic yard delivered here?—A. What is the value of it?

Q. You know where this granite came from, don't you?—A. Yes, sir.

Q. What would that stone cost dressed here ready to lay in the wall per cubic yard, if you know? I do not know what your knowledge of such things is.—A. I think it would cost about \$7.

Q. What would be the difference in value between the stone got from that quarry and stone taken out of the side of the hill here near the improvement?—A. I do not exactly know, sir.

Q. Have you used this material anywhere aside from the work on the creek?—A. Yes, sir; I used it in the Mud Hole.

Q. What do you mean by "Mud Hole;" the bath-house there?—A. Yes, sir; the bath-house.

Q. What part of the material did you use?—A. I used the sand and cement.

Q. Did you use the stone?—A. No, sir; not the stone that was used on the creek. I used other stone that was more convenient to the work I was doing.

Q. Do you know anything, Michael, about the facilities here for bathing; whether the public here is satisfied with the bathing accommodations; whether they are sufficient to meet all demands and requirements of the public?—A. I never heard any complaint among visitors. They seem to have ample room as far as I know, but I do not pay particular attention to such matters, though.

Q. What has been the result of this work on the Mud Hole, as far as the use of material is concerned?—A. I built a new foundation and pool and the material I used was the same as is used here on the creek.

Q. How long ago did you do this work?—A. Three months.

Q. And the work is good yet?—A. Yes; good, and will be good for years, and is there to show for itself.

Q. It has not been constructed hardly a sufficient length of time to test its durability, has it?—A. It is put up with this sand and cement, and I know it will stand.

J. W. JACOBS recalled.

By Mr. STORM:

Question. I understand that you wish to make an explanation, captain.—Answer. No, sir; I only desired to submit to the committee, if it is a proper matter, the lease of a strip of ground that I think is necessary for the purposes of the Army and Navy hospital now being built here.

Q. Will you remain in town all day, captain?—A. Yes, sir; I am stationed here. There is no special hurry about this matter.

Q. Well, we will take this matter into consideration this evening, if it will suit you as well, in order not to interfere with witnesses who are here to testify, and who wish to get away as soon as possible. I suppose you can come here this evening?—A. Any special hour?

Q. Can you come here at 10 o'clock to-night?—A. Yes, sir; I shall do so.

L. E. CAIN, being duly sworn, was examined as follows:

By Mr. PAYNE:

Question. I understand that the question we are requested to ask you is whether you have been an applicant for a bath-house site?—Answer. Yes, sir; I have been an applicant for a bath-house site; not for a site, but for water.

Q. For water to carry to other premises?—A. Yes, sir.

Q. When did you make the application?—A. I think it was, perhaps, in 1879.

Q. And what was your application in substance; what did you want and what did you offer to give?—A. I did not offer to give anything. I simply made application through General Kelley for water. I supposed that there was a rate established for that and I supposed I would have to pay what everybody else paid.

Q. Was that application in writing?—A. Yes, sir.

Q. Do you know whether it was indorsed by General Kelley?—A. I do not know.

Q. Did you ever hear anything from the Government in reference to the application?—A. No, sir.

Q. Is it or not true that other parties have been allowed the water since that time?—A. Yes, sir; they have.

Q. What other parties?—A. The Avenue Hotel has been one since that time, I think, and there have been one or two new bath-houses built here since that time. I think possibly the Palace and may be the Independent.

Q. Are there sufficient bath-houses here to accommodate all the people, and meet the demands of those desiring baths?—A. I could not tell about that.

Q. What is your business?—A. I keep the Waverly Hotel.

Q. Is it or not true that enough water is wasted in and around the Hot Springs Creek and covered up to run half a dozen bath-houses?—A. Yes, sir.

Q. Is it water that comes up in the bottom of the creek?—A. Not necessarily; not all of it. Some of it runs away from the sides of the mountains, and some in pipes to other places.

Q. At the time you made your application did the Government lease water to be used on premises outside of the reservation?—A. They did before and have since.

Q. To what premises?—A. Before that time the Rockafellow had water and, I think, this house (Sumpter) had water, and the old Grand Central site had water. Since that time the Avenue has had water from the reservation and I think that a bath-house right opposite the Arlington called the Hot Springs Bath-House, have got water off the reservation.

Q. State whether or not any of these places use water for other than bathing purposes.—A. There are places here where it is used for other purposes than bathing.

Q. What places?—A. The Arlington Hotel uses hot water.

Q. For what purpose?—A. I have not been through their water-closets lately, but they have the drinking water in the hotel. I do not know whether they use the water in the water-closets now or not.

Q. Do you know of any other place?—A. They used to use the water in the water-closets of the Arlington, I believe, but I am not positive about it.

Q. Do you know whether they used the hot water for any other than bathing purposes in any other hotel?—A. They used it in the French Hotel for other than bathing purposes.

Q. What other purposes?—A. They used it in the water-closets and in drinking spouts.

Q. Do they use it now?—A. The house is not running now.

Q. Is there any place other than the Arlington Hotel where the water is used for other than bathing purposes?—A. I do not really know.

By Mr. STORM:

Q. How many hotels in Hot Springs beside the Arlington have the use of water for drinking purposes that you know of?—A. Well, I do not know of any now. The French Hotel, as I told you, used to have a water-spout.

Q. You do not know that this house has hot water, do you?—A. Which house?

Q. The Sumpter.—A. I do not know. I know they had water at one time.

Q. Do you know of any other hotel that uses the hot water for other than drinking purposes aside from the Arlington?—A. Oh, yes; the Avenue.

Q. Any other?—A. Not to my knowledge, unless this one (Sumpter).

Q. The hotels which have this hot water for bathing and drinking purposes have an advantage over other hotels, and that fact would attract people to them, would it not?—A. Yes, sir; I think that is to their advantage and to the disadvantage of other hotels.

Q. Is it or not true that the bath-house known as the Hot Springs Bath-House formerly, and now known as the Grand Central Bath-House, as well as the French Hotel Bath-House, have been discontinued; that is, have not been using the hot water since the establishment of the pool, and have shut off the water running into these premises since the establishment of the pool, and just that much hot water is flowing away for nothing?—A. I do not know about the Hot Springs; I think the others have not been using it.

By Mr. PAYNE:

Q. You think these places have discontinued the use of the hot water since the establishment of the pool, do you?—A. I do not know positively, but I think so.

By the CHAIRMAN:

Q. Is this water that is alleged to be used at the Arlington Hotel necessary for bathing purposes, or is there enough beside that?—A. Oh, I think there is enough water for them all.

Q. Well, would not it be a good thing for the public and individuals generally if all the hotels had this hot water?—A. Yes; I think it is a good thing, and I think they ought to have it if they can get it.

Q. Is there enough hot water here to supply all the hotels?—A. Yes, sir.

Q. How many hotels are there here?—A. Well, I cannot tell you how many there are here really without some calculation. There are at least a half a dozen houses that claim to be hotels, and there are others, smaller perhaps, calling themselves boarding-houses.

By Mr. PAYNE:

Q. How much is it worth to a hotel to have hot water for drinking purposes only?—A. That depends upon the size of the hotel. I would give a couple of hundred dollars if I could get it.

Q. Simply for drinking purposes?—A. Yes, sir; that may be more than it is worth, but I feel the need of it so much that I would be willing to pay that amount.

By Mr. STORM:

Q. A man who has invalids in his house, would it or not be to his advantage to have them bathe in his house rather than outside?—A. Yes; it would be a great advantage.

Q. Do you think the price for bathing here, as it is now, too high, taking into consideration what the Government receives for the lease, and allowing a fair margin for profit?—A. No, sir; I do not think the baths are too high.

Q. Do you think they are too low?—A. No, I do not think they are too low; I think it is a very fair price.

Q. Do you think the bath-houses should be graded in price like hotels; those affording the best accommodations demanding a higher price?—A. I think it would be very fair and equitable to run the bath-houses like hotels, and charge whatever they can afford to charge and have the best of accommodations. I do not think the prices too high for a first-class bath, and I do not think that the prices of boarding too high for first-class houses; I do think that the prices charged in the bath-houses should be regarded according to the accommodations, as in our business.

Q. What do you charge a day for board?—A. Two and a half and three dollars.

Q. By the day or week?—A. From \$17.50 to \$21 a week.

Q. What do other hotels charge?—A. I think the Arlington Hotel is about the same

Q. What does the Hay House charge?—A. I think they charge all the way from \$12.50 to \$15 a week.

Q. Do not some of the hotels here charge as high as \$4 a day?—A. Well, I do not hardly think they do; they may.

Q. Do not some of them charge \$3.50 a day?—A. I expect they do for transients.

Q. Would a person staying a week at a hotel be called transient?—A. No, a man staying a week would not be; a man could stay at any house a week for \$21 any way.

Q. That would be no less for a week than if the charges were by the day?—A. Yes, sir; there is a slight difference.

Q. The fact is that these bath-houses now all charge the same price, I believe?—A. I do not think they do.

Q. How many do not; of course I except the Mud Hole?—A. Well, I do not know what the bath-houses charge.

Q. Do not all the bath-houses which belong to the so-called pool charge the same price?—A. I do not think they do; I thought they were graded.

Q. That grading is supposed to be based upon the superior or inferior accommodations, is it not?—A. I think it is; I thought they were graded.

By Mr. PAYNE:

Q. Is not that grading in accordance with the highest price named in the lease which can be charged, rather than being based upon the accommodation?—A. Well, I do not know about the requirements of the lease. I suppose that the price they pay according to the lease is a dollar and a quarter per month for each tub.

Q. But do not the leases have some regulation as to the maximum price that shall be charged for baths?—A. Well, I never had a bath-house lease in my life.

Q. There is some regulation of that kind, providing what the maximum price shall be. State what you know about the bathing, as to the amounts paid the bathers and who pays them.—A. I think the bather gets his pay from the visitor. I believe the visitor furnishes his towel and pays the servant, and furnishes the soap, if any is used.

Q. In other words, it is true that the bath-houses furnish nothing but the water and tub?—A. That is all, except the cooling room.

Q. What expense is there in running a bath-house, if any, after it is once established?—A. I expect I am a poor witness on that. I do not own any bath-house stock. I think the expense is light, other than the decaying process of the material, which is rapid in most cases.

Q. Who owned the French Hotel at the time that the hot water was used for other than bathing purposes, and, if you know, who secured the lease of the hot water?—A. Well, I think Major French got the water and I think he built the house, and I think the water was put in at the time.

Q. Do you know whether or not since Mr. Smith bought that house it has been closed up and no water used?—A. I answered that question.

Q. Do you know of any one that ever made application to the Grand Central Bath-House or Hot Springs Bath House, since the organization of this pool, and has been refused a bath?—A. My knowledge is that no application has been made there lately. I have not seen any one bathing there, and I have not been in the house for years.

Q. Do you know why it is closed?—A. No, sir.

Q. Have you no knowledge on that subject?—A. No, sir.

Q. Do you know whether or not either of these houses is closed?—A. I answered that. I say I do not know whether anybody has applied and been refused or not, but I have not seen anybody bathe in them.

Q. Judging from appearances on the outside, no doors being open, no bathing boys being around, &c., does it not look as though the place was closed to the world?—A. I have not seen a bathing boy or man having the appearance of taking a bath around there for a long time. Now, the place may be running, and I do not know about that.

Q. Have you ever seen anybody trying to get in there by trying the door, or anything of that kind?—A. I have not.

J. W. MAFFITE, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Where do you live?—Answer. Hot Springs.

Q. How long have you lived there?—A. Twenty-four years.

Q. That takes in the left of your life, doesn't it?—A. Yes, sir.

Q. Is there any particular branch of this subject that you are familiar with, so that we may scatter as little as possible in asking you questions?—A. No particular subject.

Q. Do you know anything of the materials used in the construction of the Hot Springs Creek improvement?—A. No, sir.

Q. And you do not consider yourself competent to give an opinion on that subject?—A. No, sir.

Q. What business are you in?—A. I am in the grocery business.

Q. Do you feel competent to give an opinion upon the manner in which the work has been done?—A. No, sir.

Q. Well, sir, as to the workmanship, the laying of the side walls and the arch, what have you to say about it? Do you say you know anything about that at all?—A. No, sir.

Q. Do you know anything about the sufficiency of the work for the purposes for which it is constructed?—A. No, sir; I know nothing about the material used, and nothing about the workmanship.

Q. Have you any opinion as to the effect on the health of the town, of the building of that sewer according to the proposed plan? Will the completion of this work, as proposed by the Government, down to the post-office, be deleterious to the health of the town?—A. I do not think it would.

Q. Do you know anything about bath-house management?—A. I understand it is run as a pool.

Q. Your understanding is that the whole system of bathing here is managed by a pool?—A. Yes, sir.

Q. Have you anything to say in regard to the prices charged for bathing?—A. I have not. I suppose it to be about right. It is like in every business; the different bath-houses have their prices arranged differently, according to the conveniences.

Q. The prices are fixed by the pool, are they not?—A. Yes, sir; and as near right as could be gotten at.

Q. Based upon the conveniences and comforts furnished by the different houses?—A. Yes, sir.

Q. Do you know of any complaint from any parties that the accommodations at present are insufficient?—A. No, sir; I have not heard any. My business does not call me around there much.

Q. What is your age?—A. I am twenty-four years old; nearly twenty-five.

Q. Have you ever tried to get a bath-house here?—A. Oh, yes, I have visited them.

Q. I say, have you ever been an applicant for a lease?—A. Oh, no, sir.

Q. You do not know anything about the extent to which the water is used outside of the reservation, do you?—A. No, sir.

GEORGE W. BAXTER, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Where do you live?—Answer. Hot Springs.

Q. How long have you lived here?—A. About nine years.

Q. Are you acquainted with the material used in the construction of the improvement on the Hot Springs Creek, and the manner or the execution of the work?—A. Well, no, sir; I am not posted on that proposition. I know the stone and where it comes from, and that is all I do know.

Q. What is your occupation?—A. Real estate and insurance agent.

Q. Is it your opinion that the materials used in the construction of the sewer are proper materials for that kind of work?—A. The stone, do you mean?

Q. Yes, take the stone first?—A. Yes, sir; in my judgment the stone is suitable if properly laid.

Q. Has the stone that has been used from the hill here as good as the granite specified in the original contract?—A. I should not think it would be, but at the same time I think it is sufficient; it certainly would not be as good as the granite.

Q. The sand used, do you consider that to be good for this class of work?—A. I do not know anything about it.

Q. Take the sand and cement, is it good for this work?—A. No, sir; I am not posted on that class of work.

Q. And you cannot say as to how the work is done?—A. I cannot.

Q. The preparation of the bed of the stream, is that in accordance with the requirements of the original plans?—A. Well, really I do not know anything about the original plans. I think the preparation of the bed of the stream, from what I have seen, is good.

Q. Were all obstructions removed from the bed of the stream; that is, about a week ago?—A. Yes, sir; I was very much pleased with the manner in which the bed of the creek was arranged and the easy flow of water.

Q. Do you think the culvert is large enough to carry off the waterfall here?—A. That is a question I could not answer. For ordinary purposes I think so, but there might come a time when it would not be, but ordinarily, in my judgment, it is large enough.

Q. If the Government goes on and completes this work here in carrying that stream to the end of the reservation would it, in your opinion, jeopardize the health of the community?—A. Under the present contract, do you mean?

Q. Yes, sir.—A. I do think so; yes, sir; I think it would, unless the work is more extended than under the present plan.

Q. Then you think the work should be carried down the stream further?—A. Yes; I think it should be carried a mile further, if possible, with a system of sewerage on the outside of the arch.

Q. You think that a system of sewerage ought to be carried along the present sewer, and extended on down below the town?—A. Yes, sir.

Q. The present improvement extends to the end of the Government reservation, does it not?—A. Yes sir.

Q. Cannot the evil be avoided by flushing the sewer?—A. Well, possibly. After the water passes from the arch, while you might flush in the arch very well, yet after passing that point it will simply tend to spread the sewerage and leave the excrescences on the side of the stream.

Q. Well, if the wall were raised and the bed of the creek deepened and narrowed down to a proper width, and a proper system for flushing be provided, would not that facilitate the flow and remove the excrescences?—A. Oh, yes; it would certainly facilitate it! On that point my judgment is that the work ought to be extended so as to guard against any possibility of endangering the health of the city; the health of the visitors and citizens.

Q. Do you think the work, after being completed as now proposed, will prove any more injurious to the health of the town than when you had your bath-houses standing over the stream, with water-closets emptying into it, &c.?—A. Oh, no, sir; I do not think so, but I do not think it will be much of an improvement on the former order of things, except in the appearance of the street.

Q. Do you know anything about the present management of these bath-houses?—A. Only from hearsay, sir.

Q. Well, the general understanding is that it is managed by a few men, or pool, as you call it, who have control of the management and of the prices?—A. Yes, sir; I understand that there are ten or a dozen men who own a number of bath-houses here.

Q. Are these gentlemen interested in matters outside of bath-houses?—A. Yes, sir.

Q. In hotels?—A. Yes, sir.

Q. Owners of real estate?—A. Yes, sir.

Q. Are any of them interested in the contract for this improvement of Hot Springs Creek?—A. No, sir; I do not know of a man interested in a bath-house here that is interested in any Government work. I understand that George L. Smith is interested in this creek contract; but that is hearsay. I do not know it of my own knowledge. I know he is interested in these bath-houses.

Q. Is he interested in any hotel?—A. I think he was interested in the French Hotel.

Q. Do you know of any complaint concerning the price charged for bathing?—A. I do not think I do, sir.

Q. Among those who are visitors and those who are residents?—A. The only complaint I heard was about the facilities for free bathing, and that is about the only complaint I have heard of. Of course during my residence here I am liable to hear complaints about everything and about everybody, as for that matter.

Q. The opportunities for free bathing have been very much diminished by the loss of the Mud Hole, have they not?—A. I do not know, sir, about that. I heard it said on the street that recently the Government has made an additional building there, and I supposed instead of diminishing it they had increased it materially.

Q. Well, in your opinion, are the charges that are exacted for bathing reasonable?—A. As graded now?

Q. Yes, sir.—A. I do not see how the parties who have invested their capital could possibly do it for less than the prices charged now.

Q. Do you know anything about the income of these houses?—A. No, sir; nor do I about the expenditures.

Q. Do you know enough of the receipts of these bath-houses to enable you to form an opinion that would be anywhere near definite?—A. No, sir; I do not know about the receipts. I take it simply as a business proposition, that the accommodations furnished are reasonable at the prices charged. My observation is simply made in a practical way.

Q. Do you know how many persons can be bathed in one bath-tub a day, allowing each one the usual time?—A. I never ran a bath-house, and I do not know.

Q. Do you know of any complaint here about the method of the Government in letting these hot-water privileges?—A. Any complaint?

Q. I ask whether some parties were not refused and others granted these privileges?—A. Oh, yes; I heard something about that on the streets; I do not know it.

Q. You have not been an applicant yourself, and do not know positively, do you?—A. No, sir.

By Mr. PAYNE:

Q. I suppose, if a single sewer was put down on the west side of the improvement, extending through the whole street and emptying below the town, it would render the sanitary condition of the place much better than it ever has been, wouldn't it?—A. Undoubtedly; undoubtedly.

MICHAEL SHEA, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside?—Answer. Hot Springs.

Q. What is your business?—A. Lapidist and jeweler.

Q. How long have you been living here?—A. I have been here about ten years.

Q. Do you know anything about the work that is being done on the Hot Springs Creek under the direction of the Government?—A. Well, I see them working at it, but I don't know much about it.

Q. Do you know anything about the plan upon which it is being done? Whether or not it is a proper one for a work of that character? What is your opinion about the plan of the improvement, without regard to the method of its execution?—A. The original plan?

Q. The plan under which the work is now being done. What is your opinion as to

the size of the tunnel, &c.?—A. Indeed I never looked into that matter, and do not know what the original plan was.

Q. Do you know anything about the material that is being used, as to whether it is the right sort of material or not for this class of work?—A. Well, from what I have heard of the original plan and what I have seen of the material used now, I do not think it is as good as the stone that was first used.

Q. Are you acquainted with the different character of stone used for building purposes?—A. Yes, sir. I am not an expert at it, but know a little about it.

Q. Well, can you tell the committee whether or not this stone now used in the construction of the work is proper material to make the work durable and answer the purpose the improvement is designed for?—A. Which stone do you mean?

Q. That blasted out of the side of the mountain adjoining the work.—A. Well, I would not like to build a house out of that stone.

Q. Well, in building a wall for a creek, do you think it is proper material for that purpose, and the right sort of work may be done with it?—A. Yes, I think that you could make good work with it if you could get it out in large pieces.

Q. Well, do you think the work done well?—A. No; I do not.

Q. State to the committee your reasons for thinking so.—A. Well, because there are several kinds of stone in there.

Q. What else?—A. And some of them are too light, I think, for the place in which they are put.

Q. You think the pieces are too small, do you?—A. Yes, I think so; and I have noticed as I have gone along the work that in some places the water runs over them and washed the cement out of the work that has been done.

Q. Have you noticed the composition of that cement; what it is composed of and whether it is the right sort of material or not?—A. Yes, sir.

Q. Well, do you think it is the proper material?—A. No, I do not.

Q. What is it made out of?—A. Well, there is a good deal of clay in it, I think.

Q. Does the objection to the cement arise from the cement itself, the loam or sand used, or want of proper proportions, or what?—A. Well, the objection I have is that I do not think in some of it there is sand at all. I think a man could raise a pretty good crop upon some of it.

Q. Is the sand that has been used sharp, clean, and free from clay and vegetable matter?—A. Sometimes I noticed pretty good sand, and then again I noticed it was very soft and clayey.

Q. What effect would that have upon the construction? I mean as to the masonry?—A. I do not know much about masonry. They seem to be going on very fast with it.

Q. Do you know anything about the management of bath-house privileges and bath-houses?—A. I do not know anything about that, only from hearsay.

Q. Have you been able always to find water enough for you to bathe in?—A. Yes, sir.

Q. Well, do you know any objection to the management of the Government property here?—A. I have heard a good many speak of the manner of the management of the affairs here and say that they were not conducted properly.

Q. What are the objections?—A. Some people say they did not get what they paid for, but so far as I am concerned, I always got what I paid for.

JAMES L. BARNES recalled.

By Mr. STORM:

Question. With reference to the sand and cement used in the new bath-house, or new pool at the Mud Hole, do you know whether it is the same material that is used on the creek here?—Answer. The same material that is used on the creek. The same material that has been used on this creek has been used in the Mud Hole, and that is hard and stands the hot water, and does not peel off.

By the CHAIRMAN:

Q. Is the masonry of the Mud Hole put up in the same manner as this work on the Hot Springs Creek?—A. Well, the mason that did it says so.

Thereupon (at 12 o'clock and 25 minutes p. m.) the committee took a recess until 1.30 p. m.

AFTER RECESS.

Committee reconvened pursuant to adjournment.

It was stated to the committee that a delegation of workmen of Hot Springs desired to appear before the committee, and they were accorded that privilege.

The CHAIRMAN. The committee is ready to hear any statements you may desire to make.

Mr. D. F. THOMPSON (a member of the delegation). I simply have to say this, that the workmen of Hot Springs, artisans and laborers, held a mass-meeting last

Friday night and passed resolutions which I have here, and which explain themselves; also the proceedings of the meeting. In conjunction with the resolution passed by the mass-meeting, there was a paper circulated yesterday morning among the citizens here, and the names signed to the paper were obtained in about six hours, indorsing the action of that meeting. This paper is signed by workmen, and also by business men, and contains between seven and eight hundred names.

The CHAIRMAN. What is the recommendation of that paper?

Mr. THOMPSON. The resolution?

The CHAIRMAN. What is the recommendation of the paper you have in your hand?

Mr. THOMPSON. It is simply to the Hon. Casey Young, J. B. Storm, and S. C. Payne, committee. I will read it:

"GENTLEMEN: We, the undersigned, citizens of Hot Springs and of the United States, indorse the action of the workmen's mass-meeting, held in this city on last Friday evening, March the 14th, 1884, as expressed by the resolution adopted, and especially so far as the contemplated change to the War Department and free bathing are concerned."

The resolutions are tacked right on to this paper.

The CHAIRMAN. You have the resolutions printed in a paper, have you not?

Mr. THOMPSON. Yes, sir; they are in the Sentinel of Saturday, sir.

The CHAIRMAN. What is the name of this organization of the sons of toil?

Mr. THOMPSON. Well, the meeting was a public meeting of workmen.

The CHAIRMAN. I see by the paper that it was held pursuant to a call of the Knights of Labor.

Mr. THOMPSON. Yes, sir; Knights of Labor.

The CHAIRMAN. You say that meeting was held when?

Mr. THOMPSON. Last Friday evening, the 14th.

The CHAIRMAN. Well, in this you recommend that the control of the Government reservation be turned over to the War Department. Now, can you give the committee any reasons why, in your judgment, that should be done?

Mr. THOMPSON. The reasons assigned are contained in the resolution there. They are, however, first: because under the management of the Interior Department the bath-houses have combined and gone into a pool, and the matter has not been managed satisfactorily.

Q. Well, what have been the facts? We are here to hear facts just as they exist.

Mr. THOMPSON. The complaint is that there has been a monopoly formed by those having control of the bath-houses.

The CHAIRMAN. Have any abuses grown out of this monopoly?

Mr. THOMPSON. We contend that there has.

The CHAIRMAN. If you can give the committee a statement of the abuses that exist under it we would be glad to hear it. If they have been withheld from persons entitled to them, the committee want to know it. If there has been a waste of hot water, and it has not been applied to the purposes for which it is intended, that is another branch of inquiry. The simple fact that all the Hot Springs bath-houses are under one management might possibly be objectionable, but unless an abuse has grown out of it, I do not know as that is a matter with which the committee could interfere. If any abuse has grown out of this management and anybody has been deprived of a fair and proportionate benefit of the hot water, that is what we want to correct, so far as we can.

Mr. THOMPSON. Well, from the fact that there is a chance at least for them to make the bathing very high, for they are all combined together, and could shut out those who have not the money to pay their prices, that is an abuse, whether they have done so or not. A short time ago bathing was a good deal less than it is now. Just now I think the cheapest bathing is \$4 for twenty-one baths. That, I think, is at the new Hot Springs Bath-House. That is a dilapidated old building, and a person's life is in danger when they go into it. The fact is, that you cannot obtain a bath here for less than \$4.

The CHAIRMAN. That is the price of twenty-one baths, is it not?

Mr. THOMPSON. Yes, sir.

The CHAIRMAN. Well, do you think that an extravagant charge? For instance, take the price of \$5 for twenty-one baths, do you think that unreasonable?

Mr. THOMPSON. I think there ought to be a less amount charged. There are many people who come here that cannot afford to pay that amount, and in fact some who come here cannot afford to pay anything. I think there ought to be bath-houses here which do not charge that much.

The CHAIRMAN. Is it the judgment of the people whom you represent that the bath-houses should be graded, so as to meet the means of every one, or should there be a uniform price that everybody ought to pay? What is your idea about that?

Mr. THOMPSON. We certainly should prefer the grading process to a uniform high price.

The CHAIRMAN. Do you or not think that some bath-houses might be so constructed that it would justify a charge higher than another bath-house and yet be reasonable, taking the accommodations into consideration? For instance, if a bath-house cost \$30,000 to build it, would not it be as reasonable in its charges, if they were two or three times greater than those of a bath-house which cost but \$5,000 to construct it?

Mr. THOMPSON. Certainly.

The CHAIRMAN. Now is it the complaint of the gentlemen whom you represent that there are not enough bath-houses charging low rates, that they could avail themselves of?

Mr. THOMPSON. We are against this monopoly. We do not believe that monopolies should exist. We are anti-monopolists, and we do not think that they ought to exist in regard to bath-houses or anything else. We think it a bad precedent that a monopoly should be allowed to exist, especially in Government concerns.

The CHAIRMAN. What would you suggest in lieu of that? Under the present system I do not see how any individuals owning leases could be prevented from pooling their interests and adopting common regulations. What do you suggest?

Mr. THOMPSON. Our remedy for that is stated in the resolution; that the hot water belongs to the Government and the Government should control the rates, and this matter should be put under the War Department.

The CHAIRMAN. I do not see how putting it under the War Department would effect any material change, though the management might be more efficient. Is it your idea that the Government shall control it exclusively, and annul the leases of those who now hold them.

Mr. THOMPSON. When they expire.

Mr. STORM. As I understand, you suggest that the Government put their own persons in charge of the bath-houses, and receive the rents directly through their own agents and employes, and not sell leases to any one. In other words, that the Government use the property itself, through its own agents, for the benefit of the people at large.

The CHAIRMAN. And put its own superintendents in charge of the bath-houses.

Mr. THOMPSON. Yes, sir.

The CHAIRMAN. Well, under the present management, do you think that there are sufficient facilities for the poor people to bathe; I mean those who are not able to pay anything.

Mr. THOMPSON. No, sir; I do not.

The CHAIRMAN. What are the facilities for people to bathe here who are not able to pay, and if there are any what are they?

Mr. THOMPSON. Heretofore, some years ago, there was one of the best springs that they had here which was allowed free to poor people. That was closed up, and that Mud Hole has disappeared on account of the blasting, or something else, and the chances of poor people bathing just now are very limited indeed. I do not know, in fact whether they have any place to bathe at all.

The CHAIRMAN. Did not General Kelley, under his superintendence, erect some bath-houses on the east side of the West Mountain for poor people to bathe in, conveying the water there by wooden pipes?

Mr. THOMPSON. I so understand.

The CHAIRMAN. What has become of that? Has that been kept up?

Mr. THOMPSON. I am not aware as to whether that is in existence or not.

The CHAIRMAN. Well, how do you know that there are not sufficient facilities, if you do not know whether that has been kept up or not?

Mr. THOMPSON. I have not examined. I do not know.

The CHAIRMAN. Have you not made an examination with a view to ascertaining whether or not there are sufficient facilities?

Mr. THOMPSON. No, sir.

The CHAIRMAN. What would be the probable number of people here who are not able to pay for baths? Of course, you cannot estimate it accurately, but, perhaps, you can give us some approximate estimate.

Mr. THOMPSON. The probable number per day?

The CHAIRMAN. Well, including the residents of the town and visitors, what would be the probable number per year of those unable to pay for bathing privileges.

Mr. THOMPSON. I do not know that I could answer that very well. I think something over two hundred, perhaps, are now here who have not any means; that is poor people.

The CHAIRMAN. Does that include residents or visitors or both?

Mr. THOMPSON. Both; something over two hundred; but at some seasons not so many as just now.

Mr. STORM. Is it your opinion that if the Government ran the bath-houses itself, that the prices could be materially reduced and the Government still come out whole in the transaction?

Mr. THOMPSON. I think so; yes, sir; that is my opinion.

The CHAIRMAN. If there are any further statements you desire to make to the committee we will hear them.

Mr. THOMPSON. I do not know that I have anything further to state. The most of what I intended to say is contained in this resolution.

The CHAIRMAN. That embodies your views, does it?

Mr. THOMPSON. Yes, sir; and the papers accompanying.

The CHAIRMAN. The committee will take them and make them as an exhibit to which report, if deemed advisable. We are ready to hear any other gentleman upon this point.

Mr. JACOB WELCHBILLIG. You have here the names of between 700 and 800 people, and I believe one-fourth of them pray for free bathing. That is what we need very badly here. That is all I can say about this matter. It would be a good thing if we had a bath-house here with from eighty to one hundred tubs; say one-fourth for the colored people and three-fourths for the whites. That would be about equally divided up. I have heard several times complaints that this bath in the Mud Hole was so crowded that persons could not get in after waiting for hours and hours, and would have to go away without getting a bath; and for that reason we held the meeting, and we pray now you do this for the poor.

The CHAIRMAN. Do you mean that many are upon this petition who are not able to pay for a bath? Do you mean that one-fourth of the persons who signed this paper are unable to pay for a bath?

Mr. WELCHBILLIG. Yes, about one-fourth, or in other words those that prayed for that—for free bathing.

Mr. F. T. TALL (colored). Our object is in regard to this monopoly that we has called a meeting—called a public meeting of the citizens and of the visitors; and we did not disexcept any one to look at the interests that were here at our door, and that we would not let it go any longer, and would take it up. We thought perhaps we could do better about it than the way the poor had to get a bath here, and we framed an idea that we had better coalesce and get as many names to sign and see if we could not find out whether there were any individuals or not that felt the benefits of these baths in the present condition it now stands in. We found that six or seven or eight hundred that felt it, and they pray for free baths, and consider that it be better if it be turned over to the War Department. They have to wait two or three hours every day to get a bath in the Mud Hole, and they got blasting there so until it is not a good place for bathing; and we did have a bath-pool erected out here about three-quarters of a mile, I would suppose, from the spring, and the water went through at first a wood trough, and second went through an iron pipe, and it was not fit to bathe in. The water sometimes was lukewarm, and now it is not there at all. The poor people of this town here is unable to pay the present rates that we have for bathing. I do not suppose right here amongst all these signers more than 250 are able to pay the present prices for bathing here, and we think the Government ought consequently to take hold of it and come to our relief, as we pray they will, and hope this committee will help us in that as much as they will, and give us the benefit of what they think we naturally ought to have.

Mr. STORM. At present is there any arrangement by which the colored people may bathe separately?

Mr. TALL. Not at this time. There has been just for the poor people a place, and they come in between two and three hours.

Mr. STORM. They are not separated from the white people?

Mr. TALL. No, sir.

Mr. STORM. That is what I want to get at.

Mr. TALL. No, sir; not separate.

Mr. THOMPSON. I wish to say that this paper was circulated yesterday about six hours, and contains the names, as you will see, not only of workingmen, but business men and citizens. Understand that the paper does not contain the names of those who wish free baths for themselves, but for others, and have signed in the interest of humanity. That is what this paper is for, and we only circulated it that short length of time, and supposed that it would show sufficient expression of opinion. It might have been circulated further and more names have been obtained, but it was only circulated from 11 to 6 yesterday.

Mr. PAYNE. You stated, I believe, that you supposed there were about two hundred persons who were not able to pay for baths, and would like free baths?

Mr. THOMPSON. Yes, sir.

Mr. PAYNE. How many of those are invalids and need bathing for their health?

Mr. THOMPSON. Those are all invalids.

G. W. LAWRENCE, being duly sworn, was examined as follows :

By the CHAIRMAN :

Question. Where do you reside ?—Answer. Hot Springs, Ark.

Q. What is your profession ?—A. Physician and surgeon.

Q. How long have you resided here ?—A. Since the 14th of October, 1859.

Q. You are one of the pioneers of Hot Springs, are you not ?—A. I was among the first, yes ; I was the first medical examiner appointed for Hot Springs.

Q. What has been the extent of your experience in the medical profession here, and what knowledge have you acquired in respect to the curative qualities of these waters ? Just state your views to the committee.—A. That is rather a broad question.

Q. The resolution under which we are acting is rather a broad one.—A. Mr. Chairman and gentlemen of the committee, I will say that I have great regard for the Hot Springs, or I should not have remained there for the past twenty-four years. I regard the waters in our region of Hot Springs as among the most valuable known anywhere ; certainly there is none superior on this continent, and perhaps none superior on the other hemisphere ; that is in blood diseases and nervous diseases and in diseases of a miasmatic nature, and embodies everything that is required to stimulate the forces to aid in our medication. Our waters are unlike artificially heated waters. You will find yourself floating upon it like sea-water. Yet it is not freighted, as it does not hold more than eight and a half to twelve and a half grains to the imperial gallon. It is one of the virtues of this water, because the mineral ingredient can be more easily assimilated as adjuncts in the treatment of chronic diseases. We have seventy-one springs, and they all differ qualitatively and quantitatively.

Q. Do you know of any other waters in this country equal to the Hot Springs ?—A. I know of none superior anywhere.

Q. Doctor, this is a great public health resort, is it not ?—A. I do not know of a zone or latitude superior to our own, and geographically speaking there is no place superiorly situated to us. I look upon this property of the Government to be the most valuable known on this continent. The Yellowstone Park and the Yosemite are not comparable to it. This is an invalid's resort and not a pleasure-seeker's resort alone, yet this is a good place for pleasure-seekers, because we have pure air and pure water unpolluted by any ills.

Q. Do you know anything about this work being done on Hot Springs Creek, under the direction of the Government, as to the character of the work and material used ?—A. I pass daily from my office to my residence three or four times, and I am enabled to see the nature of the work. It is very defective so far as masonry is concerned. In the first place the creek has not a channel sufficiently large for the drainage. There is nothing so necessary here as proper sewerage. We are now at the mercy of these pent-up ills. I mean this organic filth that is in the bed of that creek. In the next place there is no concrete. I mean by concrete a bond to hold in position the rock. The rock may be good enough, but there is no masonry there. There is no sand in the cement to form a silicate of lime, either hydraulic or ordinary lime, but only a mass of alluvial soil. There is some little matter in it that might form a concrete if it were sifted and washed. During our winter season you will find water oozing through from the artificial soil that surrounds the body of the masonry, and this freezing forms icicles sometimes fourteen or fifteen inches in length, and when a thaw comes portions of the work falls out. These breaks have been plastered up recently, but the best test I would suggest is to get a cold chisel and a competent man who has some engineering force and who has knowledge of masonry and sanitary engineering to examine into the matter. Get a cold chisel and cut out a couple of cuboids and put them under hydraulic pressure. You will find there is no cement there. Why, sir, this stream here is worthy of the best masonry and worthy of the best sanitary engineering. It ought to stand as long as the viaducts of Rome, or the aqueducts of Brazil, and as long, I might say, as the Egyptian pyramids. The work is shamefully defective in my estimation.

Q. Is there good sand that could have been obtained in this locality ?—A. Thousands and thousands and myriads of tons are in the Ouchita washed down from the mountains, and it is as fine a sand as you can get anywhere. We have in this vicinity the finest building material known. As you asked me that question, if you will permit me, I will show you some little specimens I picked up to-day. This stone [handing the chairman a piece of white stone] is a nevaculite. It is a compound word from the Latin and Greek, meaning a razor sharpening or razor stone. You will see that it is a hard, flinty stone, and will last for ages. Now that material will make anything, and it is found in any quantity on these hills and slopes. There is another rock [handing the chairman a piece of broken stone]. It is a shell rock and has a concordal fracture. That will make good work and will answer all physical and climatic demands. There is no use going into granite beds. There is enough rock on the hill-tops beyond the Arlington Hotel to make foundations for a population of a hundred thousand people. There are nevaculite beds here that are said to be the

finest in the world. Why should we go astray in these matters and why should we have such abuse of our health resort?

Q. Well, doctor, the present system of sewerage in connection with this work, do you regard that as the proper one?—A. We have no sewer system, sir.

Q. Well, as to the proposition to turn the sewerage of the town into the creek, do you think that would be hurtful to the public health?—A. It would be a mild term of expression for me to use to you, gentlemen of the investigating committee, to say that the sins of commission and omission on the part of those engaged upon this work is proof of the sad failure in a place of so much Government importance. If they had known the topography of the place, taking one mile north, one mile south, one mile east, and one mile west from the Big Iron Spring; and taking into consideration the sloping of the hills, and the little rivulets that are tributary to the creek, and taking into consideration the dividing range on the north between the Gulpha and the Hot Springs Creek and the West Mountain, they would have found two water-ways, which, with the water-fall that we average, which is 40 or 50 inches a year, and at times may be continuous, they should have known that the stream there as it is to-day is not as fitting for the drainage of this place as it was when left undone. Now I have seen freshets when men have said here comes a house, here comes Belden's library, here comes this building and here comes that building, and had it not been for those buildings being wrecked and the driftings throwing off the side walls the whole town would have been swept off. Draining is always imperfect without sewerage. You cannot make sewerage here in the present condition of affairs with satisfaction. The whole property from Whittington avenue to this place (Sumpter Hotel) should have been condemned by the commissioners. In the first place upon the mountain slopes we have beautiful cold springs which will be polluted by the seepage from these temples of Cloacina; these filthy temples that are not properly drained. Gentlemen, we have on Whittington avenue some nice cold springs, at least we had once upon a time. We had them way up near the Catholic school and on the south side and on the north side of Whittington avenue. There were nice cold springs once upon a time back of the Sheckel House. We had a fine spring near General Walsh's house. We had a magnesia spring and an alum spring and a lime spring and a chalybeate spring. We had a nice spring just opposite here, just south of where the Government buildings are going up. We had a nice spring north of this and we had another near this house. And in time these springs will have been destroyed from the seepage of organic filth and from human excreta and from people who are loathsome. I do not think the mixture would make good broth at least. There is another thing: all this property here on the slopes has no place for garbage, no place for wood, and no place for privies. The privies are placed in some instances as high as 15 or 30 feet above the houses, and we are compelled during the summer and during the rainy season, when seepage takes place, to absorb at every breath that effluvia.

Q. What do you suggest to remedy these evils?—A. I suggest that all this property be condemned for Government purposes. I say make this a sanitarium instead of a malitorium.

Q. Would it not be better, in the absence of the power to do that, to lay pipes parallel with the creek for the purpose of carrying off the sewerage instead of turning it into the creek and thereby remedy the evils that you complain of?—A. By a system of lateral pipes so arranged as to guard against our breathing back these bad odors, it might be remedied to some extent. This tunnel system is a troublesome thing. If you take the physical features of this place into account you will realize that. Look upon the east side and you have the Hot Springs Mountain, look upon the west side and you have this mountain here, between 200 and 300 feet, I think, above the level of the valley, though I forget the exact distance. Then you have the North Mountain. Now, ask yourselves, gentlemen, the question, where do we get healthy breathing air? That which comes from the Ozark gives us a pure air from the fir trees and is the best air we get. Where does it go? It is a well-known fact that pure air follows the water courses, and it goes through that miserable little tunnel and at the outlet is fanned back by the currents of air from the Gulf laden with all the bad odors and excreta from privies, hotels, and bath-houses emptying into the creek, for those poor creatures down there at the mouth of the creek to breathe. Now, I say what occurs when the currents of air coming from the Gulf coast meet the currents passing down this tunnel? Why, it is fanned back for us to breathe again, and we take into our lungs these malodors, and you have here the germs of those ills pent up in this excreta, and it will be something that will spread upon us some time and cause an epidemic. The germs are ripe, all they want is the kindling.

Q. How could the Government guard against that? What precaution could it take commensurate with this improvement now going on?—A. I struggled once. Mr. Schurz, when he was Secretary of the Interior, wished to do something for Hot Springs. I sent Secretary Schurz photographs and communicated with him about everything that was necessary. I wanted him to make broad avenues from the north to the south of this valley. I wanted him to make broad avenues so that we might

be fed with pure air from the east and from the west. I wanted Whittington avenue a hundred feet wide and wanted this place made a pleasure-seeker's resort as well as a resort for the sick. I wanted this property condemned for the Government and consulted with Mr. Bell, Assistant Secretary, in relation to it. I wanted broad avenues from the east and I wanted broad avenues from the west. I wanted broad avenues beyond the Arlington Hotel for journeying currents of pure air. Persons suffering with blood diseases need purer air than other people, and the water they drink should be pure and unpolluted by anything like filth. You must not put your privies on these hill-sides if you do not in the future want the water contaminated by the seepage.

Q. What could the Government do to obviate these evils?—A. Construct the improvement of that stream properly, which is now defective.

Q. Would you suggest the putting in of sewer-pipes?—A. I would put in sewer-pipes on both sides and have them submerged. I would put a dam above this tunnel, with locks attached for the purpose of flushing the culvert, and place this property under the superintendence of the Surgeon-General of the War Department and let them take care of it as a sanitarium.

Q. You would change the management then from the Interior to the War Department?—A. I think this does not belong to the Interior Department. The Interior Department has been kind to us I acknowledge, but it belongs to the Bureau of Medicine and Surgery, and belongs to the War Department. If this is intended as a home for the soldier of the Army and Marine, it should be placed under the War Department. This property should be placed in the hands of men who are efficient, who have character, and who know nothing but duty.

By Mr. PAYNE:

Q. The place has been healthy heretofore, has it not?—A. My dear sir, it is the grandest place I ever saw on earth.

Q. And it has been healthy up to this time, has it not?—A. Now, my dear sir, I do not like to blacken the eye of my home. It is not healthy at this time. We are filled up with artificial earth and debris taken out of this creek, where the filth of the town has been deposited for twenty-five years to my knowledge, and in which the seepage from these privies and everything of that kind has been infiltrating. Do you suppose that under the heat of a summer's sun we could escape the injurious effects that would result from such a condition of affairs?

Q. That is theoretical?—A. It is not theoretical with me.

Q. It is not practical with you, the place having been healthy up to this time?—A. Yes, sir; practical. I break down every summer. I have had to leave here because suffering from the effects of a malarious atmosphere. No man that does not breathe pure air can enjoy health.

Q. How far back do you date this condition of things?—A. We had a phoenix once. During the war we were burned out and the ashes, I think, did us a great deal of good. We had another fire in 1877, and, I think, if we had a little more ashes and commenced from the foundation on a solid basis, that Hot Springs would be blessed as a sanitarium. The Government should take an interest in this place. We have everything in common. Should we have a foreign war this would be the best place in geographical position, latitudinally and longitudinally, in the country. It is almost invulnerable, and is a natural fortress. Between the Atlantic and the Pacific, and from the Gulf to the State of Maine, this is almost the geographical center of the United States, and should we have a foreign war, there would be no safer place than here, though you might seek the mountains if you liked.

By Mr. STORM:

Q. What has been your experience as a medical man as to the effect upon health by the turning up or dumping of soil?—A. I have not had any experience in that. The engineers do that part.

Q. It is a matter of history that the turning up of soil, as instanced in the excavations around Rome, has caused disease?—A. You know full well that in all primitive countries where there is a decomposition of vegetable matter you find crenic acid, and inorganic disturbances are known to produce in mountain regions what is known as mountain fever, which is nothing but malaria. We have as the result of malaria, what are known as remittent and intermittent fever, and from typho-malaria you have meningeal diseases, malarial enteritis, malarial hypertrophies, and malarial hamaturia, where the kidneys become inflamed, and blood is passed through the intestines.

P. H. ELLSWORTH being duly sworn, was examined as follows:

By Mr. STORM:

Question. Where do you reside?—Answer. Hot Springs, Garland County, Arkansas.

Q. How long have you lived there?—A. Since the fall of 1866; eighteen years the 15th of next September.

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Q. What is your profession?—A. Physician and surgeon.

Q. You are acquainted, I suppose, with the improvement that is being made by the Government on this Hot Springs Creek?—A. Very well.

Q. Have you ever made application for a bath-house site on this reservation; and, if so, where was that site located, and what was the result of your application?—A. I have. I made application. I do not know that I could give the exact date, but I think November the 6th.

Q. What year?—A. Eighteen hundred and seventy-seven. That was the first application I made, during the time General Kelley was superintendent.

Q. Did you make application at any other time?—A. I made application recently, about three months ago.

Q. What were your applications for?—A. My first application was for a bath-house site and water privileges, to be located right over what is known as the old Magnesia Spring, that is situated just this side of the bridge that crosses over to the Mud Hole.

Q. Had you been previously to that in possession of the spring and using its water?—A. I had. I owned a large two-story building situated just over the spring, and at the time I made application to General Kelley I occupied that building as an office and residence. I had my kitchen and dining-room in the basement below. The spring making its exit so near the creek, and thinking at that time it was impracticable to raise it, I desired to convert my basement into a bath-house and made application for that purpose. General Kelley told me he would approve it and forward it at once. After waiting a reasonable length of time I made inquiries, and he said that he did not understand Secretary Schurz's action in the matter, and so it ran along for some months. In talking with him he told me that he did not know why the Secretary did not act upon the application, and that he would write at once and make inquiry. In tracing that up about two years ago I found my original application pigeon-holed in his office just above the Arlington. It has never been forwarded, and during all that time he told me many false stories about it.

Q. Did you still urge your application from time to time?—A. I urged it from time to time until he went out of office.

Q. So you did not get your lease?—A. I did not get it.

Q. Was it leased to any one else?—A. It was not leased to any one else at that time.

Q. Has it since then?—A. Yes; within the last year, I believe, to Mr. Gaines; I mean Mr. Buckstaff.

Q. Was your application and Mr. Buckstaff's application made for the lease of the same site?—A. No, sir; my last application was for territory embraced between the Old Hale Bath-House and the Big Iron Bath-House. That was my last application.

Q. Was that approved?—A. No, sir; that was forwarded to Washington.

Q. With whom did you file that application?—A. Mr. Hamblen, the present superintendent.

Q. Was that forwarded to Washington?—A. I was so informed.

Q. Was any action taken upon it?—A. At the time I expected action the site was leased to a party not a resident of this place. I believe Mr. Proctor, a resident of Illinois, and a Methodist preacher, got it.

By the CHAIRMAN:

Q. Perhaps you needed some of that class down here?—A. Yes, sir; perhaps we needed some of that class down here.

Q. Had he never been a resident of this place?—A. No, sir.

Q. Do you know what that man did with the lease?—A. I believe he took into partnership with him a gentleman by the name of Young, here, I understand.

Q. Has any improvement yet been made upon the site?—A. No, sir; no change has been made in the territory.

Q. Is it true that several other citizens here made application for bath-house sites which were not granted to them, but to others?—A. Yes, sir; as I have been informed.

Q. Do you know who they were?—A. I do not know all the parties.

Q. At what time were you removed from the reservation?—A. After the fire in March, in 1878. I wish to to make a statement, that after the fire I urged upon General Kelley to ascertain what action was going to be taken on my application, so I could rebuild and put up a bath-house at once. He said that the orders at Washington were changed and I would have to forward an application accompanied by plans and specifications, and if I made out an application that he would forward it again. I told him that I had made application according to the existing law, and I had not heard from that and I would not make any more until I did hear from it. I remember that L. D. Kane, E. A. Sage, Curtis Hagan, and several other citizens made application.

By Mr. STORM:

Q. Application for bath-house sites?—A. I understand that they did, but how true it is I do not know, as I never saw the applications.

Q. I suppose you considered that as you had occupied the premises before you ought to have been granted a lease of the site in preference to others?—A. I thought so.

Q. You do not know any reason why the lease was not given do, you?—A. I do not, except it was through illicit influence with General Kelley.

Q. Have you any suggestions to make in reference to any change in the management of these bath-houses?—A. Well, yes; there is an unequal water supply at present that ought to be corrected in some way. I do not exactly know how it should be done.

Q. What do mean by unequal water supply?—A. For instance, take the Big Iron Bath House which has access to and can use three times as much water as the Palace Bath-House can, and a good deal more than the Ozark or Rammelsburg bath-houses below it. For the last week or ten days my own patients had to leave the Palace and go to other bath-houses because they did not have hot water enough to cool during the night. Yesterday I had ladies waiting there for two hours for hot water. Whether there was a disturbance in the spring that they were using from or not I do not know. I made some inquiries and they said that they thought they would have it corrected in a day or two. There was some trouble during the time our superintendent was in Washington of the same character.

Q. Do you know the fact that the bath-houses are controlled by a pool?—A. Yes, sir; I suppose that they are, and I have so understood it for the past two years.

Q. They arrange the prices and divisions of profits, do they not?—A. Yes, sir; I understand that they do.

Q. So that it would make no difference, as to these two bath-houses that you spoke of, which one the bathers patronize?—A. No, sir; but I do not consider that this pool arrangement is a bad one. At times I have thought it was, but previous to the bath-house pool there was a little difficulty here. They were reporting all sorts of stories regarding the effects of the water of one bath-house over another and cutting under in prices and doing bad work that generally leads to bad consequences. At the time they pooled their interests it did stop all this for a time. There is a little bad work going on now and then, but I do not know that anybody could control that.

Q. Is not that remedied by legislation. Is not there a law prohibiting drumming?—A. That law has been ignored here altogether up to recently. The few little shooting affairs here and from the death of Dr. Adams has corrected a good deal of our trouble.

By the CHAIRMAN :

Q. You think, then, that you have been benefited by the shooting?—A. Yes, sir; and if ten or fifteen more of us were killed I think it would be better for the town. But the people have been taking these matters in their own hands and have quietly regulated things, and a better condition of affairs exists here now than has existed for many years past. Now the drumming is done in a little different way, and is more on the stud-horse order around hotels, &c.—studding around, but that will have its day and wear out. The people all over the country are coming to their senses and looking to men and their worth instead of their size and gait and dress. These things will regulate themselves after awhile.

By Mr. STORM :

Q. As long as five or six men control the bathing of this place there is a liability of the rate of bathing being diminished from that established, is there?—A. If that is continued it is essential that the Government establish a rate sufficiently low, so that no hardship could be imposed upon the invalid. The whole object here is to invite invalids from abroad. The prices, as they range now, are not too high. If the rates were any lower than they are bath-house property would be valueless, and they could not be kept up to that comfortable state that they ought to be. Ten dollars a course would be too much, but as rated now it is about right and makes the property good paying property and enables the bath-house owners to run them nicely. There is a little neglect sometimes in the management itself to keep them up nicely, but still, if there is a little more power allowed the superintendent he could regulate that.

By the CHAIRMAN :

Q. Has not he the power under the present law to do that?—A. I do not know but what he has. I do not know that I should have made that remark. I have not examined the law.

By Mr. STORM :

Q. Have you anything to say in regard to the manner in which the work is done on the Hot Springs Creek improvement?—A. It is admirable work; nothing could be better. It will last longer than our grandchildren.

By the CHAIRMAN :

Q. Do you mean this masonry work on the creek?—A. Yes, sir.

By Mr. STORM:

Q. Is the character of the improvement such as to answer the purposes for which it is intended?—A. Perfectly; and better than the original design, two to one. Now we have an arch and a good broad street. Before we could not get it, and the original ideas of Engineer Handbury were rather ridiculous. This only put up two walls to be arched over with iron, which in a few years would rust out. This present work gives us greater durability and strength, and if the bottom of the sewer is kept clear there is no reason why the sewerage is not perfect.

Q. What is your idea as to the emission of the pipes?—A. That, I think, is bad. I do not approve of that. I do not approve, however, of outside pipes wholly. In the first place we have ample water-works. I suppose some of our friends will kick on that a little. You lay down outside pipes here, except they are flushed every few days during our driest seasons, it will be a failure, and then is the time that we need the use of our water for flushing. I think at the corners of every street, and just as fast as is necessary to supply the demand, there should be placed large bulk-heads entering the creek, and as the water flows from the mountain's sides and the streets it should be allowed, as in every city, to enter the sewer. That would be the best for the Government and the town, in my opinion.

Q. Well, is the sewer, as constructed under the present plan, sufficient?—A. Yes, sir; and to every one hundred or two hundred feet pipes ought to be connected with the creek to carry off the sewerage from the houses.

Q. How would that operate where the works end?—A. Well, they should not end there.

Q. You think that the culvert should be carried further down, do you?—A. I think this arch work should be carried down as far as the present gas-works at least, and then perhaps walls will do for the rest of the distance.

Q. Then these lateral pipes are left out, according to your idea?—A. Yes, I think our city is reprehensible for not putting these pipes through the walls. They should put them in on this side every hundred feet. It would cost very little.

Q. If the work is executed as at present intended, would it leave the stream in any more unhealthy condition than if the improvement is carried farther down, as you speak of, provided the bed of the stream is kept clear?—A. It will leave it more so, because if the bottom is smooth it will increase the flow and the debris which floats down will not be caught.

Q. And you mean that it would be well to turn the sewerage of the town into the creek?—A. Yes, sir.

By the CHAIRMAN:

Q. And in that event you recommend the continuing of the arch, how much further down?—A. I think for the time being, to continue it as low as the gas-works.

Q. How far is that from Malvern Crossing?—A. I should say 600 feet.

Q. And you recommend the building of the culvert that far?—A. I do.

Q. And you think that from that distance down to the laundry the walls might be left open?—A. Yes, sir; but to make it perfectly smooth, and the question then would naturally arise at times of low water, would this prove to be a sufficient current to carry off the debris. But it would be the easiest matter in the world to put in up here at Whittington avenue such flood-gates connecting with the creek itself, so that you might flood it any number of times you choose to.

Q. But you think it is necessary to build the walls of the creek a mile or two further down?—A. Yes, sir; that is my opinion. In the future the wall might be carried still further down if the Government desired to do so. This plan, however, will meet all present practical purposes. You see that on the hillsides the privies are situated, and they have no means of emptying themselves into any sewer, and consequently we must suffer a little during summer time.

By Mr. PAYNE:

Q. Do you think it is the duty of the Government to furnish sewerage for this whole town?—A. It is a good, big, generous Government and we all help to pay this thing, and I think it is the proper thing for the Government to do.

Q. And you would have the Government to do this in every town, would you?—A. No, sir; the Government does not own interests in every town. The Government owns valuable property in this town.

Q. Do you know the market value of property above the Arlington Hotel on Central avenue; how much is it worth per front foot?—A. From \$300 a front foot up to \$500. They ask you all prices. I believe Mr. Bryan is asking \$300 a front foot for property there.

Q. What is that property worth on Park avenue, or Valley avenue below the Avenue Hotel, at the junction?—A. If I was going to buy it I should want to get it there for \$250, but I suppose they would want from \$300 to \$350.

Q. Have not they been offered more than that? I mean that piece of property sit-

uated on the corner of Whittington avenue and Central avenue.—A. I suppose they could get \$30,000 or \$40,000 for that property on the corner there. But that is a fancy piece of property, and to any one that would want to select it for a hotel, I suppose they would pay \$40,000 for it. I understood that they were offered \$40,000 for it. A hotel man could afford to give \$20,000 more for it than anybody else, to procure such an eligible piece of property.

Q. There was a piece of property sold recently—the Nelson property; what street is that on?—A. Whittington avenue.

Q. How far above the corner?—A. That is about 400 feet from this other property. It is on the corner of Pine street and Whittington avenue.

Q. How much is that corner worth?—A. That is a fancy piece of property. Here it is on this map [referring to the map of Hot Springs]. It takes in about 300 feet front.

Q. Has not it been sold recently?—A. Yes, sir; and brought \$18,000, and that is all it is worth, in my estimation, and more too. I do not think it is worth over \$15,000.

Q. Now, the property on the west side of Central avenue opposite the Hot Springs reservation, what is that worth?—A. They value it at from \$400 to \$500 a front foot. There has none of it been sold that I know of for over \$400.

Q. It sells readily at \$400 a foot, does it not?—A. I suppose that if most of that property was put up to-day at \$400 a front foot it would be sold within twenty-four hours.

Q. Take this creek from Reservation avenue south where it runs in back of the post-office block, and down to Bridge street; I want to know if it would not, in your judgment, be a good speculation for the owners of that property to build a tunnel over it at their own expense, for the use of the property?—A. Oh, no; the Government must do that.

Q. Well, I ask you that if in any other town similarly situated it would not be a good investment for the owners of the property?—A. That is true, but if the Government had not reserved a foot of this property and had sold it all, of course they would not be under the necessity of doing any work here at all, and it would have been left to the town. But it must be remembered that the Government owns the most valuable part of this town, and as they reserve that and the water privileges, which is the most valuable property here, they should improve it so that it might be put out of municipal hands. But to go on and finish the balance of this tunnel we could not do it, because we could not raise the means.

Q. Is it not true that these parties who receive benefits from the use of valuable Government property pay no taxes upon it?—A. I do not see how they could do that well, because it is Government property. I do not know that they even pay taxes on personal property. I do not know anything about that. Of course they could not pay on any real estate, because they simply hold a lease from the Government and they are not expected to pay taxes on Government property.

Q. If the Government should build its own sewerage for its own property, would it be any more than fair to compel the city to do its own sewerage for its own property?—A. That is a practical question, and, of course, we must admit that that is true, and it is no more than right. At the same time the citizens cannot improve that creek according to their own notions, because the Government established a commission here which laid that out just so wide and so high, and upon that plan we cannot encroach. We might improve that by changing the lines, but we have not the power to do it.

Q. There are no legal obstacles in the way of the city building a sewer of its own in the street, are there?—A. Perhaps there are no legal obstacles, but it is impracticable. We have no water.

Q. We have sewers in my town, and there is no water.—A. You have large water-works, and water to supply the sewers.

Q. We have, but we do not use it for that purpose.—A. Well, it is your own fault if you do not.

Q. We do not have any trouble there with these bad odors that we hear so much of here.—A. Well, you have the water if you want to use it.

Q. Now, I want to ask you how much those lots are worth a front foot along there on Central avenue—those lots we were speaking of which you say are worth \$400 a foot? Now, how much was it worth a foot before the Government took possession of this reservation?—A. It was not worth anything, because it did not belong to any one.

Q. I am speaking of the west side of Central avenue, opposite the Government reservation?—A. The Government owned it all.

Q. How much did the Government get for it?—A. The Government got \$20 a front foot for that.

Q. I did not suppose the Government got the market value.—A. Of course not.

Q. Have not those lots greatly appreciated in value since the Government has taken possession of this reservation?—A. No doubt that is true.

Q. And has not a large proportion of the value grown out of the fact that the Gov-

ernment had taken charge of this property?—A. That property would be just as valuable if the Government did not own a foot. I do not know but it would be more so, because individuals on the other side would own the property where the springs are, and that would make the property on the opposite side just as valuable as it is now, and more so. We have got so little property that it necessarily is high.

By the CHAIRMAN :

Q. When the Government took possession, did this property sell for any more than it would have brought before?—A. It could have been leased at these same rates, I suppose.

By Mr. STORM :

Q. Is it your idea that the Government should run these springs with a loss to itself?—A. No, sir.

Q. What do these lease incomes amount to?—A. I do not know.

Q. If the Government carries out this improvement to the extent you speak of, how will it be reimbursed for the outlay?—A. That is entirely, in my opinion, an outside issue.

Q. I believe you say that it is not your idea that the Government should run this concern at a loss?—A. Not in making the improvement of the creek. When I spoke of the Government not being at a loss I meant as to the running of the bath-houses. I think the Government should make all the improvements here, not only so far as the sewer is concerned, but further than that. I think the Government should erect a good post-office building here and a building suitable for its officers.

Q. Would not it be nice to have a court-house thrown in?—A. No; that belongs to us here.

Q. You have a court-house reservation here, have you?—A. I believe we had, but the city disposed of it.

Q. What did the city do with it?—A. Exchanged it.

Q. What did you say the distance was from where this work ended to the gas-house?—A. I said about 500 or 600 feet.

Q. Is not it nearly 2,000 feet?—A. I did not stop to calculate it. I guess it is more than 500 or 600 feet. I meant yards. I think it must be 1,500 or 2,000 feet.

By the CHAIRMAN :

Q. If the Government should appropriate a sufficient amount of money to wall in the creek according to your view, would not its property here and the lots the Government has to sell be much more valuable?—A. I say more than double in value. So I do not know that the Government loses anything.

Q. Do you think it advisable for the Government to put this property on the market now that it owns here? Do you think it wise to do this, or better to keep it out of the market and be benefited by any enhancement in value hereafter?—A. You must give the people a chance to purchase this. By selling lots you invite outside parties to come here, and it makes more valuable those lots which remain unsold.

Q. If the Government waited until these improvements were finished here, would not it realize more from the sales of its property than if it was put upon the market now?—A. No, sir; not in the long run.

Q. Has not the Government already sold the most desirable property that belonged to it?—A. I do not call that selling it, after people had been living on it for years and had laid it out. Parties got no lots except what they improved. If they had not improved them they would not have been allowed the privilege of purchasing.

ALFRED WHITTINGTON, being duly sworn, was examined as follows:

By Mr. PAYNE :

Question. Do you live in this place?—Answer. Yes, sir.

Q. And have lived here for how long?—A. I have lived here since 1844.

Q. What is your occupation?—A. Well, I am, I reckon, what you would call a stone-cutter.

Q. Are you familiar with the character of the work done on Hot Springs Creek?—A. I have watched the progress of the work since it commenced.

Q. And the material used?—A. Yes, sir; that is the stone used. I have seen the work as it progressed.

Q. Take the stone used on this work; what have you to say about it?—A. Well, sir, the stone, as far as its durability is concerned, I think it to be as good as any they could get here. I noticed a part of a wall that was built there in 1849. It was a dry wall of the same stone from the same place, and part of the wall was there when they commenced this work, and I noticed that it was as good then when they were pulling it down as when it was laid.

Q. Was it laid up in an arch?—A. Just side walls.

Q. Do I understand you to say that the stone now being used on this work is as good as that stone?—A. I think so.

Q. Is it as good as the granite that was first used?—A. I do not know about that. The granite looks to be larger and more solid, and there are less seams, and it might last longer. My observation of the stone used here is that this stone will last as long as the place.

Q. What do you know about the sand, if anything?—A. I don't know about it. The Ouchita sand in this place is superior to sand found in any other place.

Q. Do you know what kind of sand they are using on this work or where it comes from?—A. I do not.

Q. Do you know where Whittington avenue is?—A. Yes, sir.

Q. Did you ever look to see if they were taking sand away from there?—A. I saw a place excavated there, but I do not know what use they put it to. I heard what they were taking out there was being used on the Government work.

Q. What kind of work you do call this masonry?—A. I never saw that kind of work before put up. It is called rubble work.

Q. Is it what is called range rubble work?—A. I do not know.

Q. Do you know what range rubble work is?—A. No, sir; my business is dealing in these oil stones.

Q. Then you are not a mason?—A. No, sir.

GEORGE M. FRENCH recalled.

By Mr. PAYNE:

Question. There has been some stress laid on the fact that these bath-houses decay, and inasmuch as you have had experience in these matters and built the first bath-house, I would like you to state as to how long a bath-house lasts when it is properly built.—Answer. That would depend upon the material used.

Q. Well, such as are built here?—A. Such bath-house buildings as those built here, without very much expense for repair, will ordinarily last eight or ten years.

By Mr. STORM:

Q. Built of wood?—A. Yes, sir.

Q. I believe you erected one here yourself?—A. Yes, sir.

Q. How long has it been used?—A. It was built in 1877, the year before the fire.

Q. And that was burned up, was it?—A. No, sir; it is the old iron bath house now standing there.

Q. And in use yet?—Yes, sir.

Q. What was the expense of constructing that building?—A. That was an expensive building on account of the excavating. We had to commence in the tufa and rock and dig the foundation out a hundred feet long and forty-odd feet back into the mountain.

Q. What was the depth of the excavation?—A. Well, 12 or 15 feet.

Q. Do you know what the excavating cost by itself?—A. It cost in the neighborhood of \$5,000, but the whole expense of the bath-house was eighteen thousand four hundred dollars and something when completed and ready for business. The excavation was very expensive on account of the taking out of the tufa.

Q. Did it cost as much or more than any of the bath-houses in that neighborhood?—A. I think, taking into account the expense of excavating there, it cost as much as any of them. It was built at a time when labor was high here.

Q. Have you any knowledge of the receipts of that bath-house?—A. Yes; we operated that bath-house the first sixteen months after the house was built. The gross receipts were between \$33,000 and \$34,000. There were three of us that owned the house, and we kept an account every day of the sale of tickets and those were the receipts in gross.

Q. Do you know what was divided between the parties, net?—A. I do not know; but the way we operated it that time was to charge \$10 for a course, and we furnished the servants' labor, so that visitors were not required to pay anything but the price of the tickets at the rate of \$10 for a course or 50 cents for a single bath. We generally paid the laborer about a dollar a day and we kept a large number of servants there, male and female, and my recollection now is that the expense of running the house was at that time \$5 a month rent for each tub, and we paid \$2,400 a year for the use of the Government water, and my recollection is that after we had paid that tax to the Government and had paid our servants and all expenses necessary, although we had an unforeseen accident by the throwing down of the wall from high water, which cost us about a thousand dollars to repair, my recollection is that we divided about \$20,000 among us.

Q. For the sixteen months?—A. Yes, sir; I have the book at home in Little Rock, and if necessary I could give an exact transcript to show it.

Q. You did not run it the next year?—A. I sold out my interest.

Q. What was made the next year under the same management, leaving out your extraordinary loss?—A. Directly after that they commenced building these other bath-houses. There was a sort of bath-house mania here, and everybody wanted to build one, which, of course, split up the business to some extent. I sold out directly after that. There was some trouble at that time about legislation in Washington, reducing the price of a bath, and I sold out my interest.

Q. How much of your lease has been used up?—A. We had a lease from the receiver who was sent here under the Court of Claims.

Q. How long before that was the lease given?—A. That was from year to year.

Q. When the year ran out, how about the renewal?—A. We took chances on leasing it again. We paid \$5 a tub rent, or \$200 a month to the Government, and we thought that a pretty high price. About the time that they talked of reducing the price of bathing the commission was here, and their time had expired. A committee of citizens went on to Washington, and one was my partner, Mr. Nelson, and ex-Senator Cragin was also one of the committee. They left here for the purpose of procuring an extension of the time of the commission and to reduce the water rent.

Q. Taking into consideration the price of bathing now is 30 cents a bath or \$5 for twenty-one tickets, and the expense of running a bath-house, have you any data to show what might be made as net profits in one year?—A. Well, taking the business that a bath-house is capable of doing, it ought to be an enormous profit. My impression is now that the bath-house mania has overdone the business; I do not think they make as much as they would if there were not so many bath-houses.

Q. More people are coming here now than ever before, are there not?—A. The number is increasing every year, but I think the facilities in excess of the demand.

Q. Which do you mean, the demand of the public or the bath-house demand?—A. The demand of the public for baths.

Q. You have heard witnesses state here to-day that their patients complained of waiting a long time before they could get a bath.—A. I heard Dr. Ellsworth make that statement.

Q. But others have made the same statement?—A. He is the only one I heard. That is of frequent occurrence at particular hours in the day. They nearly all commence bathing at a certain hour in the day, and if they do not get their bath then they think that it will do them no good, and therefore they all want to bathe at the same time.

Q. I ask you if there is not enough water wasted here which if properly utilized would run a half dozen more bath-houses?—A. I think they have enough bath-houses.

Q. Is it true or not that there is a great deal of water going to waste?—A. Yes; there is considerable water going to waste.

By the CHAIRMAN:

Q. How may that be prevented?—A. There is a good deal of water in and around that Big Iron Bath-House that has never been utilized.

Q. How could that be remedied?—A. I do not know whether my theory is correct or not, but I think I could utilize it if I could concentrate the water and raise it.

Q. Is this water that is running to waste unavoidable?—A. It is not utilized; that is all, because there has always been plenty without it.

By Mr. STORM:

Q. Is it your opinion that the spring below here which has recently been lowered by blasting may be restored and made useful if machinery was employed in pumping it back to an elevated point?—A. I do not think it can.

Q. Is it too low to build a bath-house down there similar to the Mud Hole?—A. I presume that the water could be utilized for the Mud Bath.

Q. There is quite a large quantity of fine water flowing from there, is there not?—A. Yes, but it does not seem to be as much as there used to be.

By Mr. PAYNE:

Q. How much did you get for your third interest in the Big Iron Bath-House?—A. I was going to explain how I came to sell it. The most important reason that induced me to sell at the time I did, when I got \$5,000 for my third interest in the bath-house, was that they were talking in Washington about reducing the price of bathing. As I started to tell you before, a committee went on to Washington to procure this reduction of water rents, and among those that went was my partner, Mr. Nelson, and they, through the instrumentality of Senator Dorsey, got a bill through to reduce the rent of bath-tubs from \$5 to a \$1.25 a month. When Mr. Nelson came back he showed me a contract between himself and Mr. Morgan, clerk of the Senate committee, reducing the price, but said that we would have to pay the same amount as we paid before, but it would not go through the same channel. He said that we would be compelled to pay \$5 a month for each tub as formerly, but that Mr. Morgan would receive \$3.75 and the balance went to the Government; that that was the ultimatum made by Senator Dorsey.

By the CHAIRMAN:

Q. Which Morgan?—A. A. O. Morgan, who had been the receiver here, and Mr. Nelson gave him his note one month in advance, and I repudiated the contract. I thought if we paid that money to the Government we might get it back, but if it went down in deep Radical pockets we would never get it back.

Q. What was Morgan doing then?—A. He was clerk of the Senate committee.
Q. Was he or not the clerk of the Hot Springs commissioners?—A. He came back afterwards with the commission and staid here.

By Mr. STORM:

Q. Do you know where this \$3.75 went to?—A. I repudiated it and they did not get it out of me. I know that Morgan and Nelson fell out and I sold my interest.

By the CHAIRMAN:

Q. Who else went along with this committee to procure this legislation?—A. There was quite a committee of citizens here.

Q. And did quite a committee of citizens engage in a contract of that kind?—A. This amount of money that I speak of was on account of the Big Iron Bath-House. The contract was that we should still pay the \$5 a month, which, for the forty tubs, was \$2,400 a year, but the law only required us to pay \$1.25 a month for each tub, or \$15 a year, but still they compelled us by this contract to pay \$5 a month for each tub, and the money went through the hands of Mr. Morgan.

Q. Were all the persons on this committee parties to this contract?—A. As far as I know Mr. Nelson represented our interest in that bath-house, and we paid our proportion of the expense there, as Mr. Cragin received \$200 for his services. I know we paid our proportion and I paid my portion of it by advancing it to him before he left for Washington. The object was to procure a reinstatement of these commissioners to carry out the intention of the Government, and our object was to get this reduction, as I thought \$5 per tub per month was enormous rent. I think Senator Cragin's term of office had expired at the time he went back to have this law enacted and afterwards he came back as a commissioner.

Q. Was he a party to this contract with Morgan?—A. He was the party that went there in our interest to work for this reduction and for that we paid him \$200. That was the idea.

Q. And that was really no reduction at all?—A. No, sir.

Q. Did Morgan reduce it to \$1.25 himself?—A. I asked Mr. Nelson about it when he came back and when I was told of it I said that it did not help us any.

By Mr. PAYNE:

Q. What was the object in getting the bill through in that shape?—A. It reduced the direct rent.

By the CHAIRMAN:

Q. Did you pay any money yourself, or did Major Nelson pay it?—A. I paid my portion of it.

Q. Did you pay any of this money to Senator Cragin?—A. That \$200 was paid to him.

Q. Did you pay your part of it to him in person?—A. I turned it over to Mr. Nelson to be paid to him.

Q. Then Nelson and Morgan did this business?—A. Yes, sir; they went to Washington; I did not go.

By Mr. STORM:

Q. Do you know Mr. Morgan's full name?—A. Alfred O. Morgan, of Massachusetts. He was secretary under the Court of Claims commission. I was then engineer on the part of the Government.

By Mr. PAYNE:

Q. What other bath-houses were there here at the time you sold out?—A. The Rector bath-house.

Q. Who owned that?—A. Some of the Rector family; I don't know which.

Q. What other bath-houses?—A. And there was, I think, one of the old Hale bath-houses. One was burned up.

Q. Who owned them?—A. I think a man by the name of Bloxham bought about that time or directly afterwards.

Q. What other bath-house?—A. I think there was one owned by Mr. Maurice, and then there was the Grand Central Bath-House also.

Q. Who owned that?—A. Mr. Ballantyne.

Q. Did any of the present owners of the bath-house monopoly own any of the bath-houses at that time?—A. I do not know who the present monopoly is.

Q. Now this man Cragin, he had been one of the commissioners, had he not?—A. Yes; and his year expired.

Q. What business was he in at the time of this transaction you speak of?—A. Was then going back.

Q. His business had ended here, had it not?—A. Yes; and he was going back to Washington to get an extension. It was all-important that the work should be finished up.

Q. Were these \$200 given him for his expenses to Washington, as you understood?—A. Yes, sir; and for what influence he had there in getting this bill passed so that we could get the reduction we wanted, and this money was to enable him to stay there and get it through.

Q. Then it was with regard to the reduction of rent that you paid the money, as I understand you?—A. Yes, sir; and for that only.

Q. And after the bill was passed extending the time of that commission he was reappointed?—A. He was reappointed.

Q. Did your partner ever tell you what the object was in beating the Government out of that \$3.75, and turning it into the hands of somebody else?—A. I never could get a satisfactory explanation, and was never satisfied with the arrangement; and the first opportunity I got I sold out to him. I sold out for \$2,000 less than I was offered a year before. I had another object in view, the building of the French Hotel, which is named after me, and I put into it four baths free for the use of the guests of the house, and procured the water from this very spring which I developed in building the Big Iron Bath House. I wanted to use the money for that purpose.

Q. Do you know of any citizens here having made application for leases whose applications were rejected, and if so, give the names and what you know about it; leases for water from the reservation and bath-house sites?—A. I know Mr. Huffman made application and I made plans for the house, for which he paid me \$25. Also Jacob Cartisco made his application to General Kelley, and he was told by him that the application had been forwarded, but he never got any reply from it, although he persistently applied. That application was for a bath-house at the Magnesia Springs.

Q. To whom is that property leased now?—A. I do not know. I have heard that it belonged to George L. Smith & Co. I only know what I hear.

Q. When did you make out these applications?—A. That was some time after the fire here and during the first year or two of General Kelley's administration. It was early in the history of applications for bath-house sites.

Q. Well, what became of these sites?—A. They are still there and still unoccupied.

By the CHAIRMAN:

Q. What sites are these?—A. One is at the Magnesia Spring.

Q. Is not blasting going on there now?—A. Until recently it has been going on.

Q. This site has been recently leased, has it not?—A. I do not know; I suppose so.

Q. Do you know of any other citizens here who have made applications for leases and been refused?—A. I heard of Dr. Ellsworth making application.

Q. Any one else?—A. I do not remember now, sir.

Q. Can you tell the committee why they did not get the leases, if you know the reason?—A. I don't know the reason why they did not get them.

Q. Were not these parties whom you have mentioned as applying for leases able to construct the bath-houses in the event that they got the leases?—A. Yes, sir; all of them, as far as I know.

By Mr. PAYNE:

Q. You said you thought that the Government charge of \$5 a month for each tub was too high?—A. Yes, sir.

Q. Do not you think, upon reflection, that that was too low, considering the amount of money you were able to make out of it?—A. I think that the taxes were too much and more than we would have to pay if we owned the property outright.

Q. But you made eighteen or twenty thousand dollars out of it in sixteen months?—A. Yes, sir.

Q. Well, now, don't you think a privilege of that kind is worth more than \$2,400 a year?—A. We went to the expense of building there; the Government did not build a house for us.

Q. But the Government let you have a privilege out of which you made eighteen or twenty thousand dollars in sixteen months?—A. Yes, but it was just like the Government picking up that much money.

Q. And you really think now that the Government charged too much?—A. I think \$5 a month is too much for tub rent.

Q. Well, the water that the Government let was all that there was valuable in your bath-house; and by paying a rental of \$2,400, with little or no other expense outside of that, you were enabled to make this large sum of money?—A. Yes, sir; we paid that much money, and built a house to give value to the water.

Q. And still you think that you paid the Government too much?—A. We thought so at the time, and I think so now.

By the CHAIRMAN:

Q. Do not you think that the erection of this bath-house here has benefited the town and contributed to the public convenience?—A. Oh, yes; I think so.

Q. And you constructed your building with a view to the needs and wants of visitors?—A. Yes, sir.

Q. What proportion of the tax here do the bath-houses pay?—A. I do not think they pay any taxes. I think if I held all the bath-house sites here I should rather prefer to hold it by lease than to own the property. I think the tax to the county and State would amount to more than the rental.

EDWARD HOGABOOM, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside?—Answer. Hot Springs.

Q. What is your profession?—A. I am a druggist.

Q. How long have you been here?—A. Seven years last spring.

Q. Do you know anything about the work done on the Hot Springs Creek, as to material used, and the manner in which it is being constructed?—A. Well, nothing that would be of any importance. My opinion would not be worth anything as an expert. I had some such work done myself, but did not have sufficient acquaintance with it to give an opinion that would be of any value. I think the stone is good, and the work looks well, but I do not know anything about that class of work. As far as I am concerned, it is satisfactory to me. I hold a little different opinion of this from others. I think it is a charity that the Government is giving to the Hot Springs that the Hot Springs had no right to ask for, and consequently I do not think we ought to complain.

Q. You think you are pretty lucky to get it such as it is?—A. Yes, sir. I do not think I signed a petition for anything. I do not think that we are entitled to help from the Government any more than any other town. Hot Springs is always asking for something, and I am not a kicker.

Q. Well, if you are not a kicker I think we ought to excuse you, because you are the first man I have seen who was not. Did you ever apply for a lease on the reservation?—A. No, sir.

Q. Did you ever have one?—A. No, sir.

Q. Were you ever interested in one?—A. Yes, sir.

Q. How were you interested; did you obtain it from the Government?—A. No, sir.

Q. Did you become interested after it was obtained?—A. Yes, sir. Well, I got my interest after it was obtained. A man by the name of Buckstaff, of Wisconsin, obtained a lease here, and I owned one half-interest.

Q. Did you acquire it by purchase after it was obtained?—A. No; I cannot say that I did.

Q. How did you acquire your interest?—A. He applied for the site and through his acquaintance in Washington he got the site and I was privy to it at the time he got it, and the understanding was that after he received it I would get an interest. I had nothing to show that I would have an interest, but after he got his lease he gave me one-half interest. The understanding was that I was to have this one-half interest, although I had nothing to show for it.

Q. The fact is that you joined with him in the application for the lease?—A. I was not known in the lease.

Q. But you got it all the same, did you not?—A. Yes, sir.

Q. And you were interested in it?—A. Yes, sir.

Q. Where was that site located?—A. Right where the Magnesia Spring is.

Q. What became of it?—A. It was sold.

Q. To whom, and for how much?—A. It was sold to Albert Gains.

Q. Who else?—A. Nobody else that I know of.

Q. For how much?—A. For \$5,000. I bought the other half interest before it was sold.

Q. Then you became owner of the whole property?—A. For a short time.

Q. Well, was it the purpose of you and Mr. Buckstaff to build a bath-house there when you got the lease?—A. Yes, sir.

Q. Did you furnish plans and specifications at the time you sent in your application?—A. No—well, yes, I did. They were the same as the Palace Bath House, which had already been filed.

Q. Did you have an understanding or interview with the superintendent in regard to securing that lease?—A. I will say that I had no kind of understanding with the superintendent.

Q. I ask, did you have a conversation with him with regard to the securing of the

lease?—A. Not until after the application was made by Mr. Buckstaff. It was sent direct to Washington and did not go to the office here. I believe it was sent by Mr. Buckstaff direct to his friend in Washington, and then there was a letter sent back here and referred to the superintendent of the reservation here for his report on the application. On receipt of these instructions he looked up the parties and there was some correspondence, my impression is, though I do not think it was until several days afterwards that he found out who the party was.

Q. What was the object of the correspondence?—A. The matter was referred to him and he did not know any such party as Mr. Buckstaff. That was all.

Q. Was it then that you called on the superintendent in regard to it?—A. I think the superintendent called on Mr. Buckstaff first, but I think he was not in when he made the call at the Avenue Hotel. Mr. Buckstaff has been here four to five months each year for four or five years.

Q. What we want to get at is the conversation you had with the superintendent in regard to the issuance of that lease.—A. If I recollected it you could have every word, but I cannot give verbatim every conversation that occurred between us.

By Mr. PAYNE:

Q. Give the substance of it as you recollect it.—A. I cannot recall anything more than the substance of it, which was that he did not know any reason why that lease should not be issued. I cannot recollect anything further than that.

Q. What other parties did you have conversations with in regard to that lease, if any one else?—A. I do not recollect. I may have had conversations with persons, but nothing of any importance.

Q. Was there any understanding or agreement that it should be transferred to somebody else when you got it?—A. As I say, I was not known in the application.

Q. How long after you got the lease was the transfer made?—A. We got it some time in the summer. I went to Wisconsin on a visit to my old home, and while there I bought out Mr. Buckstaff's interest and sold the lease to Mr. Gains. The reason why no bath-house was built was the fact that we were compelled to give a bond of indemnification for any damage that might occur to the Rammelsburg Spring in the construction of our bath-house.

Q. What spring was that?—A. The Magnesia Spring. The Rammelsburg Bath-House was then receiving water from that spring.

Q. Why was that necessary? Did anybody think the spring would be damaged?—A. A great effort was being made here then to do away with the issuing of any leases there.

Q. Was it or not the understanding between you and Mr. Buckstaff that in the event of this lease being granted that it should be transferred to other parties?—A. I say no; under no circumstance, and the moment the lease was granted nothing was thought of but to build. It was on account of this difficulty that he did not build. He has some investments here now. As that lease was sold to Mr. Gains, to all intents and purposes he was the party that was to stand between himself and any damage done there.

Q. Was Mr. Buckstaff influenced to sell by the fact that he could not get a bath-house foundation there?—A. The probability of an injunction issuing against our excavating and a thousand other things probably would come up, and in any event a big fight would be made against us, as there was considerable dissatisfaction after the lease was obtained, influenced us not to build.

Q. They did not want a bath-house built there, did they?—A. They did not want any more bath-houses. That seemed to be the disposition. I understood that Mr. Rammelsburg and Mr. Long went to Washington to try to have the lease revoked after it was obtained.

Q. When was that?—A. Last summer.

Q. How was this transfer made?—A. There was just an assignment.

Q. Written on the lease or on a separate paper?—A. Written on a separate paper.

Q. Do the records of the office still show this site standing in your name?—A. No, Mr. Buckstaff's name; not mine.

P. J. LEDWIDGE, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside?—Answer. In Hot Springs.

Q. What is your business?—A. Carpenter and builder.

Q. Are you a practical builder?—A. Yes, sir; I claim to be.

Q. Do you represent the Knights of Labor?—No, sir; just so far as I am individually concerned.

Q. Are you acquainted with stone work?—A. To a certain extent. I would not claim to be an expert in stone.

Q. Are you familiar with the work now being done upon the Hot Springs Creek?—
A. Not particularly, sir. I never examined it closely.

Q. Have you examined it closely enough to form an opinion as to whether or not the material used is good material for that character of work?—A. Well, as far as the rock is concerned I consider that will last all our lives and a couple more generations. The rock I consider is good, but as for the quality of the sand that they are using on that work I could not say. I know that on some occasions I have used this bank sand, or the washing of the street, and I used that cement for masonry rough work, and I found it to be better than the sharp sand. But whether this is of that character or not I do not know. It would require a test.

Q. Did you ever use any of this particular kind?—A. I never used that particular kind, and I only know it comes from down Whittington Avenue, I suppose, but I was never up to the bank that it comes out of.

Q. Have you noticed whether that workmanship and masonry of the Hot Springs work, the putting together of the stone, the size and shape, and everything of that sort, is in keeping with work of that character?—A. There is a question there as to the nature and grade of the work required. Of course I would not claim it to be a first class piece of masonry, yet under some circumstances I would consider it to be good.

By Mr. STORM:

Q. Would you call it first-class range rubble work?—A. No, sir.

Q. How would you class it?—A. I would class it as second-class rubble work.

Q. Do you know the character of the sand obtained from the Whittington Avenue sand bank?—A. No, sir; no more than to see it. Some claim that a cement formation exists in it, but I do not know whether that is so or not.

Q. Do you know anything about the cement used on this work?—A. Not of my personal knowledge.

Q. The excavation of the creek, was that done well? Is the preparation of the bed even and smooth so as to facilitate the flow of water?—A. Yes; in the places where it is finished, I consider it very well done.

Q. Is the bed finished as you understand it?—A. Only in places. There is a good deal of it even where the walls are built where the bed of the creek is not finished yet, and it requires some blasting yet to make it level.

Q. Take those portions of the creek that are arched; is the bed completed there?—A. I could not say. All I noticed was a portion at the Arlington Hotel. That is the only place I noticed finished; the others may be, but I never examined them.

By the CHAIRMAN:

Q. Have you done much building about here?—A. Yes, sir.

Q. Have you had occasion to blast any?—A. No, sir; I have not.

Q. Have you done any blasting immediately around here at all?—A. I have not removed any of this tufa by blasting. The tufa I have removed during the erection of some of these bath-houses we did with a pick and bar.

Q. Can it be removed with a pick without blasting?—A. In some places it can and in others I do not think it can. Then it costs more to pick it out.

By Mr. STORM:

Q. It is very tough, is it not?—A. It will resist almost anything. You can hammer on it and not move it. I used wedges on it like men use in splitting fence-rails.

Q. It is even quite difficult to blast, is it not?—A. Yes, it is porous. On account of it being a spongy formation the blast escapes from the different places.

By the CHAIRMAN:

Q. What effect do you think the erection of these bath-houses here has had on the town? Do you think they have increased the value of the property of the Government and the town and benefited the place generally?—A. Well, I should certainly be in favor of seeing more bath-houses built. It would give the town a better appearance, but I do not know, however, what benefit the city would derive from that, if any.

Q. It would bring visitors here, would it not?—A. I suppose it would, and it would also have the tendency to keep bath-house prices from going up higher, and I think that is the principal feature we ought to look to.

Q. More bath-houses would meet the public requirements you think?—A. Yes, sir; that would be my opinion.

J. D. KIMBELL, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Are you a resident of this place?—Answer. Yes, sir.

Q. How long have you lived here?—A. Ten years.

Q. What is your occupation?—A. Well, I am at present connected with and manage several local corporations, loan companies, &c.

Q. Is there any particular branch of this subject which we are investigating which you are familiar with?—A. I do not know what I am called here for.

Q. Are you familiar with the improvement of the Hot Springs Creek?—A. I have only a knowledge from seeing it.

Q. Are you able, from your observations, to state whether the material used is proper for that work or not?—A. I am not. I think the stone used, from its appearance and from little knowledge I have of material—that it is good and an excellent stone for the work.

Q. Do you know anything about the sand and cement used?—A. I know nothing about the sand. I know that a great quantity of cement is used.

Q. Do you know the character of the cement?—A. I do not. I know there is quite a quantity used.

Q. Do you know whether the work is well done or not?—A. Only from the general appearance. I can say nothing of the real character or value of the work.

Q. You would not be able to classify it as being in quality good?—A. I have no experience in this line at all, and have no knowledge, only from casual observation.

Q. Is the improvement a needed improvement?—A. Yes, sir; and one that will be of incalculable advantage to this place, as affording us a wider street. That is the principal advantage.

Q. The present street is too narrow to do the business of this place, is it not?—A. Yes, sir.

Q. The main thoroughfare is occupied, first, by a street railway, and all the leading hotels and the bath-houses front on this street; is not that so?—A. Yes, sir; nearly all the hotels and bath-houses are on that street.

Q. How much has the bed of the street been raised by the filling in, say at the deepest places?—A. Well, at some points the fill has been considerable, but I am unable to say exactly how many feet.

Q. In some places it is 8 to 10 feet, is it not?—A. On an average I should say from 5 to 10 feet.

Q. When this improvement is completed it will make a broad thoroughfare from the post-office building up to the head of the street, will it not?—A. Yes, sir.

Q. How wide will it be?—A. The width will be an average of 80 or 90 feet.

Q. That will be a great advantage to persons occupying the street for business purposes, will it not?—A. I think so, and for the public generally.

Q. Have you had anything to do with the leasing of property or the sale of it?—A. Very little, sir. I am somewhat familiar with the legislation; the disposal of property here under the acts of Congress. I was in Washington when the original act passed, and took some part in proving up claims.

Q. But I want to know if you have had any experience as to the leasing of water by the Government?—A. No, sir; I have no interest, direct or indirect, in any lease or any bath-house.

Q. Can you tell the value of any property on the Government reservation now under lease to private parties?—A. No, sir; I have no information at all on that subject.

Q. The Arlington Hotel is considered the best hotel here, is it not?—A. It is considered the leading hotel; the largest and best.

Q. Do you know its capacity?—A. I do not know, sir, since the addition to it. I am not accurately informed.

Q. It is generally full, is it not?—A. Generally full, yes, sir. Sometimes it cannot accommodate the persons that apply, as I am informed.

Q. In other words, the accommodations are not equal to the demand?—A. Not equal to the demand.

Q. Do you know anything about the bath-house arrangement here, how it is managed, &c.?—A. I do not know, sir. I only understand that it is managed by a pool.

Q. In your opinion are the accommodations here sufficient both for the traveling public and for the resident population, rich and poor, as to bathing?—A. Yes, sir. That is, I understand there is no complaint among visitors as to bath facilities or the lack of them.

Q. Do you know of any complaint among the people residing here?—A. I have occasionally heard some complaint among the classes who seek or ask free baths.

Q. Are the facilities for free bathing as great as formerly?—A. They are better and greater since the Government took charge of the property here than formerly.

Q. What places are there where free baths can be obtained now?—A. One place is known as the Mud Hole. That is the only one I know of. There was one on the south-east side of the Hot Springs Mountain.

Q. That has been discontinued, has it not?—A. Yes, sir.

Q. Now the statement has been made that the Mud Hole has recently been dried up?—A. Well, that is not my understanding.

Q. Have you been there recently?—A. I have not examined it myself.

Q. Have you examined it since the water in it has been lowered?—A. I have not.

Q. If it should be a fact that it could not be used any longer for bathing purposes, where would the poor or those who desire free baths get them?—A. I do not know any place where they could get them.

Q. That bath, then, should either be restored or some other place provided, do you think?—A. Yes, sir.

By Mr. PAYNE:

Q. What effect has the erection of these bath-houses latterly had upon the value of the property of the town?—A. I think, sir, our bath-houses have had a very beneficial effect upon the general prosperity, aside from the money expended in building them. They have furnished better accommodations for the bathing public.

Q. I suppose the better the accommodations of that kind the more visitors come here.—A. Yes, sir.

Q. And the same effect results in the matter of hotels?—A. Yes, sir; the better the character of hotels the better the character of visitors; I find that of the visitors coming here the better class is increasing; those people who demand the best accommodations are increasing.

Q. Is there any improvement in the character of the bath-houses recently erected over those formerly built?—A. Yes, sir; a decided improvement; the buildings now are of a substantial character; the tubs are better and the equipment in every respect better than they were.

Q. What do you think as to whether they are better patronized or not?—A. They are unquestionably better patronized, because the number of visitors increases every year.

Q. Do you think that the facilities for bathing have kept pace with the increase of visitors in the same proportion?—A. Yes, sir; I think so; I think the supply has kept pretty well up with the demand as to bathing facilities; that is my observation, at least.

Q. I suppose that it is the bathing privilege principally that attracts people here, either as permanent residents or as visitors?—A. Yes, sir; invalids and pleasure seekers; pleasure seekers come here either from curiosity or desire.

E. A. SAGE, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Have you ever made application for a bath-house site on the reservation, and, if so, with what success? When did you make the application, and please designate the site applied for?—Answer. I first made application to the receiver when he came here for the Big Iron, and I was the first one that spoke to him about it. That was to Mr. Morgan. I did not get it. Afterwards I made application for almost every site on the reservation. I have been a continual applicant for a bath-house site.

Q. Who did you apply to?—A. I made application to General Kelley when here at different times, and had plans and specifications made out for a bath-house and had them on file quite a while.

Q. Did you ever apply to anybody else since General Kelley left here?—A. No, sir; I do not know that I have since he left.

Q. Did you ever apply directly to the Secretary of the Interior?—A. No, not directly. I put my application into the general's hands and made personal application every few weeks while he was here.

Q. Are you a resident of this city, and did you have sufficient means at any time to build a bath-house here had you been given the lease of a site?—A. Yes, sir; I have been a citizen and I agreed to build the bath-house in three or four months at the outside after I got the lease to do so.

By Mr. STORM:

Q. Who got the site you applied for?—A. The nearest I came to getting any place is where the Rammelsburg bath-house is built. I do not know who got that finally. He said that if they did not build at a certain time I could have it.

Q. When two persons made application for the same place, what had the Secretary to do?—A. I do not know.

Q. He would have to refuse one or the other, or lease it to both, would he not?—A. Yes, sir. I had a standing application for the Magnesia Springs site for the last six or seven years. I tried to get a site anywhere along there. I agreed to build a bath-house if they gave me a site anywhere.

Q. You do not know the motives of the Secretary of the Interior in refusing to grant your application, do you?—A. I do not.

Q. Are you a resident of this place?—A. Yes, sir.

Q. Were the parties who got the sites that you applied for residents here?—A. Well, the Rammelsburg party was not.

Q. What is your business?—A. I am in the hotel business.

M. C. O'BRYAN, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside?—Answer. Hot Springs.

Q. What is your occupation?—A. Dealer in merchandise.

Q. How long have you been here?—A. Going on 19 years.

Q. Are you acquainted with the work done on the Hot Springs Creek?—A. Yes, sir; I noticed it all along from the commencement.

Q. Do you consider it a necessary and proper work for the interest of the Government and the public at large?—A. I think the work very good, but I know very little about such work. I think the work very good, and I think that it will suit the purpose very well.

Q. Do you think the material is good?—A. Well, I have but very little judgment on that. I do not know very much about the rock or anything of that kind.

Q. Well, is it properly constructed, do you think?—A. I think it is as good as any work I ever saw of the kind anywhere.

Q. Did you examine the material and workmanship?—A. Yes, sir; I noticed it. I pass up and down two or three times every day.

Q. And you think it is a good piece of work?—A. I think it is. I think it is much better work than I expect to get in the next ten years.

By Mr. STORM:

Q. Are you a mason?—A. No, sir.

Q. What is your occupation?—A. I am a merchant.

Q. What is the character of the masonry; what style of masonry?—A. I do not understand the terms exactly that they use in classifying the work.

Q. Are the stones laid in ranges of the same size?—A. I think the stone put in is very regular. I noticed it frequently going along, and have stooped to look at it.

Q. You do not know the difference between simple rubble work and range rubble work, do you?—A. No, sir.

By Mr. PAYNE:

Q. You are a large property owner here, are you not?—A. I own some property here, sir.

Q. Of course, you consider this improvement a great benefit to your property, do you not?—A. A great benefit to every piece of property I have.

Q. Do not you consider it a great benefit to the Government property, also?—A. I do consider it a great benefit to the Government property.

By Mr. STONE:

Q. In what way does it benefit the Government property?—A. In the first place, it gives it a nice appearance in front, and puts the street in better shape.

Q. But the Government has no property to sell over there on the reservation?—A. If it was to be sold it would enhance the value of the property.

Q. But the Government has reserved it.—A. But the Government might change its mind and sell it, like they did the old reservation.

By Mr. PAYNE:

Q. Are you acquainted with the rents here?—A. Yes, sir.

Q. Do you know the Arlington Hotel?—A. Yes, sir.

Q. What do you think it is worth?—A. I do not know the rent.

Q. But what do you think the rent of that hotel worth?—A. I do not know what that property would be worth. It is quite valuable. It is a pretty large piece of property.

Q. Now about what would you think would be a fair rental value?—A. Of the house as it stands?

Q. The house as it stands, with an acre or an acre and a half of ground.—A. I suppose it would be worth three or four or five thousand dollars a year.

Q. Would you be willing to rent it at that price?—A. If I wanted to run a hotel I would be willing to pay two or three or four thousand dollars rental a year for it.

Q. Would you be willing to lease it to me for that amount if you owned it?—A. That depends altogether whether I would get my money back or not.

Q. Well, to rent it to responsible parties?—A. I think four or five thousand dollars a year.

By Mr. STORM:

Q. Would that be fair to the lessee, or fair to the owner, or fair between both?—A. Fair for me to receive, if I owned the property.

Q. What effect has the erection of bath-houses had on the property of the Government and the whole town? I take it for granted that it has had a good effect, but I ask the question because it is requested.—A. It has had a very good effect. Every bath-house built enhances this property.

Q. Every place built here, I suppose, brings more people into town?—A. Yes, sir.
 Q. I suppose the building of good bath-houses is good for persons who lease ground as well as for those who are owners?—A. I think it has been a very good thing for them too, sir.

MICHAEL HALEY, being duly sworn, was examined as follows:

By Mr. PAYNE:

Question. Did you furnish the contractors upon this Hot Springs Creek work with cement?—Answer. Yes, sir.

Q. What quantity?—A. I took a list awhile ago from the invoices, before I came here. [Looking at memorandum.] I furnished up to the present 2,435 barrels of 300 pounds weight each.

Q. What kind of cement was it?—A. The best grade of Milwaukee cement, sir.

Q. And that has all been used in the work?—A. Yes, sir; I think that has all been used in the work. There was two car-loads of Louisville cement. It was not quite all from Milwaukee.

Q. Do you know anything about the quality of that cement as compared with Rosendale?—A. Yes, sir; it is as good as the Rosendale. I consider fully as good, if not better.

Q. Do you know how the price compares with the price of Rosendale?—A. Well, I believe it is about the same, sir, if I am not mistaken. I am under the impression that it is about the same, sir. I wrote to several parties when I made a bid on this work, and the Milwaukee I thought cheaper than the others, and I gave them the lower figures, and lower than cement was ever laid here before.

Q. Are you familiar with Rosendale cement?—A. Yes, sir; I have been handling cement for the last eight years.

Q. What is the price of this cement in Milwaukee?—A. The price in Milwaukee is about 85 cents a barrel.

Q. What is the price of Rosendale there?—A. I do not know what it is worth in Milwaukee.

Q. What is it worth in New York?—A. We do not buy in New York. All I have bought I bought in Saint Louis.

Q. What is it worth there?—A. I think now that I paid \$1.25 or \$1.40 a barrel; I forget which.

Q. Which is the cheaper for you, the Rosendale in Saint Louis, at \$1.25, or the Milwaukee in Milwaukee, at 85 cents?—A. Which will be the cheaper at those figures?

Q. Yes.—A. I buy Rosendale for less money when I buy in large amounts. The quantity makes a difference in prices.

Q. I mean in the same lots.—A. The Rosendale cement we have to ship in barrels, while this other we ship in sacks.

Q. Cement preserved in barrels is considered better than in sacks, because it excludes the air better?—A. I believe it does. I ship in sacks to save the expense of barrels.

Q. What does Milwaukee cement sell for in Saint Louis?—A. It sells from \$1.25 to \$1.40. Of course it goes up and down like all other commodities.

Q. Then, when contractors have the privilege of putting in cement equal to the best Rosendale cement, you get a different cement that costs more?—A. I do not know. They did not mention to me what kind of cement they wanted.

Q. The contract required them to furnish a quality of cement equal to the best Rosendale, and yet you say the Rosendale cement is cheaper in Saint Louis than this Milwaukee?—A. The Rosendale is put up in barrels, and there are only 265 pounds to the barrel. My understanding was this, that the Government always requires 300 pounds to constitute a barrel of cement. Outsiders only get 265 pounds to the barrel.

Q. Then you did not buy according to the quality, but according to the quantity to the barrel?—A. I bought what I considered to be the standard both from Louisville and Saint Louis companies.

Q. Taking the same quantity of cement, pound for pound, hundred weight for hundred weight, what is the difference in cost of Rosendale cement in Saint Louis and this cement you are delivering to these contractors?—A. I could not answer that question now.

Q. Then how can you say it was a dearer cement than Rosendale?—A. Because I have to ship Rosendale in barrels and I could not get it in sacks. The price of the barrel is 24 cents.

Q. And yet you say the cement is better preserved in barrels than in sacks?—A. I do not think so.

Q. You did not say that before. You get it cheaper in sacks than by the barrel, do you?—A. Yes; and I return the sacks at their expense. Furthermore I will say that some time ago Mr. Walton's foreman explained to me that the cement did not set quick enough. I wrote to Milwaukee and they wrote back that it was on account of

the cold weather, and that when it set it was equal to any cement in the United States and they guaranteed it.

Q. Did you examine any of this work to see if this cement set as well as Rosendale, and was equal to it in quality?—A. Yes, sir.

Q. Was it hard and firm?—A. Yes, sir; as hard as any I ever saw.

Q. Have you been under the arch to see how the cement operates?—A. No, sir.

Q. You have heard witnesses here say that it had fallen out, have you not?—A. No, sir; I have not.

SAMUEL HAMBLE, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. You are the superintendent of the Hot Springs Reservation, I believe?—

Answer. I am.

Q. How long have you been superintendent?—A. Since the first day of January, 1883.

Q. You were appointed by the Secretary of the Interior, were you?—A. Yes, sir.

Q. Well, when you came into office what was left you by your predecessor in the way of records, books, files, and papers?—A. Well, there were several bundles of letters received from the Department, and I believe some fifty-odd applications for leases for hot water and for bath-house sites, and the ordinary or rather scanty office furniture.

Q. Well, was there any book or account or record of the proceedings and doings of the office?—A. Nothing further than a book which contained on one page the amount of funds that he had received for the monthly rents, and on the opposite page the expenses.

Q. I suppose it showed the account on which it was received and expended; the purposes?—A. Yes, sir.

Q. Was any record kept of the leases?—A. No, sir. Do you refer to the record of granted leases?

Q. Yes.—A. The only thing I found of that kind was several leases, some signed by both parties, and some by one and some signed by neither party.

Q. Is there no record kept in any book of your office of leases executed by the Government and transfers, &c.?—A. No, sir.

Q. And you found no such book in your office when you took charge as superintendent?—A. No, sir.

Q. Are the papers I hold in my hand, which you have given the committee, all the record you have in your office as to leases, &c.?—A. Yes, sir; those papers are all the records I have of leases.

Q. The first lease I find here is one apparently executed by B. F. Kelley, superintendent, to George W. Allen, president of the Hot Springs Land Improvement Company. Now, what do you know about that lease?—A. Simply what I know as a citizen.

Q. And there is nothing in your office touching this matter except this paper?—A. I know what that relates to.

Q. Well, what does it relate to?—A. The intention was to transfer the right to the use of a spring. When I call it a spring, it is a quantity of water on the bed of the creek near the Old Hale, which was to be transported in pipe down near the gas-house. As I understood, they contemplated at the time building a hotel there, and wanted to use this water as an attachment.

Q. Do you know anything about George W. Allen?—A. As I understand, he is a resident of Saint Louis and a man I never met.

Q. Then he is not a resident of this place?—A. I think not. The Saint Louis Land and Improvement Company, as I understand it, is made up of Harrison Howard and, I think, George W. Allen. Allen, I understand, has deeded to his son his interest.

Q. Was the lease ever executed further than that?—A. The only thing I know being done was that some labor was employed in excavating a place in the tufa, some 3 feet square, but they made no use of the water.

Q. Did they never go any further than that?—A. No, sir.

Q. And no hotel was built below the town?—A. No, sir.

Q. And that was all there was of that lease?—A. Yes, sir.

Q. This was as far as it was executed on the 16th day of September, 1878, and nothing has been done since that, I suppose?—A. As I understand all these leases were executed to date from that time. I think you will find nearly all those leases executed by B. F. Kelley to date from that time.

Q. Whom did you say were members of this improvement company?—A. Harrison Howard, and, I think, George W. Allen. I am only giving you information picked up incidentally, and I understood Colonel Fordyce, of Hot Springs, though I am not sure whether he was a member of the company or not.

Q. Now, the next lease appears to be one executed by B. F. Kelley to Micheal Mc-

Keogh on the blank day of June, 1880. Do you know anything about that lease?—A. I only know that Mr. McKeogh obtained the right to build a bath-house on the reservation.

Q. And dated from the 10th of September, 1875. It seems to be executed in 1880. Now, as a matter of fact it was executed previous to that time. Was not that bath-house built previous to 1880?—A. No, sir; I think that bath-house was built in the summer of 1880. I recollect that in the summer of 1879 the commissioner was here on their last years' work, and I think this house was built the next year.

Q. Does Mr. McKeogh own that bath-house now?—A. I think not; I think he sold his interest out some time ago.

Q. To whom?—A. Well, of that I am not certain. I understood that Mr. D. C. Rugg bought a portion of that interest, and perhaps the whole of it.

Q. Is there any transfer filed in your office?—A. No, sir; nothing relating to it that I have ever been able to find.

Q. The next one seems to be of the same character, and that is not signed at all. It purports to be a lease to H. M. Rockafellow, giving him the right to construct a bath-house now held by him on the Hot Springs Reservation, &c. That does not seem to be signed by anybody. Is there any other lease to Mr. Rockafellow for that property upon which he erected that bath-house?—A. There may be a duplicate copy among the papers, but I think it is simply a duplicate of that.

Q. Well, here is one to W. G. Latta of the same date. Now, for what bath-house is that?—A. That I presume is for what is known as the Ozark bath-house.

Q. Has that ever been transferred?—A. Not to my knowledge.

Q. Was anybody else known in the transaction except Mr. Latta?—A. Not that I am aware of.

Q. Now, here is one to Tabin & Vaughn of the same date and in the same form. What has become of that? What house was that?—A. That is, I presume, what is known as the Hot Springs bath-house, or New Hot Springs bath-house.

Q. Who has that now?—A. That stands on the Ward property.

Q. That is simply leased to allow hot water to be taken from the reservation?—A. Yes, sir.

Q. Who has that privilege now?—A. I think the property is owned by Albert Gains and George W. Smith; I am not certain. Albert Gains pays the rent. I am not certain whether there is more than one owner or not.

Q. Does any transfer appear of record in your office?—A. No, sir; none that I have ever seen.

Q. Now, here is a lease executed to J. M. Keller; do you know anything about that?—A. Well, as I understood, the lease was executed to J. M. Keller.

Q. This was on the 8th day of May, 1880?—A. That is the only paper I have on file relating to that site, and I have no copy of that lease. As I know of my own knowledge, that relates to the site now occupied by the Rammelsburg bath-house.

Q. This is a transfer, I discover, from Keller to Rammelsburg?—A. Yes, sir.

Q. I suppose Rammelsburg held the lease before?—A. As I understood it, J. M. Keller held the lease and transferred it to Rammelsburg.

Q. And he obtained it from the Government, did he?—A. That is what I understand; I have no record.

Q. Here is one from Mr. Nelson; what one is that? That is the 10th day of May, 1879.—A. Does not the lease itself state that it is the Old Hale bath-house?

Q. Yes, sir.—A. Mr. Nelson has been interested in several bath-houses here.

Q. Now, was any transfer made of that?—A. That I understand is now owned by Smith and Gains.

Q. Is there any evidence of the transfer in your office?—A. No, sir; that is the only paper I have in relation to that lease.

Q. Now, here is one executed to Willis and Garnett. What bath-house is that?—A. That relates to the Big Iron bath-house.

Q. Has that ever been transferred?—A. That is now owned by Dr. Garnett, I think, alone.

Q. Now, here is one between B. J. Kelley and S. W. Fordyce. That is for the Palace bath-house, is it not?—A. That relates to the Palace.

Q. Does that still belong to Mr. Fordyce?—A. I do not know whether there is any other owner or not.

Q. Is there no record of any transfer in your office?—A. None that I know of, and, in fact, I know of none of these transfers except as I pick up the information. There is nothing on file to show it.

Q. Now, here is one to L. C. Young. What one is that?—A. Is not there still another name?

Q. Oh, yes; Buckstaff, living in Page County, Illinois. Now, what bath-house is that?—A. That is the lease of a site between the Old Hale and the Big Iron bath-house.

Q. What became of that?—A. That lease was recently granted.

Q. Yes, it is dated the 7th of December, 1883?—A. And that is a copy forwarded to me.

Q. Well, has this been transferred to anybody?—A. Not that I know of.

Q. Has any house been built there?—A. No, sir.

Q. Now, here is one to Smithmeyer—J. L. Smithmeyer. Now what site is that?—A. That is the place between the Old Hale bath-house and the Independent bath-house.

Q. What has become of that?—A. There has been no action taken on it. That is a lease that was, as you will notice by its date, a very late lease.

Q. It was executed the 12th day of September, 1883, and no improvements have been made there yet, have they?—A. No, sir.

Q. Who is Mr. Smithmeyer?—A. Mr. Smithmeyer has a place in Washington. He is an architect.

Q. Was he ever out here?—A. Yes, he was here in connection with the hospital building; he was architect for these buildings.

Q. Now, here is the Buckstaff lease, executed in May, 1883. Now, that was transferred to Mr. Gaines, I believe?—A. So I understand.

Q. And there is no evidence of the transfer in your office?—A. No, sir.

Q. Now, here is one to Frank Stearns, of Hot Springs. Who is he?—A. He is a hardware merchant.

Q. That is dated the 12th of June, 1883. What has been done with that?—A. There was an excavation going on; that is, at the site next to the Palace bath-house.

Q. To whom do you understand that to belong to now?—A. I understand that it belongs to J. L. Smithmeyer.

Q. You have no record of any transfer of that either, have you?—A. I have no record of any transfer.

Q. Now, here is one of July, 1883, to A. B. Gaines. Now, which one is that?—A. That is a site next below the Ramelsburg bath-house.

By Mr. STORM:

Q. Who paid the rents of these different leases; the parties named in the leases?—A. I make receipts for rents running to the bath-houses themselves. The managers usually pay the rent. I make out my receipts, received from Big Iron bath-house, for instance, so much rent for such a month.

Q. The manager is the employee of the lessee, is he not?—A. Yes, sir.

Q. You do not make out the receipts, then, in the name of the man who leases?—A. No, sir.

By the CHAIRMAN:

Q. How many bath-houses are there here altogether at this time?—A. I can enumerate them in a moment. Reckoning what is known as the Little Rockafellow, which consists of a few tubs under the Arlington Hotel, and which pays rents, there are twelve.

Q. Now, how many tubs are there altogether?—A. I should have to reckon those up. Q. Those tubs pay how much rent?—A. Fifteen dollars per annum per tub; paid monthly, a dollar and twenty-five cents each.

Q. What is the cost of these bath-houses, do you know?—A. I can approximate closely to some.

Q. Now, commence at the Rockafellow bath-house, for instance?—A. Well, I could not tell the cost. I superintended the construction of the Rockafellow, but didn't pay the bills. Major Nelson paid attention to that. I understand that the fitting of the pipes, the excavating and building, &c., cost something near \$10,000.

Q. Now, take the Big Iron bath-house?—A. I only know the cost of that by listening to the testimony to-day—\$18,000.

Q. Which one comes next, in point of location?—A. The Old Hale.

Q. What did that cost?—A. I think that cost in the neighborhood of \$6,000.

Q. Now the next one?—A. The next one is the Independent.

Q. What did that cost?—A. I judge that house prepared for business must have cost in the neighborhood of \$15,000.

Q. Now, then, the next one?—A. The next one is the Palace.

Q. What did that cost?—A. I judge that cost somewhere from twenty-two to twenty-five thousand dollars. It is very nicely fitted up.

Q. Now, the next one?—A. The next is the Ozark.

Q. Well, what was about the cost of that?—A. That is pretty hard to tell. I should say, perhaps—I think that house overran \$15,000.

Q. And the next one is the brick bath-house, is it not?—A. Yes; the Ramelsburg. Q. About what is the cost of that?—A. I get the cost of that by recalling the letter in which they made the statement, as I recollect, which was \$22,500.

Q. Are these all the bath-houses on the reservation?—A. Those are all the bath-houses built on leased sites.

Q. And all that are on the reservation, too, are they not?—A. Yes, sir.

Q. Now, the Old Hot Springs bath-house; how much do you suppose that is worth?—
A. Well, I should judge that building could be built new for from \$1,500 to \$2,000.

Q. Well, then you come to the Grand Central; what would that be?—A. Well, that was built as an attachment to the Grand Central hotel.

Q. And not of much value, I suppose.—A. No; the value of the building would not be very much now. I should judge that it cost from \$1,000 to \$1,200 when built.

Q. Then there is the Rockafellow?—A. I have to guess on that to some extent. I presume that house would cost in its present condition not far from \$5,000. It may be an overestimate.

Q. That house is located some distance from the reservation, and the water is conveyed to it by pipe?—A. Yes, sir; some 1,500 feet from the spring.

Q. Now, as to the one in the Avenue Hotel.—A. That is a portion of the Avenue Hotel.

Q. And the water is carried there by pipe, is it not?—A. Yes, sir; or rather pumped.

Q. Now, these are all the bath-houses in the valley, are they not?—A. Yes; all in operation now. There used to be some tubs in the French Hotel. They still pay rent, as they always have done, on four tubs, though not using them.

By Mr. STORM:

Q. Is this French Hotel bath one of the twelve bath-houses that you said paid rent?—
A. Well, now comes what is known as the Little Rockafellow bath-house, which has a few bath-tubs under the rear of the Arlington Hotel.

By the CHAIRMAN:

Q. That is not used, though?—A. I think it is not in use, but they pay the rent on five tubs.

Q. Well, in the execution of these leases, is the application made to you direct, or do you refer them to the Department at Washington, they simply going to the Department through you? Have you any discretion in the matter of the execution of leases?—A. No, sir. There are a great many of these leases that I knew nothing about.

Q. But these later leases; did you know anything about them until you got the information from Washington?—A. I simply got an intimation about the leases from rumors in regard to the steps taken. I simply got an intimation from the Department, and in that instance I sent them a description of the place with a notice of what there was on the ground, if anything.

Q. Then the lease is not made through you directly?—A. Some make application to me and some leases are granted without my knowledge.

Q. Those granted in 1883, were they recommended by you, or were the applications forwarded by you, or were they executed altogether in Washington?—A. The lease of Mr. Sterns was forwarded through me; or rather the application.

Q. With or without any formal reference?—A. The application was made to me and I forwarded it. The application of Mr. Buckstaff was made through me formally, but as I understood the lease was granted, or promised, and the application was only made through me informally.

Q. Did you recommend the granting of the leases when application was made to you?—A. I made this recommendation in the granting of the lease to Mr. Sterns. In the first place I thought that more bath-houses were, or would soon be required, and in the second place, that he was a suitable person to have charge of a bath-house.

Q. Do you remember how many applications were made to you direct for bath-house sites, or through you?—A. A. B. Gaines made one besides this one I have already mentioned, and a man here in town, by the name of Grieves.

Q. Well, did you pursue the same course in all applications made through you?—Did you forward them with the same recommendation, or did you discriminate?—A. I would make a difference in regard to them. Maybe in the case of some I would state the situation of the reservation. I do not recollect making any discrimination against any party.

Q. You say you recommended the Sterns lease. Did you recommend others in similar terms when they applied to you?—A. Yes, sir, substantially.

Q. And they granted or refused the application at the Department at Washington?—
A. Yes, sir.

Q. And you made no lease here yourself?—A. Oh, no, sir. I considered that under the law I had no right to make a lease.

Q. Now, when the law of Congress authorized the commencement of this work, were you instructed to advertise for bids, or was the work advertised in Washington?—A. The work was advertised before I took charge of the office.

Q. Do you remember how many bids were sent in?—A. I have no record of it in my office at all, but I made a record of the bids as they appeared in the newspapers. I think there was from fifteen to twenty bids altogether.

Q. And they were not sent to you, but to Washington?—A. I had nothing to do with them, and they were sent to Washington. My recollection is that the first let-

ting took place in Washington. I know it was a matter of which I had no concern at all.

Q. Did Captain Handbury submit to you the change made in these plans?—A. Yes, sir.

Q. The change was made before you came into the office of superintendent, was it not?—A. That was made on my recommendation.

Q. Then it was made after you came into office?—A. Yes, sir.

Q. And you recommended the change in the plans, did you?—A. Yes, sir.

Q. Well, for what reason?—A. Because I considered that work would be cheaper and more substantial.

Q. Did not you have the recommendation of Mr. Smithmeyer and other architects? Did not the Government send Mr. Smithmeyer here to examine the plans, and did not he recommend the change from the iron to the stone arch?—A. No, sir; the two plans were referred to him in Washington, after I sent forward the recommendation.

Q. And he assented to your judgment in the matter, did he?—A. Yes, his recommendation was made there.

Q. Well, was it in accordance with your recommendation?—A. Yes, sir.

Q. Now, in respect to the change of material, at whose request was that made; I mean when the stone was changed?—A. I recommended it.

Q. At whose request?—A. No one's.

Q. Through whose instructions?—A. No one's.

Q. Was not it recommended by some Senators who were here?—A. I would say in regard to that that Senator Voorhees was here in the spring when Colonel Robinson was here making arrangements to go on with his contract.

Q. He was the man who first took the contract, wasn't he?—A. Yes, sir; he in conversation with Senator Voorhees stated that he could build a stronger, better, and cheaper wall in rough rubble, as the wall is now built, than he could under the plan under which he was required to build the wall. Senator Voorhees idea was that he was right, and he said he would write a letter to the Department about it. Senator Brown afterwards came here in relation to the work to be done and I gave him all the information I had, and he said he thought he would write a letter to the Department. He did so, but I never saw his letter until about a month or two ago.

Q. Did not Senator Maxey also write a letter in reference to this matter?—A. He wrote before Senator Brown came here.

Q. But this contract was first made with a man by the name of Robinson, was it not?—A. Yes, sir.

Q. And there was afterwards trouble about his executing it, I believe?—A. There was a difference of opinion as to the specifications.

Q. Did he throw up his contract?—A. Yes, sir.

By Mr. STORM:

Q. Will you please state what this difference was?—A. He had taken the contract to construct the wall, and the specification said this: The walls shall be 8 feet high, 3 feet thick, but may be varied in depth in order to reach bottom rock. It shall be built of granite, laid in regular courses, and so went on to describe the wall. He came into my office and asked me how I understood those specifications. Well, I had nothing to do with the thing in the world. I picked up the specifications and examined them, and he said what would you understand that to mean, a granite wall? I said certainly. He said do you notice the approximate amount of material required? And I told him I merely saw what was in the specifications, and by rough calculation thought the intent was to build from the Arlington Hotel south, and there should be enough masonry to do that. He then said did it ever strike you that the wall was to have a granite facing backed by concrete? Well, I paid no special attention to it, and supposed he was going to carry out the specifications as they were written. By his request I examined into the matter. He said that if that is the way it is to be understood, it was not the way he understood it when he made his bid, and that he could not do the work under that bid and that plan. He wrote to Captain Handbury stating that he thought it was his intention to do the work as he, Mr. Robinson, understood it.

Q. What was the intention, as he understood it?—A. That the walls should be built of a face of granite and backed with concrete, and then he went away, and the next I heard he had thrown up his contract.

Q. Because this concrete had to be put in the odd courses?—A. His interpretation of the specification was that concrete should be used as part of the wall.

By the CHAIRMAN:

Q. Was his bid accompanied by any forfeit, or deposit, or bond?—A. I do not remember.

Q. After he threw up his contract was the work re-advertised?—A. It was.

Q. Then who became the contractor?—A. It was finally let to George H. Bardwell.

Q. Under the readvertisement?—A. Yes, sir; under the new advertisement.

Q. And it was not let to anybody who had bid in between him and Mr. Robinson?—A. There were some lower bidders, but the contract was finally awarded to Mr. Bardwell; but I do not know the reason—I only conjectured.

Q. Well, what did you conjecture?—A. I do not know. Perhaps I should not have used that word.

Q. Well, it was finally awarded to Mr. Bardwell, was it?—A. Yes, sir.

Q. Now, as to the change of this material. You say that you were induced to recommend a change of rock upon the recommendation of these Senators?—A. Well, no. Two years before that I think that I made a rough sketch somewhat similar to this plan—what we call a working plan—and was studying how to make use of the channel of the creek for sewerage, and also to get the creek out of the way of the street. The plan was varied from this somewhat, and in that case I thought to arrange to lay a sewer-pipe.

Q. I speak of the stone now used; the change of material. I ask if you were induced to recommend a change in the material by the letters of these Senators and on their recommendations?—A. Well, I was induced in this way. I should have made the recommendation any way, but when I received a letter from the Secretary of the Interior directing me to take charge of the work, the letter closed, "We would be glad to receive any suggestion in regard to the work." I opened my letter then with reference to that, and made this recommendation.

Thereupon (at 6 o'clock p. m.) the committee took a recess until 8 o'clock p. m.

AFTER RECESS.

Committee reconvened pursuant to adjournment.

(Examination of Mr. HAMBLÉN resumed.)

By Mr. STORM:

Q. Well now, colonel, had it occurred to you previous to that time that a change in this material would be profitable to the Government?—A. Yes, sir.

Q. Had you made that recommendation when the contract was originally made or let out?—A. I had nothing to do with the contract when it was originally let out.

Q. How long had you been in charge of this work when you made that recommendation?—A. I think I made that recommendation in August.

Q. How long was that after you had been put in charge?—A. That was as soon as I could prepare the work.

Q. As soon as you had time to make such a recommendation?—A. Yes, sir; it occurred in this way: The preparation of the work—as I stated in my previous examination, I had to prepare a plan similar to this, but it called for a dressed-stone arch, and there was a party here at the time in my office, a Mr. Chaffel, of Washington, a civil engineer by profession. I prepared this plan with a dressed-stone arch, and after I had the plan prepared I submitted it to him and asked his opinion. I had previously discussed the matter with Mr. Robinson, and on consultation with him the change I made was to thicken the arch at its spring. I think that was the only change, and the substitution of rubble arch for the dressed stone.

Q. What do you mean by dressed stone? Do you mean dressed stone for the arch?—A. Yes, sir; stone cut in shape and dressed.

Q. I have been requested to ask the question, did you ever say to anybody that that was improper material and you would not recommend it? Did you ever say to anybody that this material, blasted out of the hill-side adjoining the work, was an improper material and ought not to be used?—A. Not that I remember.

Q. To whom does the property belong where this stone is blasted?—A. That belongs to G. L. Smith. There was no one in Hot Springs that I know of with whom I could consult in regard to the work, and no one that I know of knew of it, except perhaps Colonel Alexander. I think I told him of it, and with your permission I will ask him did he know of it.

Mr. ALEXANDER. Yes, sir.

By the CHAIRMAN:

Q. What was the bid under the original specification for this granite work?—A. \$18.45.

Q. A cubic yard?—A. A cubic yard.

Q. Now could that work have been done with that material, procuring the granite where it was to be got from, in accordance with the specifications, for that price, without a loss to the contractor?—A. I do not know. I never calculated that. I never made any calculation whether it could be done at that price or not.

Q. How much work was done by the contractor with this granite; what was the amount estimated up to the time the change was made?—A. I could not answer you in that form without referring to my books. As I recollect it was about 300 feet.

Q. That was a very small proportion of this whole work, was it not?—A. Yes, sir.

Q. In fact very little was done?—A. Yes, sir.

Q. Had you ever made an estimate of how much cheaper the work might be done by using the new material, than if the work had been continued as originally intended?—A. I stated in my letter to the Department that I thought the work could be done for \$9 per cubic yard, arch and all. I intended, however, for the dressed skewbacks to be paid for at the old rate, but that the rubble work could be done for \$9 a yard, and I think stated in my letter that there were parties here who would be willing to do it at that price.

Q. And still, after you gave that information to the Department, the work was let out at \$10.50?—A. Yes, sir.

Q. Do you think you could find parties here who are now willing to do it at \$1.50 less per cubic yard?—A. That is my opinion.

Q. And you had advised the Department of that?—A. That is stated in my letter, which you will find before you. You will find there the exact date of the letter in that printed pamphlet.

By Mr. PAYNE:

Q. This letter of yours contains the following sentence: "The stones at the springs—the skewbacks—will be in one block, cut to the shape shown in the plan. All the other masonry, including the arch, to be of range rubble work, laid in cement."—A. That was a matter of opinion. I had consulted nobody about it. In preparing the contract I think I spoke once or twice to Colonel Alexander in regard to it. I do not think that any other party knew anything of it at all, except these parties I had consulted, Mr. Chappel and Mr. Smithmeyer.

Q. Well, what did Mr. Smithmeyer have to do with the change?—A. Nothing. The only reference I made to him was to submit the plan and ask his opinion.

Q. What did Mr. George L. Smith have to do with the adoption of the latter material for that specified in the original contract?—A. Nothing, that I know of. I was going on to say that I submitted the plan and received a telegram from the Department, which you have before you there. It stated, "Your plan adopted," and make arrangement, or something to that effect, for the new work. I went up on the work then, and met the foreman.

By Mr. STORM:

Q. Who was the foreman?—A. Mr. Suddarth. He said, "I have a dispatch here which I do not understand, and perhaps you may be able to explain it." It was, "Make arrangement for the new plan." I had made no arrangement with the contractor on the new plan. After the plan was adopted there, their first remark to me was, "Where shall we get the material?" I told them that there was an abundance of material on the sides of both mountains, and a good deal of it loose which did not need quarrying, or if they wanted to they could quarry it.

By the CHAIRMAN:

Q. Did you tell him that he could have the use of the stone in the mountain?—A. Yes, sir.

Q. Did you have any right to control that? Did not that belong to the Government?—A. Yes, sir.

Q. Did that stone opposite the opera house belong to the Government?—A. Yes, sir; those lots are about 175 feet deep.

Q. But you could not get the stone which was back 175 feet until you took that out which was in front, could you?—A. I spoke of the loose rock on the top of the mountain. There is an abundance of it there.

Q. The property where this stone has been gotten out belongs to Mr. Smith, does it not?—A. Yes, sir.

Q. Did Mr. Smith ask you to make the change, or did he have any agency whatever in having the change made?—A. No, sir.

Q. Did you have any agency in bringing about the change, in the interest of the property, as trustee or otherwise?—A. No, sir; when he bought the property some two or two and a half years ago I was made trustee of the deed. The property was sold on ten years time, and the deed was made in my name. In other words, I acted as Mr. Lawrence's agent in seeing that the part of the contract here was carried out.

Q. Did the property belong to Mr. Lawrence?—A. He was administrator of the Belden estate, and had no connection with it beyond that.

Q. And you were simply made trustee of the deed, were you?—A. Yes, sir.

Q. To secure the deferred payments?—A. Yes, sir; simply made trustee in the nature of an agent to see that he carried out his stipulation.

Q. It is valuable to the owners of that property to have the rock blasted out and removed, is it not?—A. I presume it is, but I have had no consultation with Mr. Smith in regard to it.

Q. But it is a very desirable thing to the owners of that property to have this rock blasted and removed, is it not?—A. Yes, sir; very desirable.

Q. But you say that Mr. Smith had no agency in connection with the change?—A. No, sir; as I stated before, I told the contractors to take the stone there on the mountain.

Q. And as I understand you, you contemplated taking the loose stone that lay on the top of the mountain?—A. Yes, sir.

Q. Now how did it happen that they did not take this loose stone, but blasted the solid rock out of the side of the mountain?—A. I presume they preferred to blast rather than bring down that which was on top of the mountain.

Q. Was the stone on top of the mountain suitable for the purpose?—A. Yes, sir; I presume so. I used it for various other purposes.

Q. Is there an abundance of it there?—A. Plenty of it.

Q. Wouldn't it have been cheaper to have brought it down than to have blasted?—A. That I left entirely to the contractor.

Q. As a matter of fact, would not it have been easier to bring the loose stones down than to have blasted the solid rock out of the mountain?—A. I never got any down, and could not state what the difference would be, but I presume it would not be cheaper.

Q. Then you think it cheaper to blast the stone out of the mountain side than to bring down the loose stone on the top of the mountain?—A. Yes, sir; if it had to be brought from the top of the crest.

Q. Did you examine the work while it was in progress, to see if the contractors had complied with the requirements of the plans and specifications?—A. Yes, sir; as far as I was able I spent all my time on the work. I gave it all the time I could spare from my other duties, and stood over the work while it was being done, and to the best of my ability made it conform to the plans and specifications.

Q. Was there any stipulation in the contract between Mr. Belden and Mr. Smith that a certain amount of stone should be taken out of the mountain every year?—A. No, sir; there was a stipulation in the deed to this effect. I have to quote from memory, and give it as near as I remember. I never paid special attention to the deed. I was simply notified that I would be made trustee. It provided that if at the end, I think, of three years he had not made a certain amount of improvement he should pay a certain amount of money on the property—I think \$10,000.

Q. Well, was this blasting commenced within that three years from the date of the original transaction?—A. That was about the 24th of January, 1882.

Q. The original transaction?—A. Yes, sir; that is as near as I can remember.

Q. Then the blasting commenced within three years?—A. Yes, sir.

Q. I believe you said that you examined this work to see that it conformed to the specifications and the requirements of the contract?—A. Yes, sir.

Q. Well, did it conform to the contract and specifications in respect to material and workmanship, as to cement used, and everything of that sort?—A. I required it to.

Q. You have heard the testimony here to-day, and as a matter of fact, did it conform to the specifications and the requirements of the contract?—A. Yes, sir; I should say it did.

Q. Do you regard the cement used as a proper kind in work of that sort?—A. Yes, sir.

Q. Was the sand good that was used, and in proper proportion?—A. Yes, sir.

Q. And did the sand and cement form a good cement, and do you regard the work as good and durable?—A. I think so.

Q. That is your judgment now, is it?—A. Yes, sir.

Q. You heard the testimony of Mr. Johnson and Mr. French this morning, did you?—A. Yes, sir.

Q. Did you measure that work when you made your estimates of the amount upon which they received pay on the contract?—A. Yes, sir.

Q. Well, you heard their statements; now was there as much work done as claimed in your estimate, namely, 5,400 cubic yards?—A. Whatever amount the estimate called for; there is that amount of masonry in the work.

Q. Did you measure it carefully?—A. I went over it carefully, and if I know how to multiply and add, there is that amount there.

Q. Have you got your estimates, and, if so, will you furnish the committee with the figures?—A. I can probably do so to-morrow, as soon as I can prepare them. This matter has taken me entirely by surprise, and I want a little time to put it in shape to file with the committee.

Q. Have you estimated for the last rock used in the stone work as well as the granite, the excavation, &c.?—A. Yes, sir.

Q. Well, in the excavation of the bed of the creek there was a difference between your estimate and that made by Mr. Johnson and Mr. French of some 6,000 feet. Did you make an accurate measurement of that?—A. As near as I could.

Q. You think you measured it correctly, do you?—A. I think so.

Q. Have you your figures as to the measurement of the stone work, the loose stone work, and the excavation of the bed of the creek?—A. Yes, sir.

Q. Will you furnish the committee with that to-morrow?—A. I think I can prepare it and hand it in.

Q. And give the figures of the different cross sections also?—A. Yes, sir; I will prepare it and have it in as soon as I can do so.

Q. Well, we will give you until to-morrow or next day. We do not expect you to do everything in a minute.—A. In regard to the preparing of the plan, I received a package of papers one day—though I was in a hurry the day I received them—and threw them into my drawer. At a later time, and after I prepared the plan, I examined them and found that they were the same estimates that had been prepared by the contractor, but I could not understand them and made no use of them. I wish the committee to understand fully that the work was entirely and purely my own plan, and the only consultation I had with regard to it was with Mr. Robinson, the former contractor, who was an engineer, and with Mr. Chappel, and lately, in regard to the strength of the arch and also the strength of the material, &c., with Mr. Smithmeyer. I simply asked his opinion in regard to the materials.

Q. Mr. Smithmeyer made the same report that you did, did he not?—A. I think I forwarded my plan to Washington, and it seems that the two plans were submitted to Mr. Smithmeyer, with a request for a report on them. That I never saw or knew anything about until this winter when I was in Washington.

Q. Was Mr. Smithmeyer ever out here?—A. I think he was here in August and arranged for the location. It might have been earlier; I do not remember, exactly. He was here and made the necessary changes in the location of the Army and Navy hospital.

Q. That was about the time he got this bath-house lease, was it not?—A. No, sir; his bath-house lease dates later.

Q. But he was never a resident here, was he?—A. I do not think he was ever here but that once. I wish to add in regard to my statement in reply to the question asked me as to how many applications were made through me. There were two or three; Mr. and Mrs. Karitowski came to me and told me they made application, and I went over about fifty applications. I found nothing, and told them their application must be in Washington. Afterwards they brought in a paper, which I handed to the Secretary while he was here. And besides that—

Q. (Interposing.) Did they bring in an application?—A. And later than that three other parties filed applications for bath-house sites, which I forwarded to Washington with a formal letter of transmittal.

Q. Was Mr. Smithmeyer's application presented to you?—A. No, sir.

Q. And you made no indorsement of that?—A. No, sir; the only concern I had in that was that a letter was sent me asking a description of a piece of ground, and requesting me to make any remarks as to what was on this ground, if anything. I returned it, giving a description as requested, and stated that there was a cold-water tank and a spring, which was inclosed.

Q. That was adjoining the Old Hale bath house, was it not?—A. Between the Old Hale bath house and the Independent. As far as the Buckstaff lease was concerned, I knew nothing about that until it was stated to me that the lease had been granted. A formal application would go through my hands, and I would merely forward it.

Q. Mr. Buckstaff and Mr. Hogaboom were granted that lease, were they not?—A. The lease was only in the name of Mr. Buckstaff. As to the other, Mr. Young was a party to the lease of a site between the big iron bath house and the Old Hale. I presume it was a month after the lease was granted before I knew of it, when I was asked for a description of the site.

Q. After it was granted, Colonel, did you advise them to sell it or dispose of the lease?—A. No, sir; the only knowledge I have of these matters is the same as you have.

Q. Did you advise Mr. Hogaboom to sell the lease?—A. I never knew of the transaction until after it happened. I heard incidentally that it had taken place. It never came to my knowledge officially.

Q. Were these leases ever granted at Washington without referring them to you at all? In other words, does the Secretary of the Interior execute the lease directly to the party making application without any reference to you?—A. Sometimes the lease is forwarded to me, and sometimes a copy.

Q. For what purpose; to get your opinion or recommendation?—A. Before that he sometimes asks me for my recommendation, and sometimes asks me for a description of the site. If I recollect rightly as to the site in regard to—I cannot think of his name, but Mr. Young was one of the parties—the only thing I recollect in regard to that is being asked for a description of the site, and following that what, if anything, was on the ground.

Q. What improvements have been made by the Government here, outside of the Hot Springs Creek improvement, previous to your coming into office, or since that time?—A. Well, there has been a road constructed on the mountain, the building built that I occupy as an office, and I presume some other little improvements.

Q. Well, the building for the office, is that used alone for an office, or do you reside in it?—A. When I took charge of the Creek work I was living a mile up in the country, and I found it too far out, so I occupied this building as an office, and my family also stops there.

Q. How much space does that building occupy?—A. I never measured it. I should judge a hundred and fifty feet front, and, perhaps, running back about the same distance.

Q. Is it necessary for the superintendent to occupy so much building for his office; is there any real need of it?—A. Did you ask me how much ground the building covered?

Q. Well, the building and inclosure?—A. I believe the building is only twenty feet front.

Q. I only want to know if it is necessary for the superintendent to occupy a hundred and fifty feet front? I know the building was there before you came into office.—A. That is only a yard fenced in in connection with the building.

Q. The duties of the superintendent in the transaction of official business would require only a small office, would it not?—A. He could get along with a small office, but I do considerable platting and work of that kind.

Q. But a small office, like a lawyer or a doctor, would answer all purposes, would it not, and do as well as a 150-foot front? I mean the space occupied.—A. Yes, sir.

Q. Do you know why that office was put there?—A. I do not.

Q. There is plenty of vacant space in the middle of the reservation, is there not?—A. Yes, sir.

Q. And this building could have been put somewhere else just as well as here?—

A. I was asked then by the superintendent to make a location for a building.

Q. That was General Kelley, was it not?—A. Yes, sir.

Q. Is it a fact that General Kelley had decided to build an office somewhere else, and had he or not started to build it down where the bath-houses are now located?—A. I do not know that he had made up his mind to do it. I was in the office at the time and the question was discussed. I believed—as suggested by a witness here, to-day—that the Government would put up a building here, and I understood at one time they expected an appropriation, and it was urged to get sufficient money to put up a building that would accommodate the post-office, the superintendent, &c., but I do not know whether General Kelley entertained the idea. In fact, I heard that he discouraged the appropriation.

Q. Did he or not instruct you to build an office about the center of where the bath-houses are now located; about the center of the permanent reservation, reckoning from the Arlington Hotel down to Malvern Crossing?—A. He might have discussed that, but I do not recollect the circumstances now. I know he spoke of a number of points to put up an office. One day I came in the office and he asked me to go down and locate it where it is. I never asked him the reason for it.

Q. What is the income of the Government from the reservation?—A. There are 247 bath-tubs, and you can reckon it.

Q. Now, how are they distributed in the different houses, if you have it down?—A. The Avenue Hotel has 20 tubs, or at least pays for 20; the Rockafellow pays for 20; the Grand Central pays for 11; the Hot Springs pays for 12; the Little Rockafellow pays for 5; the New Rockafellow pays for 26; the Big Iron pays for 40; the Old Hale pays for 21; the Independent pays for 21; the Palace pays for 23, and, I think, they have one or more tubs that they do not use, and perhaps they have no use for them; the Ozark Bath House pays for 22; the Rammelsburg pays for 18; the French Hotel pays for 4; and this house (Sumter) pays for 4.

Q. Now, as a matter of fact, does this house or the French Hotel use any water at all?—A. The French Hotel has been closed for about a year.

Q. And has it been paying for water all the time without using it?—A. They pay regularly. The French Hotel has some tubs in it for use of the guests, if they preferred to use them, and I found also a pipe there for drinking water. I directed them to put an automatic valve on so that no water might be wasted, as I thought it advisable that one or more places should be allowed to have the drinking water situated very near the door; and while they did little or no bathing they paid regularly for four tubs. This house, I found, was attached to a pipe which is connected with a spring leading in back of the large reservoir. It was a spring we were obliged to fence-out of the reservoir, and put in a pipe leading out, and for a long time it ran to waste. I asked Colonel Sumter in regard to it, and he stated that he wrote to Senator Garland, and I think obtained permission through his intercession with the Department to make use of that pipe; and he paid for four tubs.

Q. Now what is the net income of the Government from all sources of rental?—A. At present three hundred and eight dollars and seventy cents per month. Once a quarter add two hundred and fifty dollars for the rent of the Arlington Hotel.

Q. What is the total per year for rentals, including the Arlington Hotel and the balance?—A. The Arlington Hotel rents for a thousand dollars a year, and multiply

this amount I gave you by twelve and that would be very nearly the income of the Government.

By Mr. STORM:

Q. That makes about four thousand seven hundred and ninety dollars?—A. I suppose the amount multiplied by twelve, with this Arlington Hotel rental added, would be very nearly that. Sometimes there is some variation in tubs.

By the CHAIRMAN:

Q. Do not your books show exactly what you receive?—A. Of course.

Q. What are the facilities, Colonel, for bathing indigent people and invalids who are not able to pay?—A. Well, there are two pools around on the south side of the mountain, where I have a man in charge, a cripple himself, who says that he has bathed as high as 125 persons a day. In the winter time it is very difficult to get water around there warm enough to give a suitable bath, and while I was in Washington during that cold spell the pipes burst, and coming back I found that the frost had also drawn the concrete off the walls. I let it alone until three or four days ago, until I was satisfied the cold weather was over, and I replastered the walls and so repaired the pipes that, as soon as it is warm enough, I can send the water back around there. Besides that, we have a new pool, and with the one to be prepared, would, I think, bathe from six to eight hundred a day.

Q. Would the Mud Hole bathe that many?—A. Yes, sir; if crowded to its full capacity.

Q. Not with the amount of water running into it now, would it?—A. There is plenty in one pool, but in the other there is very little.

By Mr. STORM:

Q. Where do the ladies bathe?—A. They all bathe now in what we call the ladies' pool.

By the CHAIRMAN:

Q. This form of pool built by Superintendent Kelley; what kind of a pipe conveys the water to that pool?—A. An inch pipe.

Q. If hot water is allowed to run through these pipes, it will not freeze any season of the year, will it? Will hot water freeze running through these pipes?—A. If the water is allowed to run all the time I presume it would not; that is, allowed to run with full head. But the pipes here that convey water to the bath houses are different. I wish to call your attention to our system here. The pipes here frequently freeze. If there is not a full flow, while the pipe lays low, the water will gather and chill.

Q. Was there any complaint about these pipes freezing up until last winter?—A. Oh, yes.

By Mr. STORM:

Q. I suppose that is where the water did not run all the time?—A. The morning I took charge of the reservation, a year ago last January, only eight inches of water was in the Government reservoir with a capacity of 30,000 gallons. I gradually raised the amount to three feet and forced it up to the full capacity. During that time I think the pipes running to the Ozark bath-house and the pipe to the Rammelsburg bath-house both burst.

Q. From the cold water? From the freezing?—A. Yes, sir.

By the CHAIRMAN:

Q. What is the capacity of these pools over there that were built over by General Kelley?—A. About eight feet square. Perhaps one is larger than that, and probably about four feet deep, though I never measured it.

Q. What is the flow of all the springs, daily or hourly, if you remember?—A. Well, I can only give an idea.

Q. I saw a statement made in these papers, though I do not know whether it is accurate or not, and I have forgotten what it was.—A. The general estimate is that they furnish about 500,000 gallons a day. I would say in regard to that, I reported to the Department in making reports in regard to it, that I estimated I would find as much more water at the level of the bed of the creek as would be of sufficient height to be made available, I think, in excavating we have found, within bounds, say, three or four times as much.

Q. Three or four times as much as the flow estimated?—A. As is available. I located the springs and took the temperature, but never measured the flow.

Q. Could all the hot water that flows into the creek from the springs be gathered together and utilized?—A. Yes, sir.

Q. What measures are necessary to be taken for that purpose?—A. I have already recommended it to the Department.

Q. Well, recommend it to us.—A. I will give you the recommendation. I find under the plan on which this work was started, a 6-inch pipe was provided for to lay near the base of the outside or east wall; the pipe to extend from some convenient point, perhaps near the Rockafellow. That pipe was to gather all the hot water and take it up to a reservoir, and from there to raise it by mechanical means to another reservoir of sufficient height to distribute the water to the different bath-houses. But I was satisfied that a 6-inch pipe could not carry it all.

Q. Carry it all from where?—A. A six-inch pipe laid along the wall.

Q. I do not understand you. How do you propose to collect the water to get it in the pipe?—A. These springs have got to be traced back.

Q. Now let us start at the beginning. How do you propose to collect together all the hot water on the mountain side and utilize it, and not let it go to waste as now?—A. The first plan contemplated merely gathering up the water that passes out near the bed of the creek. The springs along the mountain have been constantly receding more or less rapidly at all points. I do not think any of the springs are as high as when I examined them in making the topographical survey for the Commission. I then made up my mind that the springs would finally make a way through the tufa. My idea is this, that the water flowing through a pipe leaves little or no deposit. If the water flows through an open spout, where air has access to it, it leaves a deposit, and that deposit is what we call tufa. Now the water in rising and flowing down forms this tufa. The water flowing over the surface it gradually rises itself until the pressure of the water is sufficient to force itself through the stratas. Now if they changed their course, of course the tendency of the water is down and it is forcing its way down continually.

Q. That does not answer the question. How do you propose to get that water together in a reservoir?—A. I am coming to that. Now, some of these springs break out under the tufa and form a perfect swamp of hot water under the Old Hale, and there is another immense amount around the Big Iron. Wherever that water is found breaking out it must be traced back to some point where it may be secured and elevated to a sufficient height, and there conducted by some available method.

Q. Now, along the side of the mountain there are various springs. I can readily understand how you can get the water from those springs and conduct it by pipes into a reservoir. But down here at the bottom of the creek, at the very base of the mountain, where the water percolates through the tufa, I cannot see how you can collect that together and convey it to a reservoir. That is what I want to find out.—A. That is water as it flows out of the tufa. Take for example the spring that supplies the Avenue Hotel. That is a spring right under the bridge which crosses to the Old Hale bath-house. It is drawn up there by a pump, and forced up to the Avenue Hotel. That is a sufficient elevation to take it as it is now, to conduct all that water into the pipe, which has only got to be secured so that it will flow out at the pipe, and now the pipe has a steady fall, and the water runs of its own weight.

Q. Now, on the side of the mountain, back of the Arlington Hotel, is the Old Ral Hole, and then there is another spring there, and then as you come back to the mud hole is another spring. I do not remember now how many there are there along the crest of the mountain. There used to be a great many. All the water that comes from these springs might be gathered in pipes and conveyed to the reservoir without waste. But down here at the Big Iron bath-house and Magnesia Spring, and as to all these springs coming out at the base of the mountain, at the bed of the creek, I do not see very well how that water is to be preserved.—A. Wherever I should find that water appearing I should trace it back.

Q. Can you trace it back?—A. Oh, yes.

Q. Well, what is the process?—A. It is the same precisely as occurred in the excavating.

Q. The excavating, I understand, makes the water sink.—A. There is no need of that if it is down to the natural surface.

Q. Your theory is that the water in descending through the tufa gradually falls until it reaches the rock underlying the tufa, is it?—A. Yes, sir.

Q. So your theory is that this tufa is the sediment from the settlement of the water, and that in time, from obvious causes, or from causes occurring now, these springs are liable to sink beneath that tufa down to the solid rock?—A. Yes, sir; and some of these springs are intermittent. It was mentioned in this testimony, I think, that the Arsenic Spring had stopped flowing and then commenced again. I have known that to occur twice certainly, and then the spring commenced to flow again.

Q. What is the capacity of the present Government reservoir here?—A. This one next to the Old Hale has a capacity of 30,000 gallons, and the one on the hill has a capacity of 20,000 gallons.

Q. That makes 50,000 in all?—A. Yes, sir.

Q. How long does it require the entire flow of the springs to fill these reservoirs or tanks?—A. I think this lower tank, when it was first constructed, I tested. That was the only time I tested it. I then tested it as to the time that it took to fill the

tank. We measured it roughly as it flowed, and we concluded that it would take from six to eight hours to fill the tank.

Q. From all the springs?—A. That is only connected with the Big Iron.

Q. The pipe in the Big Iron Spring supplies the Big Iron bath, and then the balance comes to the reservoir?—A. Yes, sir.

Q. And then the other bath-houses have to take their chances out of that, do they?—A. That is the system.

Q. Now, if the flow from all these springs was turned into that tank, how long would it take to fill it? What I am trying to arrive at is the flowage of all the springs turned into a tank, or are some allowed to flow into the hotels and some into the creek, and some into the bath-houses, and so on?—A. I am glad you asked that question. The system is this: it is a mere modification of a system that existed a year before the Government took hold. Each man had a number of springs, and there were pipes from these leading to the different bath-houses. The whole side of the mountain was a net-work of pipes. That is the system to-day, with slight modifications. These two tanks that have been built have the springs partially conducted to them, and still many of the pipes lead from the springs elsewhere, and the result of it is all the water is under nobody's control. I illustrate that in this way: We have rules, and there is a rule, among others, that says if a bath does not pay its rent within five days of the first of the month the supply of water is cut off. I will suppose that the Big Iron bath-house fails to pay. The only way I could enforce that rule would be to take plumbers and masons and detach that pipe, and I have very little more control over the other houses than I have over this. I have already represented that to the Department as one of the reasons why this other improvement should be made.

Q. Would not it be better to have one reservoir and have all this water conveyed to it and have pipes extending from that to each of the bath-houses?—A. That is exactly what I recommended. This water is tending, according to my theory, down to the natural surface. I think by far the larger proportion is down near the creek. Of course it can be carried to a higher elevation, so that it might be conducted by pipe to the reservoir and from there go to the distributing reservoir.

Q. Previous to the formation of this pool, under the present system of distributing the water, had not certain of the bath-houses largely the advantage of others by reason of water flowing into them, while the others had to take their chances in getting the water out of the tank, and I ask is not this system a bad one for the distribution of water?—A. It is very bad indeed.

Q. And it ought to be reformed it seems to me.—A. Yes, sir; and I have so recommended.

Q. Now, what would be the size of the tank or reservoir that would be necessary to supply these bath-houses by pipes running directly from it?—A. I would not care to say what the size would have to be until I ascertained the exact amount of water, but it should be of sufficient capacity to flow twenty-four hours.

Q. Have you an idea of how much water is used a day in each one of these bath-houses?—A. It is difficult to get at that.

Q. Where is the waste of water here?—A. I can illustrate that better by stating a little experience I had last winter. Mr. Long came to me and complained that he did not obtain enough water. I went to the Big Iron bath-house and it was very difficult to get at this pipe down in the vapor trough, but we managed to get the reservoir full. Still they did not have water enough. They came to me in the morning and I knew the reservoir was running over, yet they stated that they did not have water enough. Now, from that reservoir the Old Hale bath-house and the Independent bath-house was supplied almost entirely. The Palace bath-house, the Ozark bath-house, the Remelsburg bath-house was all supplied from it, and the French Hotel, all had pipes leading from that reservoir. I went first to the Palace and asked what water they were using. This was about 11 o'clock in the morning. They said that they were using the water supplied from the springs on the hill. These other two houses were using all the water they could draw from the tank and could not get a sufficient supply. The Palace was using almost none, and the Independent was only doing a little bathing. I then went over to the Old Hale and found they could not use the douche. I then went to the reservoir and found 18 inches of water. Now that amount of water flowed into it between 6 o'clock in the morning and 11 o'clock, and, therefore, they used 30,000 gallons of water. I set that down then, and take all the tubs and estimating upon the basis that they use, by allowing them a liberal use of water, 5 to 8 gallons. I was anxious to know where the water went to, and I found that it required a good deal for the vapors. It is on account of these vapor baths that these bath-houses only last from eight to ten years. I see no reason why they should not last as long as any other house, but under the rear of nearly every bath-house on the other side there is a trough that takes a heavy flow of water through it nearly all the time, which is boxed up so that a man can

stand up in it and take a vapor bath, and it takes an enormous amount of water to supply it. Now, there is probably where all this water went.

Q. Has anybody ever made the calculation of the flow of these streams to know how much water the Government has?—A. Captain Handbury made a calculation.

Q. Well, what amount does he make it?—A. He made his test, and I think you have it in the book before you. I think he says 500,000 gallons in 24 hours. I should say that that was the amount, if not less than the amount of water that flows from these springs.

Q. Do you think 500,000 gallons a day could be calculated upon as running into the reservoir or tank?—A. Yes, but it would take a good-sized tank.

Q. Would not it be decidedly better for the Government and those using the baths to have it all collected in a tank and distributed by pipe?—A. I recommend that the vapor trough be prohibited and this water thrown up to sufficient height to give adequate pressure, and every bath-house be required to connect its pipes with this reservoir and have a meter on each pipe. I think water should be distributed by measure and not by tubs.

Q. The flow of water being about 500,000 gallons a day, and the capacity of the present tanks being only 50,000 gallons, necessarily a good deal of this water must go to waste?—A. Well, they are coming to me constantly and stating that there is not water enough.

Q. Had you ever reported these facts to the Department?—A. Yes, sir.

Q. About what is the wastage of water here?—A. I do not know. I wish to say also that in making the report recommending that this other system be adopted that the tanks which are called the cold-water tanks, those wooden affairs on the side of the mountain, be prohibited, and that the cold water be attached to the building in iron tanks, and that the vapor tanks be abolished also.

Q. Were you here in 1880?—A. I was here a part of the year.

Q. Did you hear any more complaints of the distribution of water among the bath house people than you now hear under this present system?—A. There has always been constant complaint.

Q. Was not it complained that General Kelley let some bath-houses have it, and refused it to others?—A. I do not know whether I heard any complaints as to that in 1880 or not, but I believe I have heard complaints every year I have been here.

Q. Nearly everybody else heard it, did they not?—A. Yes, sir.

Q. Now, would not it be better to have all these springs covered over, and have a pipe running out of them into a general reservoir, and distribute the water from there to the different bath-houses?—A. That is precisely what I have recommended. This reservoir could be built in such manner, I mean so high, that by the natural flow it would take very little water to keep up the supply.

Q. Where would that reservoir be located, according to your ideas?—A. On the hill back of the Arlington Hotel. It is just low enough to take in the highest springs.

Q. Near that one that General Kelley built?—A. Yes, sir. The other is between the Old Hale and the Big Iron. But that is so low that it would not give the requisite pressure.

Q. Why was that placed there?—A. General Kelley selected that point.

Q. When he was superintendent?—A. Yes, sir.

Q. Did you locate it under his direction?—A. Yes, sir; he selected the point, and I used the level to see whether it would take in the flow of the springs that he required.

Q. How many springs are there now on the side of the mountain, if you remember?—A. No, sir; I do not remember how many there are now. When I made the topographical survey I found in all 72 springs.

Q. They were not all on the side of the mountain; some were at the base; is not that so?—A. These 72 included all the springs I found.

Q. I mean how many springs are there on the side of the mountain, above the base of the mountain? I know there are a good many down in the creek.—A. I could not tell you the exact number. I presume about 25 or 30.

Q. Well, I think so myself. Now, colonel, are there bath-houses enough here to meet the requirements on the part of invalids, and visitors, and residents, &c.; in other words, are there sufficient bathing facilities?—A. I was in the Ozart bath-house a day or two ago and there were a number of persons in there waiting for each other and there were a number of complaints. I presume there are facilities enough here now to meet the wants of every one, if they were patronized the entire day and people did not crowd in at certain hours. I look upon the place in this light: it is a place of bathing-houses and hotels, and everything else here are mere adjuncts. You build up this place by building up those two things. The town lacks hotel accommodations. The Avenue Hotel and the Arlington and Waverly are obliged to turn away numbers of guests. I think the hotel and bathing accommodations should be increased.

Q. Is there any central location available at this time for a hotel site?—A. Yes, sir; but you would have to pay a pretty large amount per foot for it.

Q. Would not the vacant property above the Arlington Hotel be a good location for a hotel?—A. Do you mean where the Arlington Hotel is?

Q. Above the Arlington Hotel, on Fountain street.—A. Yes, sir; that is a good locality up there.

Q. What use has the Government for that property?—A. It might erect a bath-house or hotel there.

Q. Is not there room enough for a bath-house elsewhere, near the springs, and what objection could there be to building hotels and boarding houses up there?—A. None that I see.

Q. Has the Government any use for that land?—A. None that I know of.

Q. Is there any reason why the Government should not sell that for a bath-house or hotel?—A. I should prefer leasing to selling.

Q. Well, is there any objection to the leasing of it?—A. No, sir; I see none.

Q. Could not the Government office be put somewhere else and allow a hotel to be built there?—A. I do not think it would take much to move it.

Q. Has the Government any special use for that ground where the Arlington Hotel stands?—A. Nothing, except that it is leased to the Arlington Hotel.

Q. Well, if the Arlington Hotel was taken off, the Government would not have any use for that ground except to build another hotel, or a bath-house, would it?—A. No, sir; under this system that I have spoken of, my idea is to throw the distributing reservoir sufficiently high to send the water to any point necessary, and if necessary there could be in the future two tiers of bath-houses constructed.

Q. What is the Government going to do for a bath-house for this Army and Navy hospital now being constructed on the reservation?—A. The point where it was located is a little south and in the rear of the Mud Hole.

Q. The Mud Hole is gone now, isn't it?—A. The Mud Hole is not exactly gone.

MR. PAYNE. The hole is there.

By the CHAIRMAN:

Q. How much ground has the Government there?—A. They have 100 feet front and it runs back 200 feet. The line extends back nearly parallel to the street up to nearly 5 feet of the line going from the Palace bath-house, leaving 200 feet space along Central avenue. They have gone back 200 feet.

Q. [Indicating on map of Hot Springs.] Here is the brick bath-house; here is the Mud Hole, and here is the hospital. Now, where are the 200 feet front of the hospital property on the creek?—A. The hospital property has 100 feet front. That is right here at the extreme or lower corner of the reservation. Now, from there it runs back 200 feet.

Q. But that is not on the creek?—A. No, sir; as I understand it the bath-house is not to come down here to the front of the creek. I was trying to explain to you where they intended to locate it. This line extends back 200 feet and runs parallel with the street at the end of the reservation and at right angles with the street. Here is the point [indicating on the map] where Mr. Smithmeyer located the bath-house. His claim comes in between the Independent and Ozart.

Q. Well, colonel, how did you estimate this work on the creek? Did you measure the stone work of the walls and arches by measuring the height of the walls and the thickness at the top and bottom, and from that make your estimate?—A. Yes, sir.

Q. Did you notice in your measurements, whether or not the work exceeded or fell short of the specifications or the requirements of the contract?—A. It did not.

Q. As to any particular section for instance?—A. My method for carrying on the work, and I was on it half a dozen times a day, sometimes spending all the time I had to spare there, and if I had any doubt in regard to the limit of the work, I measured it frequently in order to keep it up to the specification. In making my measurements for my estimates, I would take the length and height, and the other dimensions I knew.

Q. Did you take it by sections?—A. Yes, sir.

Q. Well, now will your figures show when you come to show them to the committee whether the amount of work done exceeded or fell short of the estimate? For instance, the specifications require so much to be a certain height and a certain width, &c. Now, will your estimate show whether these sections conform to the requirements of the specifications?—A. Yes, sir.

Q. Do you know the actual number of visitors that come here, colonel?—A. I do not.

Q. Have you any rules and regulations governing the bath-houses, the reservation, &c.?—A. Yes, sir; and I had them printed on heavy thick cards.

Q. You have the same regulations you found in existence when you came into office?—A. Yes, sir; those issued by Secretary Schurz.

Q. Well, will you make one of these an exhibit to your testimony; we would like to have it?—A. There has been a modification of the price to be paid by bathers.

Q. Have these regulations been stuck up in the bath-houses?—A. Yes, sir; I have

made frequent visits to the bath-houses, and if I did not find that card stuck up, I gave them one to tack up.

Q. Do you remember any particular one that has this card up in it now?—A. I do not know that I noticed it. They are required to keep them up.

Q. Is there any further suggestion that you wish to make about any changes in the management of the Government property here, to meet the requirements of visitors and invalids and for the good of the public interest generally, with the exception of this recommendation of the distribution of the water. We are here to get such facts that will enable us to make an intelligent recommendation to Congress, and of course we have no theory of our own?—A. I do not know that I have.

Q. Now, do not you think it would be a good idea to inclose these springs with fences so as to keep people and stock from committing a nuisance there?—A. I am glad you mention that. I think that wherever the hot water shows itself, it should be inclosed and in good order.

Q. I think so, too. Now, colonel, if you desire to say anything about the Mud Hole business, you have heard the statements to-day about blasting and its effects; if you desire to make any statement, the committee would be glad to hear it.—A. I will give the committee my experience in regard to it: The excavations commenced last summer on the northern site. It was carried back, taking out a heavy wail of tufa by blasting, and I did not apprehend any danger. But I heard that an extremely heavy blast had been fired there, and I did not know anything about it until after it had occurred; and I came down and cautioned them about doing anything of the kind. This was an extremely heavy blast, and had no perceptible effect upon the Mud Hole that I could learn; and I consulted with the manager in regard to it. The excavating stopped shortly after that. Since that time I have blasted out the solid stone immediately adjoining that, and I was as careful as possible in doing it, and constructed this new pool with a very small but a living spring in the bottom of it, and still another led into it that was just outside of the pool, and no excavation had been made until I came back from Washington. I intended as soon as I got back to put that pool in order and use it for bathing, and repair the old one, which was in need of repair. One of the repairs that I proposed to put on it was to make an excavation. I noticed the constant tendency of the water in all the springs to recede, and my intention was, as soon as I could, to put the pool in order, to examine the old pool, and, if possible, by the use of masonry, to secure the water and prevent this receding. When I came home I found that they had excavated on these two sites again. I saw no objection to the excavation going on, especially after the experience we had on both sides of it, but I cautioned them to use no blast in the vicinity of the mud hole, except, if they wanted to, to use a light blast on the tufa to break it up. I thought that would have no more effect than a pistol shot, and permitted them to do so. The blasting of this place near the Ozark, which I presume has over a hundred feet front, I have made my arrangements, and intended to have pipes transferred to the new pool, but the plumbers failed to do that, and the manager came to me and told me that the water had receded.

By Mr. STORM:

Q. And went out immediately after the blast, we have heard it said?—A. I asked the superintendent if it occurred from the blast, and he said that it was so reported to him.

Q. Have you any reason to say that it is not so?—A. I would not undertake to say that.

Q. You have not any doubt, have you, that the blasting there caused that water to fall?—A. Quite likely.

Q. Are you not satisfied, in your own mind, as a scientific man, that it is absolutely certain this blast dried up that spring?—A. I am not absolutely certain; it is probable.

Q. When a blast is immediately followed by the drying up of the spring, could you assign any other cause for its disappearance?—A. No, sir.

Q. Then why do you say that it is simply probable?—A. For this reason, that the Corn Hole, the spring below, and several springs in that vicinity have receded without any visible cause.

Q. But they have all receded since this blasting has been going on there; isn't that so?—A. Not all of them.

Q. When did that spring which you first mention disappear?—A. Since the blasting began on the mountain?

Q. Exactly.—A. Oh, that commenced before I came here.

Q. As the engineer in charge of the Government property here, do you think it safe to blast along there in that solid rock or tufa?—A. I do not think that they are blasting there now.

Q. Answer the question. Do you think, as an engineer, that it is safe for you or

anybody else to be allowed to blast in that rock below those springs?—A. No, sir; I would not have permitted it.

Q. Would you permit it to be done hereafter?—A. I would prefer that it would not be done.

Q. Would you advise or allow it to be done, as an individual, if you could prevent it?—A. Not under the present circumstances, certainly.

Q. Under what circumstances would you allow them to blast there?—A. If I thought there would be no damage accrue from it.

Q. Would you think that no damage would accrue from blasting there from your present knowledge of the effects of blasting?—A. No; I would not permit it now. I would like to make one remark in regard to the springs in the vicinity of the Corn Hole. No blasting has been done since the construction of the Independent and Palace bath-house at that point.

By Mr. PAYNE:

Q. What do you mean by vicinity; within what distance?—A. The blasting that was done here at this place we have under discussion, which is certainly 300 feet distant, and perhaps more, and there is no tufa there. It is solid rock between the two, and I do not think the blasting that far away would affect the spring unless the blasting was in the rock and extended all the way through. I do not think that blasting affected it.

By Mr. STORM:

Q. Affected what?—A. The springs around the Corn Hole.

Q. Do you mean to say that you think it is safe to carry on this blasting there in the solid rock?—A. I am not advocating blasting; but I do not think this particular blasting I speak of affected those springs.

Q. But you would allow it to be done, which is just as bad. You, as superintendent, are put here to protect the interests of the Government, and I do not think you ought to allow this blasting to be done, when it is well established that the blasting here has dried up several very important springs, or lowered them.—A. In that connection I have already stated that we have an arrangement made to collect this water.

Q. I believe the Interior Department has ordered that blasting shall cease there?—A. Yes, sir, until the committee came. I was going to say in regard to this water that the flow into the Mud Hole pool was very light, but it answered its purpose, and the bottom of the pool was sufficiently warm. The problem with me was that I found on the level of the creek a large amount of water flowing out, and the problem with me was how to secure it and bring it back. Up in the tufa I noticed when I commenced to take it out that it was porous, and as the excavation was carried down a larger flow of water was opened up. Now, if the excavation was made, and made without harming anybody else, we would obtain a large quantity of water, and as a matter of fact I would consider it better to supply the mud hole in some other way and secure that water rather than it should be wasted through the tufa.

Q. When did you say you came in charge of this Government property here?—A. A year ago last January.

Q. Had the laying of the sewer wall commenced when you were made superintendent?—A. A year ago last January.

Q. Were you in charge of the works here before that?—A. No; but I did considerable work here, though.

Q. But you only became superintendent a year ago last January?—A. Yes, sir.

Q. Had any work been done under this contract at this time?—A. No, sir.

Q. Had not the contract been made and signed before that?—A. That was the contract with Mr. Robinson.

Q. Well, the one with the present contractor; who was he?—A. Mr. Bardwell is the present contractor.

Q. The contract was made with him at what time?—A. I think you will find the date there among those papers before you.

Q. It was the 8th day of May, 1883. That contract was made on the specifications and plans furnished by Colonel Handbury, was it?—A. Yes, sir.

Q. You knew of that contract being made, did you not?—A. I knew that it was made.

Q. Had you been consulted in any way about it?—A. No, sir.

Q. You are a civil engineer, I believe?—A. Yes, sir.

Q. After you had been here some four or five months the Department executed this contract with Mr. Bardwell on the plans and specifications furnished by Captain Handbury; is that the fact?—A. Yes, sir.

Q. And Captain Handbury had been here before?—A. Yes, sir; he was here the summer before.

Q. Who was the engineer here in charge in 1883?—A. There was no one. Captain Handbury was at Little Rock, but I had nothing to do with the contract until a later date.

Q. What were you doing here as superintendent?—A. I was attending to the reservation.

Q. Where was Captain Handbury in March, 1883?—A. In Little Rock.

Q. What was he doing there?—A. He was stationed there.

Q. Well, he had nothing to do here that you know of?—A. No, sir.

Q. When Senator Voorhees says in his letter of the 29th of March, 1883, "I understand the engineers insist that the walls of the side of this stream shall be constructed of granite with a finished face," what engineer or engineers did he refer to?—A. I presume he must have referred to Captain Handbury.

Q. But you say Captain Handbury was not here at that time?—A. Probably he had been discussing his plans with him.

Q. How do you suppose that Senator Voorhees became informed of the fact that the engineers were insisting upon a granite wall in this creek improvement?—A. The only information I gave in regard to it was when Senator Voorhees was stopping at the Arlington Hotel, when I talked to him in relation to this work. Mr. Robinson and myself were there and he came alongside of us, took a seat, and entered into a conversation principally with Mr. Robinson, and the three of us sat there together. He asked Mr. Robinson in regard to the contract and he gave his opinion about it.

Q. I ask you, as a man of natural shrewdness and common sense, who do you suppose Senator Voorhees got his information from in regard to this work?—A. Got it from Mr. Robinson.

Q. And Mr. Robinson tried to get a modification of that contract, did he not?—A. I do not know.

Q. You do not suppose he got his information from Captain Handbury, who was down at Little Rock, do you?—A. No, sir.

Q. He did not get it from you, did he?—A. I might have made some remarks.

Q. Do you recollect having any conversation with him about it?—A. I was engaged in the conversation.

Q. But you could not insist upon that which you did not believe right?—A. I took no great part in it. I did not approve of that plan.

Q. How long is this work; how many feet?—A. The original line of the work was 2,850 feet, and I have extended the left-hand wing. I do not remember just how far, but I think 150 feet or a little more.

Q. When the contract was entered into with Mr. Robinson on the 29th of March, 1883, what was the length of the work then?—A. 2,850 feet.

Q. That is a little over a half of a mile?—A. Yes, sir; a little over a half of a mile.

Q. Senator Voorhees said that the difference between the granite and stone here would be very great, didn't he?—A. Yes, sir.

Q. How great did you suppose it would be?—A. I recollect what he obtained his data from in regard to that point. He was in conversation with the contractor, who was also an engineer—Mr. Robinson. Mr. Robinson made the remark to him that he could build a stronger and better wall of this stone than he could build under the specifications with the granite face and concrete backing, and that he would undertake to do the side walls of that material according to the plan, and then arch it from the beginning of the work to the Arlington Hotel according to the plan for the money he was to receive for his contract.

Q. Did Senator Voorhees take that all in?—A. He heard it.

Q. Did he act upon it?—A. The remark that he made in regard to that was that he thought then that it would be better to use this other material, or something to that effect; I do not remember his exact language.

Q. There was no question about the fact that the granite was good?—A. No, sir.

Q. And there was no question that it made a good substantial structure?—A. No.

Q. This contract entered into providing for granite, did it not?—A. Yes, sir.

Q. And there is no granite in either of these mountains here?—A. It is classed by some as granite.

Q. This stone that they have been using here taken out of the side of the mountain?—A. Yes.

Q. It is called granite, is it?—A. Yes, sir.

Q. Did you ever see granite like this?—A. It is not like the kind I am acquainted with. It is not Maine granite.

Q. What kind of granite is it?—A. I have not given my opinion as to what it is.

Q. But you say it is granite?—A. I say some engineers class it as granite.

Q. What engineer classes this stone, taken out of the side of the hill here, as granite?—A. I think one of those who testified before you yesterday.

Q. Which one?—A. I think one of them. I think Mr. Johnson; but one or the other.

Q. Then, what was the necessity of getting the contract changed? That called for granite, and if this stone in the side of the hill was granite you could take the granite from that place, as no particular place was specified in the contract?—A. The difference was between granite and rubble.

Q. You say that this is granite here, and the contract called for granite; now what was the necessity of Senator Brown or Senator Voorhees interfering in the contract?—A. This stone could not be, without more expense than the stone was worth, be put in shape to conform to the specifications. In other words, it cannot be dressed.

Q. Which stone could not be dressed?—A. This being used here now.

Q. So the specifications could not be carried out with this stone now used?—A. Not without great expense.

Q. Well, was not the change of contract simply for the relief of the contractor?—A. It may have been; I do not know whether it was or not. That did not enter into my calculation at all.

Q. I cannot conceive why you advised the substitution of this stone here, as I understand you did?—A. Yes, sir.

Q. And the change was made from the plan originally suggested or furnished by Captain Handbury to a stone which you did not call as good as the other, do you?—A. I think it is just as good for that purpose.

Q. Do you think the stone here used is as good as the granite first used?—A. I think precisely as good for that purpose.

Q. Do you think it is as good?—A. Yes, for that purpose.

Q. For what purpose?—A. For the purpose it is being used.

Q. Why can an inferior stone be used in an arch than in any other stone work?—A. It is not an inferior stone for that purpose.

Q. Is a stone full of seams or veins as good as a stone without them?—A. No; I prefer not having the seams.

Q. Is not the stone used in the arch, and taken from that hillside and put into this work, split with seams?—A. There are seams running sometimes through it and sometimes showing slightly.

Q. Will you say as an engineer that a stone of that character is as good as stone free from seams and veins?—A. I do not.

Q. You say that the stone is as good as granite for the purpose it is being used here?—A. I say this—

Q. Just answer the question. I do not care for an explanation.—A. I have got to explain myself to make my answer clear and in justice to myself.

Q. Then you cannot answer the question directly?—A. I have got to make an explanation, I say, in justice to myself in this regard. I think a wall of the dimensions called for there is better than a wall of not less than a foot of thickness only built 8 feet high and backed with concrete to make it 3 feet thick. I believe if the stone was longer it would be a better wall for the purpose than the wall first called for.

Q. What has that got to do with the question that a stone full of seams is as good as a stone with no seams?—A. I am satisfied that that work will last through all time.

Q. And yet you are of the opinion that the granite which is free from seams is no better than this stone with seams in it?—A. But it is put up in different shape.

Q. I mean the granite in the same shape.—A. If you put up a granite wall that way I prefer it to this.

Q. That is what I meant.—A. If you take that blue stone and make the wall of it solid I would prefer that.

Q. Is this wall as it is laid up what you would call range rubble work?—A. No, and the contract does not call for that.

Q. That part of it has been changed. You omit the range rubble work of the prior contract and substitute rubble work, do you?—A. No, the first contract called for ashler face masonry.

Q. I know what your contract called for, but I am speaking now of what Captain Handbury called for.—A. That contract called for stone laid in regular courses.

Q. I see here in your letter of the 14th of August, 1883, to the Hon. M. L. Joslyn, inclosing plan, &c., that you state, "The stones at the springs—the skewbacks—will be in one block, cut to the shape shown in the plan. All the other masonry, including the arch, to be of range rubble work, laid in cement." Now, what have you to say about that?—A. I say in regard to that, that I do not know how that word came there. It ought not to be there, because the arch need not be of range rubble work.

Q. But this is a statement in a letter that you wrote to the Secretary, in which you inclose the plan and specification, and you say there should be range rubble work in the arch. You put that in yourself, did you not?—A. Yes, sir.

Q. And you know how it got there?—A. Yes; but I say I did not intend to have that word in.

Q. How was the Secretary of the Interior to understand that you did not intend to use that word?—A. Well, of course I understood that.

Q. Acting Secretary Joslyn wrote on September 1, 1883, to George H. Bardwell as follows: "The Department deems it for the public interest to change the plan for the improvement of Hot Springs Creek, at the Hot Springs Reservation in Arkansas, under your contract of the 8th of May last, and to cover the creek with an arch of range rubble masonry of stone, of the quality found upon the reservation, according to the

plans set forth in the letter of the superintendent of the reservation dated August 14, 1883, and the accompanying drawings, which are herewith submitted, the walls to be 5 feet thick," &c. Now you see that is the construction that Mr. Joslyn placed upon your letter.—A. Now read the other letter.

Q. Well, I will read this, and there is where the joker comes in: "Washington, D. C., September 1, 1883. Sir: I hereby propose to do the work of walling and arching of Hot Springs Creek, at Hot Springs, Arkansas, with rubble masonry, as per plans and drawings of work set forth in accompanying letter of superintendent and engineer of said reservation dated August 14, 1883, from foundation to keystone of arch, complete, for the price and sum of \$10.50 per cubic yard. Very respectfully, George H. Bardwell."—A. Now there he used the term "rubble masonry."

By Mr. PAYNE:

Q. Is there any change anywhere else?—A. If you read on you will see that his proposition was accepted.

Q. Was there any change in the previous letters; in Mr. Smithmeyer's communications?—A. I cannot say whether there is.

Q. He speaks of rubble work as specified in your letter. Mr. Smithmeyer's letters, and in the Secretary's letter, range rubble work is spoken of. Now I would like to know how that letter of Mr. Bardwell's changes the matter?—A. Mr. Bardwell's proposition was to build the wall of rubble masonry.

Q. His proposition was to accept the contract as specified in your letter of August 14, 1883.

By Mr. STORM:

Q. This man Bardwell says in his letter that he proposes to do the work in accordance with your letter. He says:

"I hereby propose to do the work of walling and arching the Hot Springs Creek, at Hot Springs, Arkansas, with rubble masonry, as per plans and drawings of work set forth in accompanying letter of superintendent and engineer of said reservation, dated August 14, 1883, from foundation to keystone arch, complete, for the price and sum of \$10.50 per cubic yard." Now, in your letter of August the 14th you state that all the other masonry, including the arch, shall be of range rubble work laid in cement. Now, why did he not accept the contract to do the work as you state in that letter? He says he does.—A. Well, it was not so understood.

Q. Well, he certainly saw your letter, did he not? This man Bardwell was at Washington all this time, was he not?—A. Yes, sir.

Q. How do you suppose it happened, that although you sent in a statement, as superintendent and engineer, that there were parties here who were willing to do this work for \$9 a yard, Judge Joslyn made a contract with him at \$10.50 a yard and never consulted you about it?—A. The only way that I can explain that is that I never asked any questions in regard to it. The only interpretation I gave that was that Mr. Bardwell had accepted the other contract.

Q. And he was there at Washington at the time, was he not?—A. Yes, sir; and he is a man I never saw and never had any business with.

By Mr. PAYNE:

Q. How do you know what he meant by that letter?—A. Well, I think that was the understanding.

By Mr. STORM:

Q. Now, he was in Washington during all this time, and can you conceive of any other theory than that he was there pressing to get more for his work than you estimated?—A. I presume that, as he was holding the contract, he had a right to carry it out according to the old plan, for the change was a matter in the discretion of the Secretary.

Q. Have you the slightest idea that Mr. Bardwell wanted the contract carried out as originally proposed at his bid of \$10.50 a yard?—A. I do not know.

Q. From all that you know and have heard, have you the slightest idea that Mr. Bardwell wanted that contract carried out at his bid?—A. I do not think that I would.

Q. And you do not think that he did?—A. Well, I do not know anything about that. I had no communication with him.

Q. I suppose that because the Government wanted a change, and could not make a change in the contract without his consent, he put on this \$1.50 per cubic yard?—A. I suppose so.

Q. Here is a letter written by Judge Joslyn to Mr. Bardwell, dated Washington, September 1, 1883. "Your proposal of this date to do the work upon the improvement of the Hot Springs Creek, in Garland County, Arkansas, according to the plans and specifications contained in the letter of Samuel Hamblen, Esq., superintendent of the Hot Springs Reservation, dated August 14, 1883, at the rate of \$10.50 per cubic yard, is accepted, and the original contract is modified accordingly." Now, sir,

if you are asked to take this letter of Mr. Bardwell's, in which he refers to your plans and specifications, and Judge Joslyn's acceptance of it, what do you suppose Mr. Bardwell expected to do and what modifications were made, according to your letter of August 14, 1883? Was not it for range rubble work?—A. That was what I stated in my letter.

Q. And upon your letter he makes his proposition, and upon that letter it was accepted?—A. Yes, sir; and he also states that he will make the work of rubble entirely. We use skewbacks of dressed stone, and that is in the contract the same as the other.

By Mr. PAYNE:

Q. Why not put in skewbacks of rubble work instead of dressed stone, if that was the interpretation of the contract?—A. Because you cannot make a good skewback of rubble. That wants to be in a single block.

By Mr. STORM:

Q. You have already stated that you could make a better arch of granite laid in courses, have not you?—A. No.

Q. Did not you say that if this had been built of granite, laid in regular courses, it would have been a better job?—A. I referred to the side walls.

Q. Did it never occur to you in looking at this work to look at your own letter, in which you provided for range rubble work, before you certified to the fulfillment of the contract, in order that the contractor might get his monthly pay?—A. No, sir.

Q. There was no change in the sand, was there?—A. No.

Q. Do you consider the sand used of the quality called for in the specifications, which says that the sand shall be clean, sharp, and free from loam and vegetable matter or other dirt?—A. I should like to give the history of that sand.

Q. When the Government makes a contract with an individual to furnish a certain article, and he does not do it, we do not care about the history of it; the question is whether the contract was carried out by the contractor, and whether this sand now used is clean, sharp, and free from vegetable matter or other dirt?—A. I have taken that sand and tested it with cement in different forms. I have taken sand from the Ouchita and did the same thing, and got better results from that sand now used here. I showed the thing to the Secretary, and he told me that I could use this sand now being used.

Q. When you showed it to the Secretary, did you take the sand to him in Washington?—A. No; he was here.

Q. Do you call that clean, sharp sand, free from loam or soil or dirt of any kind?—A. I do not know how to class it. I only know that the work I have seen done with it and by testing it that better results were obtained than with Ouchita sand.

Q. It has been shown here that it did not shut out the water.—A. That was where there may have been seams.

Q. I would like you to say whether that is clean, sharp sand free from soil or dirt; I want to get your idea of this sand.—A. That is not clean, sharp sand. It is a composition which, when I tested, I got better results from than from the river sand.

Q. What was the proportion of cement used to the sand?—A. My direction to the contractor was to use half and half, and whenever I was around I saw that they did that. Of course I did not spend all my time there.

Q. Were all these leases made in Washington on your giving a description of the property and what might be on the land?—A. It is the duty of the Secretary of the Interior to make leases, and not mine.

Q. Still you are the superintendent. Did not the Secretary consult you as to the fitness of the men who applied for leases? He knew nothing of men living here and your judgment was superior to his, you being here on the ground?—A. When they forwarded applications through me I stated to the Secretary my impressions as to the granting of the lease, and whether the persons applying were the proper persons or not.

Q. Then you did do that?—A. Certainly.

Q. I understood you a while ago to say you did something else. Well, these parties filed through you their applications, and you sent forward to the Secretary of the Interior your views as to the fitness of these parties to have the leases?—A. Yes, sir; that is, in the cases of those who filed their applications with me.

Q. This Illinois man, he did not file his application through you, did he?—A. No, sir; he got his lease in Washington.

Q. But the man who wanted it lived here, didn't he?—A. There is another one mentioned in the lease who lives here.

Q. But somebody else wanted it that did not get it; who was that man? do you know that another man made application?—A. Do you refer to Henry Hecox? I can explain as far as that is concerned.

Q. In the case of Henry Hecox, did he file his application through you?—A. No, sir; I think he filed it some four years ago.

Q. Through Superintendent Kelley?—A. Yes, sir.

Q. Now, do you know what Superintendent Kelley's practice was?—A. I do not know as to the recommendations, but it seems that he made leases himself.

Q. Yes, and gave the lease to a man in Illinois, and not to a man living here. Do you know what parties making application got leases through your recommendation?—A. I did not recommend Mr. Hecox.

Q. But in point of fact leases were made to parties who did not live here against recommendations for parties living here?—A. Yes, sir.

Q. What is the quantity of land occupied by the Arlington Hotel?—A. The building?

Q. The land occupied and used.—A. I could not tell you exactly without making measurement.

Q. How much have they a right to occupy?—A. One acre.

Q. Do you know whether they occupy an acre or not?—A. I do not know whether they occupy a full acre.

Q. Do you know whether they occupy more than an acre?—A. I do not.

Q. Have you ever heard the question raised?—A. Yes, sir.

Q. And have you never taken any pains to find out whether that hotel occupied more than an acre or not?—A. There is an inclosure around the building which takes in more ground than the building itself. Their acre is platted down to a certain form and their buildings are entirely on that acre. At least there has been nothing built since I was in charge of the reservation.

Q. Senator Maxey never recommended the substitution of this stone here for the granite, did he?—A. I never knew anything about Senator Maxey's letter until I saw it here.

Q. But he never recommended a substitution of material, and only referred to the plan of the sewer, is that not the fact?—A. I do not know whether he referred to that or not.

Q. When was your name inserted in this deed that has been referred to, as trustee?—A. At the time of the making of the deed.

Q. When was that?—A. I think in January, 1882.

Q. About a year before you were appointed superintendent?—A. Yes, sir.

Q. Had you any connection at that time with this work here?—A. No, sir.

Q. Where were you living then?—A. My family was living here. I had been in Texas on railroad work.

Q. What was your occupation there?—A. Acting as engineer, and I came back here on or about the time Mr. Lawrence came down to sell the property.

Q. Who was Mr. Lawrence?—A. Administrator of the Belden estate.

Q. What relation did you bear to that estate?—A. None at all.

Q. How did it happen that your name was inserted in the deed as trustee?—A. Because I was present with the parties while they were making the transfer and one of them suggested that they use my name as trustee.

Q. Well, what did you do as trustee?—A. I never did anything except, I believe, in one instance to report on receipt of a letter from Mr. Lawrence asking me to pay the taxes upon the property.

Q. Then the title is in you yet?—A. As trustee.

Q. As trustee what do you consider the amount of benefit rendered that property by the taking out of this stone?—A. Well, I should judge about ten thousand dollars.

Q. There was no wall laid then under the contract for this iron arch or girders, was there?—A. Oh, yes.

Q. How much?—A. I could not tell you exactly without examining it. I should judge some 300 lineal feet.

Q. On each side?—A. Yes, and there might not have been so much as that.

Q. You mean 300 lineal feet counting both sides, do you?—A. Yes, sir; and there might not be so much.

Q. But you have means of verifying that exactly, have you not?—A. Oh, yes.

Q. You have it among your papers, have you?—A. Oh, yes.

Q. Where is that wall?—A. It is at the upper end of the work just below where the two branches come together.

Q. Where the wye is?—A. Yes, sir.

Q. Is that used?—A. Under the direction of the Secretary I took it down and constructed those wings.

Q. That wye?—A. Yes, sir.

Q. That was taken down and used, was it?—A. Yes, sir.

Q. Then no arch rests on the old wall as originally laid down?—A. No.

Q. Then in making this calculation you calculated 5 feet for the bottom of the wall and 3 feet for the top, did you?—A. Yes, sir.

Q. And when you made your estimates you calculated 5 feet for the bottom and 3 feet for the top of the wall, where the spring of the arch comes in?—A. That is, for the wall built under the new plan.

Q. That is what I asked you a moment ago, whether any arch was sprung over the old walls?—A. I told you there was not.

Q. I asked you whether the wall was taken down, and whether all the wall there, on which there was intended to be an arch, was 5 feet at the bottom and 3 feet at the top?—A. Yes, it is now.

Q. I mean now, and on which you made your estimate for the payment of the contractors, estimating it at 5 feet at the bottom and 3 feet at the top?—A. Yes, and that first wall laid was paid for, of course.

Q. And under his bid the contractor was paid \$18.45 a cubic yard for that work, was he?—A. Yes.

Q. And that was taken down?—A. That was taken down to the required height to put the skewbacks in.

Q. Who took it down?—A. The contractor.

Q. When he took it down and put it up again did you allow him for the wall again?—A. Yes, sir.

Q. How did you estimate it?—A. He took it down and put it into the wings.

Q. And did you estimate it at so much per cubic yard?—A. Yes; and he put in on the back the rubble.

Q. Then he got credit for the stone in that wall twice?—A. He got paid the second time for rubble work.

Q. And the first time he got paid for it as range rubble work?—A. Yes, sir. These two wings it was necessary to have at the point where the streams come together. There was some dressed stone work there, and I told him then that I was directed to take that wall down and make it conform to the other style of work. I told him that if he would take it down and use it that he might put it in to face that work around there and back it up with concrete.

Q. Then about 300 feet of masonry was laid on each side under the first plan?—A. I cannot tell exactly.

Q. You will give us the figures in the morning, will you?—A. Yes, sir.

Q. Then, in your estimates that you furnished on which the contractor drew his pay, you estimated that wall at 5 feet at the bottom and 3 feet at the top, did you?—A. Yes, sir.

Q. And how did you estimate the arch?—A. I will have to refer to my notes.

Q. You could not tell us now what was the area of any particular section, could you?—A. I must refer to my notes.

Q. Then I will not go any further than that this evening.

By Mr. PAYNE:

Q. According to the original contract, I wish you would show us on this map how far down the stream or up the stream the work commenced [Handing the map to witness].—A. (After looking over map.) This may or may not be constructed according to the dimensions. If it is constructed according to these dimensions here, the work commenced just below the juncture of these two creeks at the corner of Whittington avenue and Central avenue.

Q. And goes down to what place?—A. Down to the north line of Reserve avenue.

Q. And it has been extended up the stream about 150 feet, hasn't it?—A. Yes, sir; about 150 feet up the west branch of the creek, and about 80 feet up the north branch.

Q. And that was done by your order, was it?—A. It was done by the Secretary's order.

Q. And that was done about the time you wanted to find use for this granite?—A. No; when Mr. Joslyn was here he went up and took a look at the work. There were two walls there, and he said to me, why did you stop your work here? He said it would not do to leave it that way, and the work should be extended so as to take in the two creeks; that it was dangerous to leave the work in that shape; and I asked him how far I must extend it, and he said, extend it as far as you think it necessary to make a good job of it.

Q. At the time that work commenced and the plan was adopted, the Government owned no property fronting on Central avenue north of Fountain street, did it?—A. No, sir.

Q. Did it own land in the rear of these streets?—A. Yes, sir.

Q. About what distance does it extend from Fountain street to the north end of the work under the original contract, taking the center of the street?—A. About 1,200 feet, or a little over.

Q. You say that these were the limits of the work fixed upon [indicating on map]. How are they fixed and in what way—by written or by verbal order, or how?—A. The north limit was fixed by Captain Handbury.

Q. In what way?—A. By placing the line through and designating the point.

Q. By stake?—A. Yes, sir.

Q. Was it ever done by any specifications, or was it in his specifications?—A. He prosecuted his plan here in person when he was in charge of the work, and we went out together, he tracing the line there and I laying it out under his direction.

Q. Then he placed his stakes there, and also at the southern end?—A. Yes, sir.

Q. Now, colonel, in estimating the amount of work done, did you carry out the price per yard, for instance, of the rubble work?—A. Yes, sir.

Q. And at what price did you estimate the skewbacks?—A. The same as the rubble work.

Q. Did you estimate it all at \$10.50?—A. I estimated it all at \$10.50 per cubic yard.

Q. Had you ever figured to see what the difference was in the entire work on your estimate at \$9 per cubic yard for the rubble work and \$18.45 per cubic yard for the cut-stone work?—A. I have never made any figures since the contract was modified. Under the second contract we had the arch to be made of stone instead of iron girders and brick.

Q. I do not mean that. I mean what your estimate was on your plan and what the amount was under the contract?—A. No, sir.

Q. When was that survey made?—A. A year ago last summer.

Q. That was after the contract was let, was it not?—A. Oh, no; before that, in the summer of 1882.

Q. Do you know why no mention of that was made in Captain Handbury's specifications or contract?—A. No. When the order was made to lay off the work for the contractors, Captain Handbury came over and brought his plan with him, and I took the instrument out, and with his assistance we together located the line.

Q. Was that after the bid was accepted?—A. Yes, sir.

Q. Then you are mistaken in saying that the survey was made in the summer of 1882?—A. Oh, this survey that he and I made was made last summer. His survey was made the year before.

Q. That was when he got up the plans and specifications, was it?—A. Yes, sir.

By Mr. STORM:

Q. He certainly, as an engineer, could easily have gotten the distance, could he not?—A. He did so, I presume. The only data I had to go by were the designations of points that he made himself. I think he designated the closing points.

Q. Your modifications of the plan, of course, discarded the iron beams and brick work?—A. Yes, sir.

Q. And your idea is that the present arch is stronger and will support more weight than under his plan, if you had built the side walls of dressed stone, is it?—A. Oh, yes. The iron girders would have extended but three inches on to that iron, and I would not for that point consider it sufficient. The spaces between the walls were to be 17 feet. The beams were specified to be 17 feet and 6 inches.

Q. What does the term "range rubble work" mean? Are the stones in courses in that work, or how is it?—A. Yes, sir.

Q. That is the meaning of that expression, is it?—A. Yes, sir. There is one other point I would like to speak on. The question has been raised here several times in regard to the space required to carry off the volume of water. In making our calculations for work of that kind, I made our plans for any ordinary high water, and no extraordinary thing is provided for. Now in order to obtain the requisite space for the water I had to go back to data of the floods and one of the highest floods, as the oldest inhabitants tell me, which ever occurred here. I took that flood at its highest point from any stone or mark on the side of the stream that it could be obtained from. That volume in the clear space required a little over 130 feet, with about the same fall that we give to this work here. We constructed this with a view to its being amply sufficient to carry off any ordinary amount of water. I have an exact measurement of the height of floods they have had here. We allow something over 150 feet for the arch.

Q. You say that this is only about 150 feet?—A. That is the capacity.

Q. What is the area of the cross-section?—A. About 153 feet, perhaps.

Q. The original plan was 180 feet, was it not?—A. The original plan was for the walls to be 17 feet above the arch and widened out to 20 feet below, and when the Secretary was here and I discussed the matter with him, I obtained his consent to make the walls symmetrical throughout.

Q. Well, how far are they apart now—the walls?—A. Seventeen feet, and the same throughout.

Q. Do you want it to be understood as correct that you only make provision in this culvert for ordinary high water and no provision for extraordinary high water?—A. I mean this by that: that we make provision for the ordinary highest water, but I can illustrate myself better by saying, suppose we had a cloud burst or anything of that kind, of course I would not take that into account. Such a thing has never happened here and may never happen, and then may happen in a week.

Q. But you do not make any calculation for the very highest water that may come from freshets?—A. I say that I think it is sufficient for any probable floods, but not for anything extraordinary or out of the regular course of nature.

Q. That is a pretty close calculation, as this culvert is built for eternity. There

was a flood above here once that carried off a great deal of timber.—A. That is not likely to happen here again. All the mountain slopes are stone and the water does not stay on them.

Thereupon (at 11 o'clock p. m.) the committee adjourned to meet again to-morrow morning at half past nine o'clock.

WEDNESDAY, *March 19, 1884*—9.30 a. m.

Committee met pursuant to adjournment.

HENRY P. M. BIRKINBINE, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside?—Answer. Philadelphia.

Q. Are you here on a visit to Hot Springs?—A. I have been here for a few days.

Q. What is your occupation?—A. I am an engineer.

Q. Civil or sanitary, or what?—A. Hydraulic engineer. My specialty is water-works construction.

Q. Well, sir, have you observed the Government work on the creek here at Hot Springs?—A. I gave it a cursory examination.

Q. Have you examined closely enough to see whether the plans and specifications, after which this work is being done, are proper ones for work of this character?—A. I have not seen the plans and specifications.

Q. For instance, the creek is to be walled in and arched over, the bed to be cleared and straightened out, and do you suppose that that is a proper plan to accomplish the result desired?—A. So far as I understand, it is.

Q. Have you noticed the material being used, as to whether it is proper or not for this work?—A. It is such material as I would use for the same purpose.

Q. Is it put up in a workmanlike manner?—A. It seems to be.

Q. Have you noticed the stone?—A. I have looked at it.

Q. What kind would you call it?—A. I am in a new country. I came from Pennsylvania, where we have none of this stone. It seems to be a species of slate stone.

Q. Is it durable?—A. Yes, sir.

Q. Have you noticed the cement?—A. I have not noticed the cement. I picked up the gravel that they are using in making the mortar, and it is something new to me.

Q. Do you think that good mortar?—A. It is fair.

Q. Do you regard it as first class?—A. Well, I do not know what material you have here.

Q. Would you regard it as first-class mortar?—A. Sufficient for that purpose, yes, sir.

Q. You know nothing about the rainfall here do you?—A. No, sir.

Q. And you could not speak as to whether or not the opening in this culvert is of sufficient capacity to carry off the rainfall?—A. It has a very large apparent capacity.

Q. Now would you suppose that this creek could be used for sewerage purpose without detriment to the public health?—A. Well that is a question. I should think from the appearance that if the flow is confined to the center that there would be water enough to neutralize anything of that sort.

Q. How long have you been engaged in your profession?—A. As a profession, since 1856.

Q. And you have been associated with whom? What engineers, if any?—A. I have had no associates of engineers. I was associated with Mr. Troutville as an expert. Several years of my experience was as chief engineer of the Philadelphia water-power.

By Mr. PAYNE:

Q. Have you had experience in building culverts?—A. Not much in culverts. My experience has been with water supply.

By Mr. STORM:

Q. Mr. Birkinbine, are you competent to judge of stone masonry?—A. I have had it done, and have done it by direction.

Q. What kind of work would you call the arch of this culvert? How would a mason classify it?—A. It is very hard to get as good a stone as you have here for that purpose.

Q. I am speaking simply of the character of the masonry?—A. I call it range rubble work.

Q. Why, the engineer of the Government, who is superintending its construction, says it is not range rubble work?—A. What I understand by that is, that the stone is so selected as to range it.

Q. And you think, from your examination, that it is range rubble work, do you?—
A. That is, the stone is so selected as to form a range almost continuous, connected with each other and overlapping.

Q. And you would say, as an engineer, should the question be asked you, that it was range rubble work?—A. So far as I know that is the character of it.

Q. Were you under the arch to see?—A. I was on top.

Q. The top does not disclose whether it is range or common rubble work. You do not pretend to say it lays in courses of the same thickness or length, do you?—A. No; not exactly.

Q. The specifications for this work calls for clean, sharp sand, free from vegetable matter and other dirt. Is that the character of the sand used on this work?—A. I think there is a little clay in that sand, but I do not know as there is any vegetable matter.

Q. Have you gone up the street there to see where they get the sand?—A. No; I only noticed it as I passed.

Q. Did you notice that the stones laid in the arch were seamed?—A. Do you mean had cracks in them?

Q. Yes.—A. Yes.

Q. Is that as good as stone free from seams?—A. If exposed to the atmosphere it is not so good.

Q. The atmosphere would get in this culvert, would it not?—A. Frost will not.

Q. But you spoke of the atmosphere?—A. I meant by that atmospheric action.

Q. Witnesses have testified that icicles hung under this arch the past winter, and if that is the case the arch is subject to frost, is it not?—A. Well, not if it continues it would not be.

Q. Well did you notice the granite there?—A. Yes.

Q. Would you call the stone used in the arch as good as that blue granite you saw?—
A. I think so for that purpose.

Q. Why would not this stone be as good for the arch as the side walls?—A. That stone would have made good side wall.

Q. If hard stone is necessary anywhere it is in the arch, is it not?—A. It is all hard stone.

Q. But if good stone is needed anywhere it is in the arch, is it not?—A. I consider it all good stone.

Q. And you do not make any distinction between stones with seams and stones that are solid?—A. Oh, yes.

Q. But do I understand you to say if you were putting in an arch you would not care whether the stone had seams or not?—A. Not if they were not exposed.

Q. But suppose they were subject to pressure?—A. Pressure would not open the seams.

Q. Well, what is the use of putting mortar in the stone?—A. To fill up the seams.

Q. But you cannot get mortar into the seams of these stones?—A. They wedge in.

Q. But the difficulty is that these seams are not in wedges, but are parallel seams.—
A. Yes, sir.

Q. And you make no distinction, then, as to the durability of these two different kinds of stones, the blue granite and the stone now used?—A. If it is covered over it does not make any difference. I should not have any apprehension in using the material myself.

By Mr. PAYNE:

Q. These seams in these rocks, do they run parallel with the face of the wall or perpendicular to it?—A. I noticed there were cracks in the stone, but nothing that I would hesitate in putting in myself.

Q. Did you notice whether these seams ran parallel or perpendicular, or would it make any difference?—A. Well, it is bound in every way there. It might at the outer end, but when it is a continuous job it is different.

Q. Suppose seams ran perpendicular to the face of the wall, would it be detrimental to the face of the arch?—A. I do not think there would be any detriment; not in an arch for that purpose.

Q. Did you notice the character of the rock there to see whether it was dressed to uniform thickness or not?—A. Do you mean the arch stone?

Q. Any of the stone?—A. The granite could be dressed. I do not know whether the other could.

Q. The granite could; but the stone with seams in it, did you notice whether it could be dressed to a uniform thickness?—A. I have not examined sufficiently to say.

Q. Well, in range rubble work—does that call for ranges or stone of a uniform thickness, or otherwise?—A. Well, I would, if it was to be range work without the rubble in it, call for stones of a uniform size; but, if it was called plain rubble work, there should be breaks in continuous line.

Q. What is meant by rubble work, anyway?—A. I understand it is stone taken as you find it and built into a wall, and when you call for range rubble work they

construct the walls to form interlapping and continuous lines as near as possible. If simply range work is called for, you would be expected to cut the stone specially and place it in parallel lines entirely.

Q. Does rubble work mean undressed stone?—A. That is what I understand.

By Mr. STORM:

Q. It means undressed on the edges, does it not?—A. It means to get it as nearly in parallel lines as you can, with such breaks as will not affect the integrity of the work. If you say range work, it means continuous lines.

Q. And you would call this range rubble, would you, this work upon the Hot Springs Creek?—A. I think it is very good, so far as I have examined it. I thought it was remarkable work for a town of this kind to do. I did not then know the Government was doing it.

By Mr. PAYNE:

Q. When you found the Government was doing it what did you think?—A. I still thought it was good work.

Q. Did you make a careful examination of the sand?—A. I could get better sand, but I used precisely that kind of sand often. It is a gravel mixed with a little clay, and it simply takes longer time in setting, but I think it makes just as good a job as clean, sharp sand, provided it has no dirt or matter in it that will rot and fall out.

Q. When that cement was put in there with that sand and had sufficient time to set would you expect to find it hard or otherwise?—A. Yes, it will be hard.

Q. How hard?—A. I simply broke off a piece. I did not test its hardness, but found it was quite hard.

Q. Did you try a cold chisel or common bit auger on it?—A. No; I simply broke a piece off and found it hard.

Q. Would the action of the water have any effect on it?—A. I do not think it would. It has not so far as I can see.

Q. And do you think it sufficient to stand the action of the weather?—A. Yes, sir.

A. A. FLEMING, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside?—Answer. At Hot Springs.

Q. What is your profession?—A. Civil engineer.

Q. How long have you resided here?—A. I think I have resided here since 1877.

Q. Have you observed the work being done on Hot Springs Creek?—A. Yes, sir; I have.

Q. Do you understand the plan of the work?—A. I have not examined the plans.

Q. You have seen the work there have you not?—A. Yes, sir.

Q. Do you think that a proper plan for a work of that character?—A. Yes, sir; I do.

Q. Have you noticed the material being used?—A. I have noticed it as it was put in.

Q. Do you regard the material as good and durable?—A. Do you mean the stone?

Q. Yes.—A. Yes, sir; I think so.

Q. Did you notice the blue granite that was put in at first?—A. Yes, sir.

Q. Do you think that a good building material?—A. I think it is.

Q. Well, the stone subsequently used was blasted in the side of the mountain near by. What do you think of that?—A. I think that is good stone for that class of work.

Q. What sort of stone is that?—A. I do not know.

Q. Do you know its geological classification?—A. No, sir.

Q. Did you ever see that kind of stone used before?—A. Not except about here.

Q. You have seen it used here before, have you?—A. Yes, sir.

Q. And you form your ideas by actual observation, do you?—A. Yes, sir.

Q. How long have you seen that used for work here?—A. For some years in different places.

Q. From your personal observation do you think it forms durable work?—A. It makes good strong work.

Q. Have you noticed the workmanship, the manner in which this stone is put in. And is it good, strong, durable work?—A. It is.

Q. Is the mortar, and cement and sand all first class?—A. I have not examined the sand particularly, sir, but I have seen the cement after it set.

Q. Did you examine it carefully after it set?—A. I have seen it.

Q. Have you examined it?—A. I have once or twice; not often.

Q. At what points of the work?—A. I saw it, sir, very nearly opposite the opera house, which was about the only time I took any particular notice of it.

Q. Did you make an examination of the cement at that point?—A. Not particularly.

Q. At what point did you make particular examination?—A. I did not make any particular examination.

Q. Are you prepared, then, to say whether or not this is good cement?—A. Yes, sir; I think so.

Q. But you only speak from a superficial examination and not a careful examination?—A. No, sir; I was employed by the city.

Q. For what purpose?—A. City engineer.

Q. Were you employed by the city to examine that work?—A. No, sir; not at all. As I say, I was not employed to examine the work.

Q. You are the city engineer, are you?—A. Yes, sir.

Q. What are your duties as city engineer?—A. I have to set the grades and give them the lines, and also superintend whatever work they do.

Q. You mean on the street, don't you?—A. On the street, sir.

Q. What has been your experience in the construction of masonry work?—A. I have been on public works some thirty odd years, and on every work there has been more or less masonry.

Q. And you are familiar with this character of work, are you?—A. Yes, sir.

Q. And from that knowledge acquired by your personal experience do you regard this work upon the Hot Springs Creek improvement good work?—A. I regard it as good work.

Q. How would you classify that work?—A. I would call this rubble masonry.

Q. First class, or second?—A. It would not be first class.

Q. I mean as to rubble masonry.—A. Yes, sir.

Q. Have you ever made any measurement of this work?—A. No, sir.

Q. Do you know its present condition?—A. I pass it every day.

Q. Well, could a reliable measurement be made of that work now by a competent engineer?—A. I should not like to undertake it myself. I think that the walls no one could measure but some one who had been on the work all the time. The arch could be easily measured, but as to the walls, they are deeper in some places than in others.

Q. Could not you manage to strike a mean average of depth of wall and make an approximate measurement of it?—A. I would not like to attempt to do it.

Q. I mean could it be done?—A. Not with any accuracy.

Q. Could you come within a thousand yards of it?—A. Yes, sir.

Q. Could you come within five hundred yards of it?—A. I ought to.

Q. Do you think you could come within two or three hundred yards?—A. Yes, sir.

Q. Do you think a competent engineer could make a measurement now and arrive at an estimate within 200 or 300 yards of the actual work done?—A. He would have to examine those points very carefully.

Q. Well, could he make an estimate so as to determine whether or not this work went over or fell short of the specifications? For instance, could he make a measurement of the walls of the creek to determine whether or not they formed in amount of work the number of cubic yards required by the specifications and the contract. Could that be done?—A. Not accurately.

Q. I mean could it be done with approximate accuracy?—A. Yes, sir.

Q. Now, taking the estimates of the engineer who prepared the plans and specifications for blasting the bottom of the creek, could an inspection of that work be made and an approximate estimate be arrived at of how many cubic yards of stone were taken out of the bottom of the creek by blasting?—A. I doubt it, sir; I do not think there could be, sir.

Q. What would be the difficulty in measuring this work now?—A. It would be to find how deep the walls would be.

Q. Would that be the only difficulty?—A. That would be the only difficulty I know of.

Q. Well, could not the depth of the wall be reached with little trouble in each section. For instance, at one corner in each section of the work could not a depth be reached without much difficulty?—A. I have not been around on the work sufficiently to say.

Q. What do you think? Could not that be done in the Mississippi River?—A. Yes, sir; but it would take time and patience.

Q. And could not it be done easily in a small stream like this? Could not you take the depth of the wall in each section of that work?—A. I could.

Q. Could not it be done with comparative ease?—A. It could be done, certainly.

Q. It could be done without much difficulty, couldn't it?—A. No.

Q. Taking that data could not a reasonably accurate computation be made as to the amount of work done there, by a competent engineer?—A. I suppose so.

Q. There would not be much difficulty about that, would there?—A. Not a great deal.

Q. Would there be any difficulty in estimating the walls above the foundation and

the arch? The difficulty, as I understand you, would consist in ascertaining accurately the depth of the wall under the surface?—A. Exactly, sir.

Q. Are you acquainted with the quality of this stone as to hardness? This stone being used on the Hot Springs Creek improvement?—A. I do not exactly understand the question.

Q. I will put the question in another form. What do you consider this stone, a hard or a soft stone?—A. I consider it a hard stone.

Q. Do you consider it a difficult stone to dress?—A. Very.

Q. Are you experienced in quarrying stone and dressing it?—A. I have seen a good deal of it done, sir.

Q. What would you think would be the cost, from your knowledge of the hardness, of dressing this stone?—A. What would be the cost of the work, do you mean?

Q. What would be the cost of preparing them as dimension-stone?—A. I really could not say.

Q. Could you give an opinion in regard to it?—A. No, I could not.

At this point the chairman stated that he thought it would be well to get the engineers to measure the work, and he requested Mr. Lowe, the engineer who accompanied the committee from Washington to the Hot Springs, to do so, in connection with other engineers. The following statements were made in this connection:

MR. LOWE. It is hard to get the cubic contents of that wall. It is easy to measure the length, but how are we going to measure the thickness at the bottom?

THE CHAIRMAN. We think it can be done. This gentleman who has just testified thinks there will be no difficulty about it.

MR. LOWE. If he can measure the thickness of the wall at the bottom he can do more than I can.

MR. STORM. He assumes that it is 5 feet thick at the bottom.

THE CHAIRMAN. The specifications show that, and if it is any thicker than that the Government cannot pay for it.

MR. FLEMING. I suppose we may assume that the thickness is 5 feet.

MR. LOWE. If I am allowed to assume the thickness of the wall, of course that is another thing, and I can of course measure it.

MR. STORM. I do not want to assume anything. We want it measured, and the contents ascertained with some accuracy, and if you (Mr. Lowe) cannot do it, say so.

MR. LOWE. It is impossible to measure the thickness of a wall that is six or eight or ten feet under ground without uncovering it.

MR. PAYNE. That is so.

MR. STORM. Is there any way of excavating on the outside or getting an iron bar down on the side of the wall to get the slope?

MR. LOWE. There is no difficulty in excavating if you allow the time to do it. Certainly it is not possible for me to stay here long enough to excavate pits.

MR. STORM. We do not want you to do it.

MR. LOWE. Or to see it done.

MR. PAYNE. I think if you can do this you can make what measurements are possible from what appears there, and then come back and give us whatever results it shows. If you cannot get the thickness of the wall come back and report it, and we will get evidence from those who put up the walls as to the thickness. You can give the length and height without giving the thickness.

MR. LOWE. Well, how will I get the cubic contents?

MR. PAYNE. We will find a way to do that.

MR. LOWE. It would be very difficult to measure it even if considerable time was taken to uncover the wall. Of course if it is uncovered you can measure the thickness of the wall. As to getting the depth of the wall, of course we must sink pits, and we would probably have to pump the water out.

MR. STORM (addressing the witness Mr. Fleming):

Q. Colonel, would you characterize the masonry of that work there in the arch as range-rubble work?—A. That is common rubble work.

Q. And not range-rubble work?—A. Simply rubble, and not considered as first class.

Q. Is the sand used there a clean, sharp sand and free from loam and vegetable matter or other dirt?—A. I never examined the sand particularly.

Q. And you do not know enough about the sand to give an opinion?—A. I have seen the sand only in a cursory way.

Q. The stone used is not as good quality of stone as the blue granite, is it?—A. It is good quality for rubble masonry.

Q. That is because the stone does not have to be worked down to any particular thickness, is it not?—A. Yes, sir.

Q. This stone will not dress for range masonry work, will it?—A. No, sir.

Q. It is troublesome when you strike the seams, is it not?—A. Yes, sir.

Q. Is it not the tendency of this stone to break up in squares?—A. I do not think so.

Q. It will not dress down on its face, but you must work it on its seams?—A. Yes, sir; I have seen it dressed.

Q. If struck with a hammer it would break in cuboid, would it not?—A. Well, I do not know.

Q. Have you not seen blocks in there that had these iron seams in them?—A. I have seen some.

Q. Well, you would hardly call such a stone as that in any sort of masonry as good, would you?—A. Pretty good.

Q. Is it as good as the granite without seams?—A. I would not call it first-class masonry.

Q. Do you think it will do for this kind of masonry?—A. Yes, sir; as good as required.

By Mr. PAYNE:

Q. Did you say whether this work was sufficient to answer the purpose?—A. I think so, sir.

Q. And the seams that are in the stone, do they run all in the same general direction or parallel or crosswise?—A. I have not noticed that particularly. I think that is as good an arch as I want to see for that kind of work.

Q. Which is the stronger, range-rubble work or rubble work?—A. Range-rubble work is the strongest.

Q. On account of the uniform courses?—A. On account of the uniform courses.

SAMUEL HAMBLÉN recalled.

By Mr. STORM:

Question. I understood you to say last evening that you had the memorandum of cross-sections on which you made your estimates, and that you would give the date to the committee this morning. Have you them ready now?—Answer. No, sir.

Q. Can you give them to us this evening?—A. They are scattered around in my different note books, and I spent part of the evening yesterday when I left here in looking them up.

Q. They had finished the building of the walls and the filling had been put in, had it not, when you made your estimates?—A. In some cases it had. I was on the work every day and examined it, and I think while the work has been in progress there has never been a day but what I have been on the work and examined it.

Q. When you measured the work in order that the contractors might receive their pay, had the walls been filled in?—A. In some cases.

Q. They filled in as they went along, did they not?—A. Yes, sir.

Q. And you did not measure until the wall got up to the height required by the plan, did you?—A. No.

Q. Then, when you measured it, the base of the wall was concealed?—A. Yes, sir.

Q. How did you estimate as to the width of the wall at the base when you came to make up your calculations?—A. Five feet at the base.

Q. And that width you allowed whether you knew it was that width or not?—A. I knew the wall was generally that width, and frequently I measured it as they went along, as we always do in work of that kind. I was on the work every day, and if my eye told me that there was a possibility of the work being too small I tested it, and if I found there was a discrepancy in any way I called attention to it, and had it rectified.

Q. Is this estimate based on experience as to the actual width of the wall, and is it based upon actual measurement made by you at the time?—A. Yes, sir.

By Mr. PAYNE:

Q. How did you get at the depth?—A. In the same way. I was on the work every day, and where I found it running below grade I made a note of it.

By Mr. STORM:

Q. Did you make that note on paper?—A. Yes.

Q. And did you mark on the paper the point in the stream where the wall went below the surface?—A. In some cases. If I had sufficient time I should have drawn an outline of the thing, but I have not had that.

Q. You knew that when they excavated for the wall that the space would be filled by the wall, and when you came to measure it you must have made a memorandum of that part of the wall which went below the surface, and if you could show this memorandum to the committee as to the depth the wall went below the rock surface we could arrive at a true calculation. Have you this data?—A. Yes, sir; I think I have that in full.

Q. You have marked on your diagram the points where the wall goes below the rock, have you not?—A. No, sir.

Q. You have data from which you could make a diagram or give us figures, have you not?—A. I made notes.

Q. How many feet do you think they went below the surface in bed rock?—A. The creek was irregular. In some places they would go down a short distance and in some places quite a distance and then rise to grade again. It is very irregular, but I think I can find all the data necessary as to this.

Q. It is not possible now by physical inspection to find where the wall goes below the surface, is it?—A. Yes; by taking time enough.

By Mr. PAYNE:

Q. The bottom of the wall does not commence above grade line at any point, does it?—A. Yes.

Q. You had a grade line, and the bottom of the wall did not commence above that grade line, did it?—A. No.

Q. That is what I meant. It frequently went below it, did it not?—A. Yes, sir. The bottom of the masonry above that grade line is where there is solid and substantial rock. I advised the contractor to scalp the rock and blast it through the center and leave the natural rock in its bed, because I considered it better that way.

By Mr. STORM:

Q. In the measurement, of course, you allowed the least depth to which it was blasted?—A. I told them that if they blasted the bed and locked the wall securely on the bed, so that the wall would be safe, I would allow them that in the height of the wall.

Q. Where there was great depression, was very much concrete used?—A. Where the depression was great it was raised by concrete, and where the rock was high it was scalped off.

Q. Can you tell us, on your estimate for this work, what proportion of the work is done and what it would cost to complete the work under your plan?—A. I will make that out.

Q. I wish you would do that.—A. Yes, sir, I shall do so, and hand it to you.

L. J. BARBEE, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. What is your occupation?—Answer. Bookkeeper for S. Walton & Co.

Q. What was the price paid for sand per cubic yard for the first three months of this work?—A. \$2.25 per load.

Q. Where did this first sand come from?—A. It came from Whittington avenue, I think. I was never at the sand bank myself.

Q. Are you using that sand still?—A. We are still using the same sand.

By Mr. STORM:

Q. Do you know what the sand cost after that?—A. No, sir; I cannot tell.

Q. Did you get any sand from the river?—A. Well, not that I know of.

Q. Were you with this firm at the commencement of the work on this creek?—A. No, sir; I was not.

Q. Who composes the firm of S. Walton & Co.?—A. The parties that are doing the creek improvement.

By Mr. PAYNE:

Q. Who is the company?—A. George H. Bardwell.

Q. The original contractor?—A. Yes, sir.

By Mr. STORM:

Q. How does it come to be S. Walton & Co. if George H. Bardwell was the original contractor?—A. I suppose that is an arrangement between themselves.

Q. Then it is S. Walton and G. H. Bardwell, doing business under the name and style of S. Walton & Co.?—A. Yes, sir.

By Mr. PAYNE:

Q. Where does Mr. Walton reside?—A. He resides in the Hot Springs now.

Q. Where did he reside previously?—A. In Charlestown, W. Va.

By Mr. STORM:

Q. Do you remember anything about a suit brought against this firm by parties to whom they owed money?—A. No, sir; I do not.

Q. You do not know anything about the funds of this company being attached on a garnishee process, do you?—A. No, sir; I do not.

Q. You do not know of anybody else claiming an interest in the firm, do you?—A. No, sir; no one that I know of.

Q. Who did they purchase the sand from?—A. Michael Haley was the party who they purchased the sand from.

Q. That is the sand used on Whittington avenue?—A. Yes, sir.

GEORGE G. LATTA, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. You were here at the time the Hot Springs Commissioners awarded this property, were you not?—Answer. I was, sir.

Q. Well, was certain of the property awarded to charitable institutions, churches, &c.?—A. Yes, sir.

Q. What has ever been done with that?—A. Have the institutions taken charge of it, do you mean?

Q. Have the churches taken charge of it?—A. The churches have taken charge of their property, and the portion awarded to the county of Garland was taken charge of.

Q. That was awarded by the Commission for what purpose?—A. They were empowered under the law to award a location for buildings for county purposes.

Q. Did the law authorize and empower the county to do anything other with it than to erect upon it county buildings?—A. I think that was the purpose.

Q. How did the county or city get rid of it?—A. The county judge, by virtue of his authority and power under the laws of the State of Arkansas, as construed by him, leased the property to some gentlemen here for a period of ninety-nine years.

Q. The committee is charged with inquiring into everything connected with the Government property at this place, and we want to know the facts as to whether or not the law authorizes any such disposal by the county?

Mr. PAYNE. Here is the law. It is as follows:

“SEC. 19. That a suitable tract of land, not exceeding five acres, shall be laid off by said Commissioners, and the same is hereby granted to the county of Garland, in the State of Arkansas, as a site for the public building of said county: *Provided*, That the tract of land hereby granted shall not be taken from the land reserved herein for the use of the United States.”

By the CHAIRMAN:

Q. I want to know of the witness if there is any authority to devote this land to any other than the purpose of putting up public buildings?—A. No, sir.

Q. What power was there to lease it?—A. It was decided by the county judge that he had power under the general statute vested in the judge of the county.

Q. Can you furnish the committee with that statute?—A. Yes, sir.

By Mr. PAYNE:

Q. What is the rental of it?—A. A thousand dollars.

By the CHAIRMAN:

Q. Per year?—A. No; for the whole time.

Q. A thousand dollars for 99 years?—A. Yes, sir; a thousand dollars for the whole time; it runs for 99 years to avoid the principle of perpetuity.

Q. What sort of proceedings did the county court embark upon to sell that?—A. By order of the court granting a lease to these gentlemen for that period of time.

Q. What is the value of that property?—A. Well, the value of that property now, I would consider that tract of land now worth about \$10,000.

Q. How much of it is there?—A. I think a fraction over three acres. I think they gave the county between three and four acres; I think about three and a half.

Q. Where located?—A. Located southwest of this point (Sumpter Hotel), about 500 yards.

Q. What would be a reasonable rental value of that property? What could it be rented for without improvements?—A. Well, to lay it off in residence lots, and that is about all it is fit for, it would lease for about a \$1,000.

Q. A year?—A. Yes, sir. You see it is contiguous to the business property, and residences there would be very desirable. Now, if it was located elsewhere it would not rent for that, but subdivided into 50-foot lots and leased in that way I am satisfied if I owned it I could rent it for that.

Q. Rent it for what?—A. For \$1,000 a year.

Q. That would be \$99,000 instead of \$1,000?—A. Yes, I would consider it worth a \$1,000 a year to me if I had it.

By Mr. STORM:

Q. What did the county do for a court-house site after it leased this?—A. After this ground was leased the county judge purchased property from Mr. Thomas Howard, on which there was a residence at the time, and this residence was converted into a courthouse.

Q. Is it in the town here?—A. Yes, sir; in the town.

By the CHAIRMAN:

Q. Is it a proper place for a court-house?—A. Very inconvenient indeed.

Q. Could not the town build a court-house for about what they paid for that?—

A. Yes, sir; you could build a very nice court-house for that in this county. At least, counties due west of us have very nice court-houses that they have built for \$5,000. The county court-house in Montgomery County, which is a very nice one, cost them only \$5,000.

Q. What did the county give for this property purchased from Mr. Howard?—A. Five thousand dollars.

Q. They could have built on this tract here that was awarded to them for that amount of money, could they not?—A. Yes, sir.

Q. And would it not be more convenient than the court-house is now?—A. Yes, sir.

Q. How did it come that they made such a liberal arrangement about this property that the Government had given them?—A. It seems that the county judge wanted another location. He wanted a location due south of here, and endeavored to secure that knoll, and it being a private claim and being valuable, the Commission decided not to award this other land to the county, and this other land being near they did award it. The county judge became very angry at this, and determined not to build on it.

Q. Would not that have been a good place for a court-house?—A. Very desirable. It is within three minutes walk of any business portion of the city, and convenient for witnesses and accessible to anybody who wants to examine the records. I suppose it has been leased within the period. I have not examined this lease. I will say, however, in reference to this matter, that the county judge offered to lease that property to quite a number of parties at the same price he leased it to the parties who now have it. He offered it to me for a thousand dollars.

Q. You did not think you could get a very good title to it did you?—A. I did not want it. In fact I thought the county ought to have it and I declined to purchase it, although I considered it a good trade, indeed an admirable trade. Finally he got some purchasers. He determined to sell it after the award was made by the Commissioners, and he was so bent on that that nothing could change him from his course. Our court-house is very inconvenient now, and could not be more so.

By Mr. PAYNE:

Q. Does the county judge have authority under your statute to dispose of land of the county?—A. He considered that he had, and some good lawyers think he had.

By the CHAIRMAN:

Q. Do they think that he can divert property from what the donors intended?—A. There are authorities here that the county court has absolute control over county property.

Q. But that is property which the county really owns?—A. Well, under our statute law we have the power. I do not think it is questioned by any lawyer that the county court has absolute control of county property.

J. P. MELLARD being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you live?—Answer. South of the city about a mile.

Q. What is your business?—A. Real-estate agent.

Q. This committee is here, Mr. Mellard, charged with the duty, under resolution of Congress, of inquiring into the public work being done upon the creek here, as to whether or not it is being done after a proper plan, and whether the material and workmanship is proper for a work of this character, and to inquire generally into the Government property here, and we thought perhaps we might obtain some information from you on these subjects. Now, can you tell us anything about this Hot Springs improvement; whether it is a work required by public necessity, and whether it is being done in a proper way?—A. Well, I have not investigated that work. I have once or twice looked at it, but never succeeded in satisfying my mind about it one way or the other.

Q. And you are not informed on that subject?—A. No, sir.

Q. Do you know anything about the hot-water privileges? Do you know whether the bath-houses are conducted in a manner to meet the requirements of invalid visitors and those who patronize them, and can you give us any information on that subject?—A. No, sir; I have very little to do about bath-houses and pay very little attention to them.

Q. How long have you been here?—A. About seven years, sir.

Q. What was the population of this town when you came here?—A. My recollection is that it was about two thousand.

Q. What is the population now?—A. About five or six thousand.

Q. Is it a place of rapid growth?—A. Yes, sir.

Q. Do you know anything about the lot of ground given by the Government to the county of Garland for court-house purposes?—A. Yes, sir.

Q. How far is it from the business part of the town?—A. I cannot say how many feet, but it is very near the business part of the town.

Q. Is it within two or three hundred feet?—A. I expect it is about three or four hundred feet.

Q. How much property is embraced in that tract?—A. I think it is about 400 feet square. I am not sure about that.

Q. What has been done with that property?—A. It was disposed of by leasing by the county authorities.

Q. Well, did the public interest require that disposition to be made of it?—A. Well, there was a difference of opinion on that. I expressed myself at the time, and express myself now, as opposed to it.

Q. We want to know your opinion.—A. That is my opinion.

Q. You do not think it ought to have been disposed of in that way, do you?—A. No, sir.

Q. Upon what terms was it disposed of or leased for ninety-nine years?—A. A thousand dollars.

Q. A thousand dollars for the ninety-nine years?—A. Yes, sir.

Q. What is the value of that property now, if it was put on the market?—A. Well, now, you see there has been a great deal of improvement made here since then.

Q. Well, I mean what would it have sold for at the time? A lease of ninety-nine years is pretty good, and one man would have no use for it longer than ninety-nine years, would he?—A. Well, hardly.

Q. What would have been the reasonable value of that property?—A. At the time?

Q. Yes.—A. Well, at the time I thought it worth about \$4,000.

Q. What would it lease for a year, if put up to the highest bidder?—A. Of course, now it is worth a great deal more than that. What it would sell for now, without any improvements, it is hard to say. It is very valuable for resident property.

Q. You are a real-estate broker and you ought to know the value?—A. I have not figured on it lately. I think there was 50 feet of ground about there that sold not long since for \$900.

By Mr. PAYNE:

Q. Fifty, by what?—A. It is a short lot; perhaps 140 feet, or something like that. That is the latest sale I know of there. It was divided and subdivided, I do not know how many times, and it requires some little attention to estimate what the whole piece of property would be worth. The rear lots of course are not worth as much as the front ones.

By the CHAIRMAN:

Q. Do you know the actual number of visitors to Hot Springs?—A. No, sir.

Q. Does the number increase or decrease?—A. I believe the number is steadily increasing every year.

Q. People come here from all parts of the world, do they not?—A. Yes, sir.

By Mr. STORM:

Q. You buy real estate, sell it and lease it, I suppose, in your business?—A. Yes, sir.

Q. Have you any knowledge of the rental value of real estate along Central avenue?—A. Do you mean on this side?

Q. Yes, sir; the west side.—A. Do you mean ground rent or house and lot?

Q. Take lots already improved.—A. Well, along in front of the reservation they rent say from a hundred to a hundred and fifty dollars a store.

Q. A year or month?—A. By the month. I mean a two-story frame store.

Q. Would a brick building rent for any more?—A. Oh, yes, the bricks rent for \$250 for a three-story brick.

Q. What would these frame stores which rent for \$150 a month cost to construct them? What would be the original cost of these frame buildings that rent for \$150 a month?—A. Perhaps an average of \$1,000. The ground costs a great deal of money, though.

Q. What would be the cost of the ground?—A. The ground would be worth \$400 a front foot.

Q. What ought such a building as the Arlington Hotel, taking its location into consideration, with reference to bathing privileges, &c., what ought that property rent for by the year?—A. Do you mean the ground rent?

Q. Take the ground and the buildings that are on it; take the property just as it is now, what should it rent for?—A. That is most too large a subject, I am afraid.

Q. You are a real-estate agent, and I do not know who else to ask.—A. I have not much experience in renting property like that.

Q. You have not got a thing as big as that yet?—A. No, sir.

Q. Have you ever rented any hotels?—A. I have had application for renting of ho-

tels, but never rented them. I believe the French Hotel rents for \$250 a month. That is the largest hotel I believe that has been rented here.

Q. How many rooms are there in the French Hotel, do you know?—A. I do not remember. Major French is there and he knows exactly, but I do not.

Q. How does it compare in size with the Arlington?—A. It is very small as compared with the Arlington.

Q. Well, how is it as to style of building?—A. Well, it is a nice style of building.

Q. But inferior to style to the Arlington, is it not?—A. Well, I do not know as it is as large in size. I do not know that the rooms are as nicely fitted up.

Q. But as to location, the Arlington has a better location?—A. Rather better.

Q. Taking that as a basis, then, if you please, state what you would consider a fair rental for the Arlington Hotel?—A. That I could not do. I do not remember the number of rooms in the French Hotel or the number of rooms in the Arlington Hotel. We grade hotels very much, in renting them, by the number of rooms.

Q. Would you base the proportion on the number of rooms?—A. Yes, and of course the location and style has something to do with it. Now in renting boarding-houses we are governed a good deal by the number of rooms.

Q. Suppose there were 30 rooms in the French Hotel and 180 in the Arlington, then what would you say about those two if it was a matter of rental?—A. Well, I reckon it would figure out six times as great.

Q. About \$1,500 a month?—A. Well, I never examined the actual number of rooms, &c., but I expect it would figure very nearly that amount. For that, I believe that a very high figure for the French Hotel and more than it rented for since.

By Mr. PAYNE:

Q. Well, I will ask you what will be a fair rental for the French Hotel a month?—A. I think about \$200.

By the CHAIRMAN:

Q. Was the amount of rental of the French Hotel regulated in any way by its reputation as a hotel?—A. Yes, sir; and had a good run of business.

Q. And would rent for more on account of its reputation?—A. Perhaps so. I could not say. I did not have the renting of it.

Q. What is the reputation of the Arlington Hotel?—A. Oh, that is first class.

Q. What was that hotel in 1874? What sort of building was there, and what was the character of the hotel then?—A. It was a great deal smaller then.

Q. Did it have any reputation as a hotel then?—A. It always has.

Q. Did it have any such reputation as it has now?—A. Yes, sir.

Q. What has been the additional cost to that hotel for improvements?—A. It has been quite large. I do not know exactly.

Q. But the additional cost since that time has been pretty large, has it not?—A. Yes, sir.

Q. And the present management is a good one and has given it a good reputation?—A. Oh, yes; fine.

By Mr. PAYNE:

Q. Do you remember the way it was in 1878?—A. Yes, sir.

Q. What has been added, then; that wing, I suppose?—A. That wing recently, and another wing in the rear has been added; a kitchen and dining-room, &c., has been added.

Q. When Mr. Stitt first took charge of it, what was the hotel that was there then?—A. Two additions have been made since then.

Q. Was it a small building then?—A. Comparatively small; it has just the same front.

Q. Was it regarded then as a first-class hotel?—A. Yes, sir; regarded first-class here. It was formerly the Rockafellow House, and Mr. Stitt made the addition.

S. W. FRANKLIN, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside, and what is your occupation?—Answer. I am a doctor of physics, and live in Hot Springs.

Q. What is your opinion about Hot Springs as a health resort, and the curative properties of the water here?—A. I do not think that it admits of two questions; I think it is the greatest place on earth; I regard it as the greatest known health resort on earth.

Q. What is the number of visitors here a year?—A. I suppose six or seven thousand, sir.

Q. Do they increase or decrease?—A. They increase constantly.

Q. Well, do you consider the present bathing facilities sufficient for invalid visitors, citizens, &c.?—A. I do not.

Q. What additions would you suggest to the committee? We are here for information, and want to make an intelligent report to Congress.—A. The truth is that certain hours are better for bathing, as I have found in my experience, than other hours. If there was no difference in that respect the present facilities, considering the number of visitors, would be perhaps sufficient. We all rush our visitors to the bath-houses at certain hours, but as this place is increasing in the number of invalid patients that come here, it would depend a great deal upon the number, which I do not know exactly.

Q. Do you think the present facilities insufficient for the number of visitors at this time?—A. Yes, sir.

Q. What is the flow of these springs?—A. I do not know.

Q. Can you tell what amount of water is used daily for bathing purposes?—A. I cannot.

Q. Do you think there is sufficient water here, if properly utilized, to furnish additional facilities?—A. Yes, sir.

Q. Have you looked at this public improvement in course of construction here on Hot Springs Creek?—A. I have looked at it occasionally as I have passed up and down the street.

Q. Do you think, from looking at it, that it is to the interest of the public and the Government that that creek should be improved?—A. I think it indispensable.

Q. Do you think it should be continued further down than it is at this time?—A. I do.

Q. How far?—A. It should be carried out of town.

Q. How far would that be from the present terminus?—A. I do not know how long the town is; the engineer can tell you better than I—a mile or two, I should judge.

Q. What is your idea about making that creek a sewer? Do you think it would be hurtful to the public health?—A. I object to it; I think it would be deleterious.

Q. What would you suggest in lieu of the present system?—A. I should suggest lateral pipes and parallel pipes running down the creek either inside or outside of the walls of the sewer.

Q. Would you have the sewer matter turned into a separate conduit from the creek or turned into the creek?—A. I do not think the creek should be used as a sewer.

Q. Do you think it insufficient to carry off the sewer matter?—A. I think it insufficient.

Q. What are your reasons for thinking it insufficient?—A. In the first place, if you extend the walls it might not be so bad, but unless you proposed to do that it would be open right in the midst of the town, and all this garbage and deleterious matter would be poured right out in the open air, and the southern wind would bring back to us these disagreeable and unhealthy odors.

Q. Now, if the arch was continued to the southern edge of the town—I do not know the distance, but down to the gas-works—what would the effect be; how far is it below the town to the gas-works?—A. It is a half a mile below the town.

Q. Well, if the culvert was continued below the town, down to the vicinity of the gas-works, could it be safely used for a sewer then?—A. I think the other plan of parallel pipes is much better. I favor that system.

Q. You recommend, then, the laying of the sewer pipe on each side of the creek?—A. And continued indefinitely.

Q. Well, that would go to the ocean?—A. Well, when I say indefinitely, I mean to the Gulpha.

Q. And not to turn the sewerage into the Hot Springs Creek at all?—A. No, sir.

Q. What distance is the Gulpha from the city?—A. I suppose four or five miles.

Q. Is there anything needed at the Hot Springs in the way of additional hotel accommodations or anything of that sort, besides bath-houses?—A. I think we want more hotels here.

Q. You have doctors enough, I suppose?—A. Oh, yes; too many.

By Mr. PAYNE:

Q. If a separate sewer was put in here, and, as you suggest, running it south indefinitely, would you still think it advantageous to the Government to continue the improvement below Reserve avenue?—A. I do not know where Reserve avenue is.

Q. Well, below the post-office here.—A. I think so; most unquestionably. One-half of our people are living south of that point.

Q. Well, what earthly benefit would it be to the Government to extend the work below that point?—A. Anything that enhances the salubrity of the atmosphere of this health resort benefits the Government, because the Government owns the major portion of the property here.

Q. Even if you grant that, which I do not, how would that enhance the salubrity of the city to extend that work below Reserve avenue if there was a sewer there to carry off the sewerage? What effect would it have on the health of the town whether the stream was a covered or an open one?—A. I do not know whether it

would have any effect on the health of the city, but the Government is pecuniarily interested in everything connected with this place.

Q. If you owned as a private individual a reservation do you suppose that I could convince you that it would be to your interest to spend the amount that it would cost to extend that improvement beyond your reservation, if there was a proper sewer outside of it to carry off the sewerage of the city?—A. The interest of the Government and the city is so intimately blended that that which benefits one benefits the other. I do not propose to go into an argument, as I would probably get the worst of it.

Q. I do not know whether you would or not.—A. But that is my opinion, that anything that benefits us also benefits the Government.

Q. Then why not extend that principle to every town in the Union?—A. Because the Government is not interested in every town in the Union.

Q. But the Government does not get much money here.—A. I do not know what it gets.

Q. But as a fact the Government does not get much money here.—A. This is the most valuable domain it has.

Q. I can see how this would benefit the people on Valley street, but how the building of this sewer especially to carry off the sewerage of private property would benefit the Government I would like to have explained to me.—A. I am not accustomed to arguing. It is not my business.

Q. I want to get at this for my own information. State how far—if this wall ceases here at Reserve avenue—that point is from the Army and Navy hospital and Government bath-house to be erected there.—A. Well, the question was asked me before as to these lateral pipes.

Q. I ask you with reference to the present system.—A. I think the present system is deleterious to health.

By the CHAIRMAN:

Q. The question is, what distance is it from the Army and Navy hospital to the point where this present Hot Springs improvement ends?—A. I suppose two hundred yards.

Q. It is not that far, is it?—A. Well, say a hundred yards.

Q. You are a member of the city government, are you not?—A. Yes, sir.

Q. What proposition has the city government, if any, for the sewerage of the town?—A. They have been talking about laying lateral pipes.

Q. Have they taken any measures to establish a system of sewerage?—A. Well, it has been referred to a committee, and they have not reported yet, that I am aware of. I have been away for several months and I have not caught up with affairs.

Q. What is the value of the assessable property of the town?—A. I do not know.

Q. Do you know what percentage on the dollar is assessed for city purposes?—A. I do not. I do not know the amount of taxes.

By Mr. PAYNE:

Q. Do you know what they assess these lots for opposite the reservation?—A. No, sir.

EDWARD HOGABOOM recalled.

By the CHAIRMAN:

Question. Were you or not advised by the superintendent to dispose of the lease you obtained?—Answer. I cannot recall distinctly whether he advised it or not. I advised with Mr. Ricks, but I spoke to quite a number of my business friends as to the advisability of my disposing of it, not for my own interest, but because of my friend who was absent at the time. As to my own interest in it I had made up my mind to dispose of it.

Q. The question is whether or not you were advised by the superintendent of this reservation to dispose of your lease?—A. My impression is that when I asked him what he thought about it, as a business matter, I think he replied favorably. I do not recollect the conversation.

Q. Do you mean that he advised you to dispose of it, or not?—A. I cannot say he did. My impression is that his reply was favorable. He was not the only one that recommended me to dispose of it, for it was a universal thing with all whom I advised with about it. I consulted the superintendent as a business man, and whatever he said about it he said as a business matter. It was just an incidental affair, and I didn't think of it five minutes afterwards.

Q. Did you state to anybody yesterday that you had been advised by the superintendent to dispose of it?—A. I stated the same as I state here now.

Q. But did not you state that the superintendent had advised you to sell your lease?—A. I have stated what I stated yesterday.

Q. Did he advise you to sell it to any particular individual?—A. No, sir.

Q. Did you or not state to two gentlemen yesterday that the superintendent advised you to sell your lease? Did you state this to Mr. Nichols?—A. I stated substantially what I state here now.

By Mr. STORM:

Q. The question asked is whether you stated to Mr. Nichols that the superintendent advised you to sell your interest. Answer that question.—A. Well, I did.

By the CHAIRMAN:

Q. Did Colonel Hamblen have any information from you or anybody else that you know of that Mr. Gaines or any particular individual desired or intended to purchase that lease?—A. I do not think he did.

Q. Did not he advise you to sell to Mr. Gaines?—A. No, sir. The way I came to ask this advice was because I received a letter of Mr. Buckstaff, in which he had data figured out that the property was worth \$40,000, and I was anxious to dispose of my interest.

Q. At that figure?—A. No, sir; but for what I could get for it, and I wanted to get advice in the matter.

Q. Did you make any improvements or ever spend a dollar on it?—A. That is another thing that I could not be definite about. Colonel Alexander was making improvements on the creek and was depositing the dirt on the street here, and I instructed him that if it was convenient for him at any time while he was at work there to begin excavating on that property to do so. He did commence excavating, but I did not have anything to do with Colonel Alexander after that in relation to it.

By Mr. PAYNE:

Q. You never paid for it, did you?—A. No, sir; but Mr. Buckstaff instructed me to have the excavating done, and the intention was to have it done.

Q. Did you have it done?—A. I think he did something at it before I sold out. I went away, and the excavating was done while I was gone.

Q. Do you know what was paid for it, if anything?—A. No, sir; I do not. There was never any other conversation passed about it between Mr. Alexander and myself.

ROBERT ALEXANDER, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Where do you live at present?—Answer. Hot Springs is my residence.

Q. How long have you lived here and been acquainted in this neighborhood?—A. A little over six years.

Q. What has been your occupation and business for the last few years?—A. I have been engaged in silver mining out here. Since the 20th of May I have been engaged as a subcontractor on this creek work.

Q. You have been making some excavation and preparing the beds for the wall, have you not?—A. Yes, sir; had a subcontract from George H. Bardwell.

Q. In making these excavations how far did your excavation extend?—A. Along the whole of the permanent reservation, as well as above Whittington avenue.

Q. Did you make any excavations at the Magnesia springs, near the lower part of the spring, or what is known as the Mud Hole?—A. I started two bath-houses there for George L. Smith and Albert Gaines. One bath-house site was got from Mr. Stearns, and one was got from Mr. Buckstaff and Mr. Hogaboom.

Q. But this work had no connection with your contract, did it?—A. No, sir; that was an outside job which I was doing for so much a yard.

Q. Mr. Gaines and Mr. Buckstaff were interested in that, were they not?—A. I was working for George L. Smith and Albert Gaines.

Q. Was any body else interested with them?—A. No, sir. When I started the work I believe they had bought out Mr. Stearns's interest, and were then trading for the Buckstaff and Hogaboom interest. I went to work before they closed the trade.

Q. Did Mr. Smith ever tell you what he wanted to do at that place?—A. I understood that he wanted me to excavate as low as the water was running, so as to strike water, and I think his intention was to drain the Mud Hole above.

Q. He did say anything about the method of doing the work, as to blasting, &c.?—A. He did.

Q. What?—A. He urged me several times to put in very heavy blasts, and I told him once that if we put in heavy blasts it would destroy the Mud Hole, and he said he didn't care a damn. One day, when I was away, one of my men put in five sticks of giant powder and two kegs of black powder, throwing down several tons of rock, but it was against my order. It came within 20 feet of the Mud Hole.

Q. Two kegs of black powder and five sticks of giant powder in blasting operations is considered a very heavy blast, is it not?—A. Yes, sir. My orders were to never put in over a keg of powder and one stick of giant powder. I spoke to my man about it,

and he said somebody came there and asked him to do it, and I think it was Mr. Smith. As far as I have been able to find out I think he must have been the person.

Q. That was about the time when one of the witnesses who have testified here spoke of the water disappearing from the Mud Hole, was it not?—A. That shot exposed a lot of water that came from the Mud Hole and opened a cave. There are pockets through this tufa in the shape of caves. Generally you will find these caves full of water. They were called here yesterday crevices, but they are pockets, and are porous, like a sponge. I told Mr. Smith that I was afraid to put in any more shot, as the main cave seemed to run under the Mud Hole, and we did strike fine water there running out below. After this big shot it turned the course of the water and it came out along side of the Magnesia spring.

Q. That is the spring just northwest, is it not?—A. It lies in a southwesterly direction. In blasting there you will discover in removing that tufa that it forms pockets and holds the water. They are small caves, forming pockets. One shot that we fired there caused the water to gush out, and the stream went clear across the bank.

Q. Is it probable that these pockets serve as a sort of dam to send the water back?—A. Yes; I think taking the tufa away from the front draws the water away.

Q. What is this tufa?—A. It is a sediment from the hot water.

Q. Formed by the water coming in contact with the air, I suppose?—A. Yes, sir; and the hot water leaves this deposit. At this place the tufa is from 11 to 15 feet thick.

Q. Have you any doubt about what caused the fall of this Mud Hole spring?—A. I have no doubt it was the blast I have referred to. I told Colonel Hamlin and also told Mr. Smith about it. I also informed Secretary Joslyn about it, and he telegraphed to have it stopped. I drew a diagram showing the location of the Mud Hole, and demonstrated that this blasting would have a tendency to blow up the Magnesia spring and the Mud Hole bath.

Q. Something has been said about this tufa being a different thing and separate from the rock. Do you know anything about the blasting of the tufa at the brick bath-house?—A. That job I got from Mr. Gaines. I went to work cleaning off the top, so as to get the rock bare. The reason I cleaned it off first was because they wanted a deep hole. I gave Mr. Stearns an order for a 14-foot drill of 1½-inch steel, the idea being to put in a very heavy shot there. From the conversation that I had with him and Mr. Smith at different times I thought they wanted to tap this spring back of the Mud Hole, and by putting in a big shot to do so. In drilling the front of that place I struck water that was very warm, but I could not tell its heat.

Q. What effect do you think the blasting there would have on the spring back of the hospital?—A. There is a ledge of rock running through, and if you blast that the hot water will follow.

Q. Did they want you to blast there?—A. Yes, sir; I was going to put a shot in there.

Q. You think there is hot water there, do you?—A. Yes, sir.

Q. Do you think that blasting there is a safe operation, or not?—A. I do not. I have always thought it was not.

Q. Have you any knowledge or opinion as to the cause of the water leaving what was known as the Arsenic spring?—A. I was blasting up in front of the Rockafellow bath-house one day when I was told that there was no water in the Arsenic spring, and I was afraid my blasting did it. In a few days afterwards I found water in the spring, and I heard a plumber here had said that the water lost had been carried off in a pipe. I have seen pipes carried in under the north end of the Arlington Hotel and taken in at that time. I do not know what for. I have an idea that this spring was carried into some other place. I believe it could be traced up. I do not believe the spring ever dried up, and I believe that the water was tapped and carried off.

Q. These springs here are now mostly covered up and concealed, are they not?—A. Yes, sir. When I first came here they were open on the side of the mountain, but they are nearly all bricked over now.

Q. Do you know of any hot water being in the hotels here for other than bathing purposes?—A. Yes, sir; in the French hotels I have seen them using the water in the kitchen.

Q. For culinary purposes?—A. Yes; and one bath for family use. In the Arlington I have seen hot water come in the wash-room and used for washing purposes and also in the hot-closets. I believe it has been used in other hotels, but these places I mention I have seen it. Here lately I understand that they have been refitting the pipes and testing them.

Q. Can you conceive why hotels should pay for four or five or six bath tubs and not use the water?—A. They use the water for hotel purposes, for drinking and washing, &c.

Q. Why do you suppose they pay for four bath tubs and yet have no bathing at all?—A. They just do that for having the privilege of the water.

Q. It is cheaper than paying water rent for water furnished by the water company, is it not?—A. I do not know what the water rents are. Besides, the water works do not furnish hot water.

Q. And of course it is better and purer water than you get from the water works.—A. Oh, yes; I think it gives a hotel a great advantage.

Q. Do you know whether any water of that kind has been shut off recently?—A. Since I came here the other day I see that there is no hot water in the Arlington Hotel wash-room and there is cold water in the closets. I do not know how recently the hot water has been shut off.

Q. But I suppose it has been between the last time you were here and the present?—A. Yes, sir.

Q. When were you here prior to the last few days?—A. I left about the 1st of January.

Q. You have already said you had a contract here on the creek. What was that contract?—A. My contract was a subcontract from Mr. Bardwell, through his agent, to excavate the rock and earth in the creek.

Q. Has there been any change in the plan since you began your work?—A. A great many changes. When I first began working they were doing the work on the Handbury plan. I made my excavations on the line pointed out by Mr. Hamlin and afterwards they shifted it above the Arlington 6 feet, and I excavated that over again. Also the bed of the creek was carried lower as much as 3 feet; after I had my side walls cut and I had to widen that out, and I had to widen 2 feet on each side for the 5-foot wall, which was made for a 3-foot wall originally. The bank being soft it caved in and a great deal of dirt had to be taken out.

Q. What were you to have a yard for your work?—A. My contract was 32 cents for earth and \$1 for stone. Mr. Bardwell got \$1 54 for stone and 34 cents for the earth.

Q. Do you know if any contract was made with Mr. Bardwell by the Government for covering the arch?—A. I do not know of any contract. That work was not specified in the original contract.

Q. Who has been covering the arch with earth?—A. Perhaps I had better state here that Mr. Walton took the contract for the stone work from Mr. Bardwell, and since that time he became a partner with Mr. Bardwell, and up to the time he became a partner and since he has done all the arch work. I do not know whether he gets his orders from Mr. Bardwell or not. It may be he gets them from the Interior Department.

Q. But the arch is being covered now, is it not?—A. Yes, sir; it is being covered now, but I have nothing to do with that.

Q. What do you know about the change of stone in the contract under this management?—A. From the granite to the other?

Q. From the granite to the stone in the side wall?—A. When this granite started I put in bids for the granite work, and I also inserted in the same bid a proposal on this other stone work at the suggestion of Mr. George L. Smith. My bid at the time, I think, was \$9 a cubic yard, and may be less for this rubble work.

Q. Was that at the time they were considering this change?—A. This was at the first letting. This was when the first bids were sent in. Afterwards, when we found the granite was so high, I started out to find granite to compete with the Diamond Jo Quarry, and we found some in a different place fully as good as his and started to work on that. After being at work on that a while, Mr. Smith set to work to have this thing changed, so as to use his stone, and I believe he was the principal cause of bringing about the change.

Q. And as far as you know he was the interested party in the substitution of one stone for the other?—A. Well, you see his influence.

Q. Were you in any way connected with or in partnership with Mr. Smith?—A. No, sir.

Q. Did you ever get a part of the consideration for the substitution of this stone for this granite?—A. Not a particle. At the time he promised to get me the contract I thought he had influence enough to do it, but I got the subcontract forty-eight hours before he knew I had it.

Q. Had you anything to do with the getting of the original contract?—A. For Mr. Bardwell?

Q. Yes.—A. Not at all. I had never seen the man. I do not understand how he got it. I had a lower bid in.

Q. But he managed to get it, and the power behind the throne was mightier than the throne itself.—A. Yes, sir. I was the one who made the estimate for Haycock and Martin.

Q. What was your bid, colonel?—A. For granite work, \$17; concrete, \$7.60. The earth work 43 cents; vitrified pipes, 55 cents; iron pipe, \$1.55. The total amount of the bid was \$81,426. At the same time I put in a bid for the rough rubble work. I forget whether it was \$7.50 or \$9.50; I think \$7.50. I put that in at the solicitation of Mr. Smith, and I believe sent on a specimen of the rock. That was only for the work

for the two perpendicular walls on the permanent reservation, running, according to Captain Handbury, from the northern corner of the Arlington Hotel to the other side of the street down here. That did not include up to Whittington avenue. Captain Handbury, when I started to excavate, refused to give me an estimate, and would not allow me to go to work outside of the reservation, and I only worked inside. I make mention of this to show that this bid was only for this distance.

Q. Has anybody else put in bids?—A. Yes, sir; here are all the bids made in Washington at that time. This is a copy sent on by Mr. Martin. He inclosed it to Mr. Haycock and myself, as he was there at the time the bids were opened:

The bids are as follows:

Earle, Miller & Patterson, Saint Louis, no bonds, \$125,390.

Aldrick, Welckbellig & Co., Hot Springs, no bonds, \$117,550.

John McKim, New York, bonds, \$204,532.

John McKim, New York, railroad stone, bonds, \$136,332.

John McKim, New York, undressed stone, bonds, \$89,832.

C. W. Fry, New York, undressed stone, no haul, bonds, \$105,276.

Dillon & Wherry, Little Rock, no bonds, \$74,489.

D. Pullman, Hot Springs, no bonds, \$7,573.20.

Gottlibb Eynerman, Saint Louis, terra cotta pipe, exct. pipe, no bonds, \$86,511.20.

J. H. Seewees, Washington, no bonds, \$78,110.40.

M. A. McGowan & Co., Washington, rocks extra, bonds, \$116,364.

A. F. Robinson, Little Rock, terra cotta, no bonds, \$68,414.

Maloney & Reynolds, Washington, bonds, \$78,920.

Hicop & Martin, Hot Springs, bonds, \$81,426.

Henry Ferrell, Xenia, Ohio, bonds, \$90,007.20.

Gustav Wilke & Co., Chicago, stone, excv. extra, bonds, \$111,448.

George P. C. Rumburgh, Little Rock, no bonds, \$69,057.

John Burnes, Washington, bonds, \$235,530.

Q. Was any of this excavation below the surface of the creek?—A. Yes, sir; in making the excavation the contract called for the wall to go to bed-rock. To get a solid foundation in some places I had to use a steam engine and pump, and we dug down in one place as much as 8 feet. It was a common thing to run along 3 and 4 feet below the bed of the creek for the foundation of the wall, and in doing so there was a good deal of cave in and we had to dig that out again. It was a pretty hard job. Most of the excavations were made even where there was a hard foundation a foot below bed-rock.

Q. In your excavations you excavated more than the levels of the survey of the engineer would show?—A. Yes, sir.

Q. In contracts of that kind, made on the estimates of an engineer, is the caving in of work allowed for in the estimates for completed work?—A. Well, not unless it is so stated in the contract. But where I had my work ready prepared for this stone work, and it fell in, I was entitled to it. Where it was washed in by freshets I had to take it out again, and I have always claimed that. When I had the bed dug out and it was washed in by freshets I could not prevent that and neither could the Government.

By Mr. PAYNE:

Q. Have you ever been paid for the wash-outs?—A. Yes, sir, I think so. Not the wash out, but the wash in.

Q. In your bid there you have \$7.50 for rubble work.—A. I will say right here that before Mr. Bardwell got this change to rubble work I sent a bid to Washington offering to do the work for \$9 or \$10. I made a regular bid to the Assistant Secretary of the Interior for it.

Q. Was that after the original contract was made?—A. Yes, sir; that was when the change was made from the granite to the rubble work, and I sent a bid in to try to get the rubble work.

By Mr. STORM:

Q. Then you did not accompany your first bid on Captain Handbury's estimate with this proposition to do the rubble work?—A. Yes, sir; that was the \$7.50 proposition, but afterwards a man by the name of Robinson got the contract, and then some one else got it, and they readvertised it.

Q. Now, was the idea of your bid, that if the Government desired to take that alternative you would give the Government the opportunity of accepting either bid?—A. Mr. Smith told me that they would change it.

Q. And in your original proposition you put in both propositions, one for the granite work and one contemplating the use of this other stone?—A. No, sir; I never expected to see a foot of granite go in.

Q. Do you know anything about the prices paid for these leases down here of these bath-house sites where you excavated?—A. I do not know what Mr. Stearns got. I think Mr. Hargaboom told me he got \$5,000 for the lease that he and Mr. Buckstaff

had. I understand that Mr. Frank Stearns got twenty-five or thirty-five hundred dollars, I do not know which. But as to Frank Stearns, I do not know whether he ever got anything or not. It is very hard to tell. I believe Stearns put in the application for Smith. The work was done up in Smith's room, anyhow.

By Mr. PAYNE:

Q. Is that your surmise, or have you the facts?—A. I saw them writing the papers.

Q. Saw who writing the papers?—A. Mr. Smith and Mr. Stearns.

Q. Are you sure that was an application you saw them working on together?—A. Yes, sir; this gentleman over here (pointing to a gentleman in the room).

Q. This bid of Haycock & Co. that was on the first advertisement, was it not?—A. Yes, sir.

Q. And Mr. Robinson made a bid to do the work for \$68,414?—A. He did not get that contract at that time on account of not furnishing a bond. I furnished a bond.

Q. There were others lower than you, were there not?—A. I think we were the lowest, because we complied with the law and furnished a bond, and they did not.

Q. There was a bid put in by Malony & Reynolds, of Washington, for \$78,920, was there not?—A. I do not know.

Q. Then there were other bids below yours, were there not?—A. But we considered ours the lowest responsible bid.

Q. No one got the contract on that first advertisement, did they?—A. I believe there were one or two switches. I do not know how Mr. Bardwell came to get it.

Q. It was readvertised, was it not?—A. Yes, sir.

Q. Did you put in a bid on the second advertisement?—A. No, sir.

Q. Did Mr. Haycock?—A. I believe he did.

Q. Do you know what the bids were on the second advertisement, when Mr. Bardwell got the contract?—A. I think I have it at the house, and I may have it here. I will look. [Looking over memorandum-book.] There was one man here, Howell, who put in a bid for \$15.50 for granite.

Q. Do you know what his price on the other work was?—A. Mr. Welchbilling also put in a bid, and his bid was for granite at \$22; a man by the name of Fletcher, of Little Rock, put in a bid for granite for \$21.37; a man by the name of Crennam put in a bid at \$19.20; A. P. Robinson put in a bid at \$26. J. J. Powell put in a bid for granite at \$16; Mr. Shipman put in a bid for \$21.24, and so on.

Q. Could this work be furnished at \$17 a cubic yard?—A. Yes, sir; I think it could.

Q. And afford a reasonable chance for compensation to the contractor?—A. Yes, sir.

By Mr. STORM:

Q. Did I understand you to say that at the time of the substitution of this stone that you then made a proposition to do this rubble work at a certain figure?—A. I did.

Q. To whom did you communicate your proposition?—A. I think to the Secretary of the Interior. I think I have a copy of it in my copy-book.

Q. What was your proposition?—A. It was either \$9 or \$10 a cubic foot.

By Mr. PAYNE:

Q. Will you be kind enough to look that up and bring it here, so that we can get at the exact figure?—A. Yes, sir; I think I have a copy of that.

Q. Of course you understood the Government was then bound by contract?—A. I believe, from what I understood, that the way Mr. Bardwell came to get that was that he had the original contract with the Government and they wanted him to make a change and he did not solicit it. I thought I got in ahead of him, but I found I did not. I thought that Mr. Smith and myself were the only ones that knew it, and I put this bid in on Mr. Smith's suggestion. The Government desired the change, and conferred with Mr. Bardwell, and he let them off by them giving him the other contract.

Q. Then you think this original contract a valuable one to the contractor?—A. I do.

Q. I mean putting in the work according to the original specifications; do you think there is money in it?—A. I think I could take it and make money out of it.

Q. So you think the contractor really had a valid claim on the Government at the time the contract was changed?—A. Yes, sir; but I did not blame the contractor for getting a better trade.

Q. What do you say is the quality of this stone now used?—A. I think the stone is good for this purpose. I pulled down a wall that was built here of this stone some years ago. It was built by James Belden along both sides of the creek and in pulling down that wall I found good solid work of the same kind of stone. I had a great deal of trouble in getting the work down. In fact it was the most solid work I came across anywhere.

Q. Do you say this is first-class rubble work and first-class sand?—A. I never examined the cement or sand.

Q. Have you ever had any experience with this material? Did you ever use this sand?—A. Yes; I call it a kind of fire-clay. I think it is very fine myself. I recollect this in regard to this sand business: when Secretary Joslyn was here his attention was called to the sand, there being a pile of it laying near the opera house. Somebody made complaints about it and he took up handful and I handed him my microscope which I had in my pocket to look at it. I did not look at it myself. He said it was good enough sand for this work and he then authorized Mr. Hamblen to use it. Mr. Hamblen at that time was undecided what to do. He had been getting indifferent sand from the Ouchita and other places.

Q. How is this Ouchita sand? Is that good, sharp, clean sand?—A. I never saw any sharp sand in this country. It comes down in a quartz formation and is all rounded up. I have never seen any sharp sand here.

Q. And you do not get any in this town, do you?—A. No, sir.

By Mr. STORM:

Q. The stone subsequently used is more or less seamed in the native bed is it not?—A. Yes, sir; but the way it is put in the wall I do not think the seam will hurt it. They generally put the best face in front.

Q. This work is not what you would call range rubble work, is it?—A. No; I would not call it range rubble.

By Mr. PAYNE:

Q. State whether you considered it disadvantageous to the Government to make this change in the rock.—A. I do not think so. I think the Government was the gainer by it. I do not think that plan of Captain Handbury's was as good as the present plan. That called for brick-work, which was more costly and would not last as long.

Q. Do you think it was worth while putting the additional expense to the Government of using granite instead of this rock now used?—A. No, sir; I think it was a piece of folly in the first place to put in granite and bury it up when there was so much building rock close at hand. I am speaking now of in front of the reservation. This plan makes it some \$43,000 less.

Q. Do you mean for the whole work?—A. Only in front of the reservation.

Q. That is about half?—A. About half. I do not think the other wall would have stood.

Q. Why not?—A. Because every stone was just a foot front between every header, and the granite blocks were one foot and then that was filled in with concrete.

By Mr. STORM:

Q. Is there any concrete in these side walls?—A. No concrete. There was concrete put in under the wall.

Q. I mean in the rear?—A. No, sir; I do not know of any except where the wall was changed at the upper end. After the first granite wall was built Secretary Joslyn gave me the order to make that change. I did all the extra work for Mr. Bardwell and that came under my head of extra work. Secretary Joslyn told me to go and do that work.

Q. What arrangement did you have with Secretary Joslyn for doing that work?—A. He told me to take the walls down to the height wanted and then to fill in behind with this rough rubble and make this as thick as the other wall on the top, and the stuff taken away was used in extending the work up there at the two branches.

Q. Do you know anything about the thickness of the walls put in there all along the work?—A. Yes, sir; 5 feet at the bottom and 3 feet on top.

Q. Did you measure any of that wall?—A. I had to measure for the excavations. Some places I have seen it put in over 6 feet.

Q. Did you see any of the wall less than 5 feet wide at the bottom?—A. I never noticed any. Colonel Hamblen told me if I saw any to let him know.

Q. Did you see the work as it progressed?—A. Every hour of the day.

Q. Now these fillings that were made in the bed of the rock—this concrete—what was the character of those places that were filled in?—A. Well I cleaned it out right down to the solid rock where this filling is and gave it the proper slope, and Mr. Walton's men followed on putting in the concrete.

Q. About how much concrete was put in?—A. I do not know. I saw that it was all covered over.

Q. I mean under the wall. Is there not concrete under the wall itself?—A. Wherever it was needed it was put in.

Q. Did they make the wall of concrete or did they fill in the irregularities with concrete?—A. Yes, sir.

Q. Were these irregularities filled in with concrete to make a level bed?—A. Yes,

sir; and the same cement they used in the walls. They mixed up small stone and cement and shoveled it in. They broke up rock about the size of an egg, and that is what the bed of concrete was made of.

Q. Do you see why there was such an increase of excavation over the original estimate of Engineer Handbury?—A. I only account for it as I told you before. We went down in the bed of the creek lower than they expected we would have to go. We went down 2 or 3 feet lower than the original estimates called for. We lowered the bed of the creek from 2 to 3 feet below Colonel Handbury's plan.

Q. And the excavation was deeper on account of the increased thickness of the wall, was it not?—A. The wall had to be carried down to a solid foundation.

By the CHAIRMAN:

Q. Is not the bottom of that creek all rock?—A. No, sir; there are a great many places where it is several feet to the rock. At the opera house it is nearly 8 feet.

Q. Did you excavate through the soil to the rock in every instance?—A. Yes, sir.

By Mr. PAYNE:

Q. Did you say there is some of the wall that exceeds 8 feet?—A. Yes, sir; and we had to get a steam-fire engine to pump the water out there where we went down 8 or 9 feet. Some places we had to go down very deep.

Q. How much is there of that?—A. That was a very short place there, and then there was another place of 4 or 5 feet down; but a great deal of it was between 3 and 4 feet.

Q. What proportion of the whole work was rock below the bed of the stream?—A. I think it averaged 18 inches all through on both sides.

Q. Is it possible now to get the measurement of the wall below the bed of the stream?—A. The only way to do would be to take Mr. Suddarth and a man and dig the places out and sound.

By the CHAIRMAN:

Q. Could not an iron bar be forced down without digging a hole?—A. No, sir.

Q. It seems to me by pressure you could tell when the bottom was struck.—A. There is no way of getting at it unless you dig down. You might take a hose and probably wash a hole in it.

By Mr. PAYNE:

Q. Can you pick out the places where the rock is deepest?—A. I do not recollect all of it; I suppose I could pick out most of it.

By the CHAIRMAN:

Q. You say the average depth of the wall below the surface of the creek is what?—A. About 18 inches, I think.

Q. Both sides?—A. Yes, sir; we had to blast the rock out in a good many places 1 foot below the line of the wall to get a good bearing.

Q. Do you know anything about the value of property on Central avenue, opposite the Government reservation?—A. Yes, sir; it is about \$400 or \$500 a front foot.

Q. How is it above the Arlington Hotel, up there around Whittington avenue?—A. That has gone up \$50 a foot since this improvement began.

Q. What is it worth?—A. A gentleman paid \$95 a foot for ground up there, and I think other parties have paid more.

By Mr. STORM:

Q. Has the bed of the stream a rock bed?—A. Not all the way.

Q. What part do you suppose is rock, and what is not?—A. Well, I could not tell you exactly the amount.

Q. Is one-fourth, or one-third, or three-fourths rock?—A. Yes, sir; three-fourths. I think I found rock every place I went down.

Q. When you found rock in the bed of the creek, you did not have to go down any further to find a foundation for your wall, did you?—A. When we reached the rock we stopped.

Q. The rock was the best foundation you could get, was it not?—A. Some places they made me blast the rock, because afterwards in quarrying out the bed of the creek it would shake the walls.

By Mr. PAYNE:

Q. How near is the excavation to being completed?—A. I thought it was completed, but this last freshet has filled it up again.

Q. You had it all dug out, did you?—A. Yes, sir; but I have noticed that it has filled in since I went away.

Q. Has it filled in to any great extent?—A. Well, I know that I had a six-horse-power engine there that has been covered up.

By Mr. STORM :

Q. Have you any idea of what proportion of the masonry work has already been done?—A. I never paid any attention to that at all. I never knew what my own estimate was until I got the return from the contractor.

By Mr. PAYNE :

Q. When did you complete the excavation?—A. Well, I did not complete it altogether, but pretty nearly completed it.

Q. When did you stop work on it?—A. My men quit working about the 15th of January. The funds gave out then. I believe that the creek will always be filling up with gravel until they get this opening made down all the way. They will have to carry the work down below the gas-house before they can stop this filling up. Right here opposite to this house there is a ledge of rock that sticks up four feet above the bed of the creek and forms a regular dam.

By the CHAIRMAN :

Q. How high is this wall along the creek, measuring it from the bottom of the foundation up to the top, as now constructed?—A. I would say it would average 6 feet 6 inches.

Q. That is the average height, is it?—A. Yes, sir; from what I have seen done.

Q. Who else was present when you heard this lease business being fixed up between Mr. Smith and Mr. Stearns? Was the superintendent there?—A. No, sir; I just dropped in Mr. Smith's room on business, and saw them fixing it up.

Q. Did Mr. Albert Gaines have anything to say about blasting out this place over here?—A. Yes, I think he told me one time he wanted a good big shot put in there, and that is about all the talk I had with him.

Q. What are the relations between Mr. Gaines and Mr. Smith, friendly or unfriendly?—A. I think unfriendly. I would say no relation at all.

Q. I mean the feeling between them; is it friendly or unfriendly?—A. I think it has been very unfriendly; but that has nothing to do with the facts. I can prove all I have stated about these springs. If you want to go further into it, I can keep you here all day at it. One thing certain is that he wanted to destroy that Mud Hole, and he has done it.

Q. Who has been doing the blasting there recently?—A. I asked Mr. Walton, and he said it was not him; that he loaned the man to Mr. Smith and Mr. Gaines, and I believe he furnished the tools and the powder.

Q. Mr. Walton did not superintend the blasting himself, did he?—A. No, sir; Mr. Suddarth was the foreman in charge of the work, I believe. Mr. Barns was there, and he told me he saw Smith and Gaines standing there bossing. He can tell you about that.

J. N. CONGER, being duly sworn, was examined as follows :

By the CHAIRMAN :

Question. Do you reside in Hot Springs?—Answer. Yes, sir.

Q. How long have you been residing here?—A. It will be nine years in June.

Q. Are you superintendent of the Hot Springs Railroad?—A. Yes, sir.

Q. What number of visitors pass over your road annually?—A. I think, in 1882 between seventeen and eighteen thousand passengers, and in 1883 about twenty-two thousand.

Q. That would be what number annually?—A. About thirty-four thousand in the two years.

Q. Nearly all the people that come here come over your road, do they not?—A. Yes, sir; I expect so.

Q. What was the number of visitors over your road in 1881?—A. About fifteen thousand.

Q. And the year before?—A. Well, I could not tell.

Q. Is it on the increase?—A. Oh, yes.

Q. Has it been annually increasing since you opened the road?—A. Yes, sir; every year since we opened the road.

Q. How long has the road been built?—A. It has been built eight years.

Q. And the increase of visitors here has been steady every season, has it?—A. Yes, sir.

Q. Are you an engineer?—A. I am not.

Q. You do not know anything about the work on this creek, do you?—A. No, sir.

By Mr. PAYNE :

Q. Can you tell what proportion of these passengers are visitors and what residents of this place?—A. I suppose nine tenths are visitors.

By the CHAIRMAN:

Q. And the larger portion of them are invalids, I suppose?—A. Yes, sir; I presume they are, but a great many come for pleasure.

Q. Have you done much masonry work in the construction of the railroad?—A. I had nothing to do with it until I came here.

Q. Do you know anything about the kind of material used here in this work on the Hot Springs Creek?—A. I examined it.

Q. Do you consider it good material for that kind of work?—A. Not such as I would use.

Q. You do not think it durable, do you?—A. No, sir.

Q. Have you noticed the manner in which it is put up; whether it is put up in a workmanlike manner or not?—A. Not in such manner as I have done similar work for myself or the company by which I am employed.

Q. Then you do not consider it first-class work?—A. Nor second.

Q. Have you examined the cement or mortar?—A. I have.

Q. Is that the proper kind of cement or mortar for a work of this character? Is the sand good?—A. Not such as I would use. I do not consider it sand.

By Mr. PAYNE:

Q. The stone used in the building of the new bridges or the abutments on your railroad is what?—A. Granite.

Q. Where do you get your sand?—A. From the Ouchita River.

Q. What kind of sand is that?—A. It is very good.

Q. Is it sharp sand?—A. Yes, sir.

Q. Clean?—A. Clean.

Q. Free from dirt?—A. Yes, sir.

Q. It has been suggested here by some witnesses that it is a sort of round gravel and not sand?—A. I think our foreman said that it was as good sand as he ever used.

Q. And it is obtained how far from here?—A. We are hauling it on our railroad for the Government work here for the hospital buildings from Cold Creek.

Q. That is how far?—A. About 12 miles.

Q. At what price can it be delivered here per yard?—A. I believe it costs \$5 delivered at the landing at our station, and then we charge \$10 a car, and a car holds about 6 yards.

Q. That is, a cubic yard?—A. Yes; a cubic yard.

Q. That would be about \$6.67, besides the cartage?—A. It would only be \$2.50 a cubic yard delivered here.

Q. Did you not say \$5?—A. Five dollars a car load.

Q. Can this granite be found along your road?—A. Yes, sir; we have been using it for the abutments to our bridges.

Thereupon (at 12 o'clock and 25 minutes p. m.), the committee took a recess until 1.30 p. m.

AFTER RECESS.

Committee met pursuant to adjournment.

JACKSON D. PAGE (colored), being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you live?—Answer. Hot Springs.

Q. How long have you lived here?—A. Seven years.

Q. Have you ever made application for a bath-house site?—A. Somewhere in the neighborhood of three years ago I made application to the then acting superintendent, General Kelley, I think.

Q. Did you file a written application?—A. Yes, and plans and specifications.

Q. Well, what was done about it?—A. I do not know, sir. It was filed with the superintendent.

Q. What did he say to you in reference to it?—A. He said that it would be forwarded to the Secretary of the Interior.

Q. Did you ever hear any more of it?—A. No, sir.

Q. Did you get the lease?—A. No, sir.

Q. Was any reason ever given you for not getting it?—A. No, sir.

Q. What locality did you make application to lease?—A. It is the place up here where the Avenue Bath-House engine-house is located.

Q. Where is that?—A. Between the Old Hale and the Independent Bath-Houses.

Q. Is that occupied now by anybody else?—A. Yes, sir; by Mr. Smith and the Avenue Hotel Co.

Q. What Smith?—A. Mr. Frank Smith.

Q. That is where he has the pump that forces the water to the hotel, isn't it?—A. Yes, sir.

Q. How long after you applied for that site did he get the place?—A. About a year ago he got it.

Q. Do you hold any official position here; and, if so, what is it?—A. Yes, sir; I am justice of the peace of this township.

Q. Have you means to build a bath-house?—A. When I made application I had means.

Q. Did you furnish plans and specifications, and have the means to build in accordance therewith?—A. Yes, sir.

Q. Is there any provision for colored people to bathe upon this reservation?—A. None that I know of. I believe there is one bath they are allowed to bathe in.

Q. Which one is that?—A. The Independent; and I am told that they are allowed to bathe in the Brick Bath-House; but I have no knowledge of that.

Q. Are these good bath-houses?—A. The Independent is; yes, sir. I know they bathe in the Independent.

Q. Are they allowed to bathe as freely as white people when they want to, and for the same price?—A. That is my impression; yes, sir.

Q. Do you know the Grand Central and Hot Springs Bath-Houses, and, if so, are they being operated now; how many rubbers are employed in each or either of them, and what do you know generally about them?—A. Well, I do not know whether they are being used or not. I pass the Grand Central Bath-House every day, but cannot say whether it is in use or not. If it is running, there is not more than one rubber there; and as to the Hot Springs Bath-House, I think that is running, but I am not certain.

By Mr. STORM:

Q. Then your application for this bath-house was to have a house especially for colored people, was it not?—A. Exclusively for colored people.

By Mr. PAYNE:

Q. Did you so state in the application?—A. Yes, sir.

F. C. STEARNS, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you live?—Answer. Hot Springs.

Q. How long have you lived here?—A. I have been here since the 5th or 6th of February a year ago.

Q. Then you have only been here a little over a year?—A. Yes, sir.

Q. Do you own a bath-house site here?—A. I do not.

Q. Did you ever lease a site from the Government?—A. I did.

Q. When?—A. That was in March, about a year ago.

Q. A month after you came here?—A. Yes, sir.

Q. To whom did you make application?—A. To the superintendent.

Q. Who was then superintendent?—A. Samuel Hamblen.

Q. What did he do with your application?—A. I presume he forwarded it to Washington.

Q. I mean did he make any recommendation?—A. I presume he did.

Q. You do not know?—A. I do not know.

Q. And you received the lease?—A. Yes, sir.

Q. At whose instance did you obtain it?—A. Through George L. Smith.

Q. Did he ask you to get it?—A. Yes, sir.

Q. For what purpose?—A. For himself, I presume.

Q. You had no interest in it yourself, did you?—A. No, sir.

Q. And you simply got it in your name for him?—A. That was the proposition he made.

Q. Did Mr. Hamblen know that fact?—A. At the time I put in the application I do not presume he knew; not from me he didn't.

Q. But you do not know whether he did or not?—A. Not at the time.

Q. Did the Interior Department know it?—A. No, sir.

Q. Where was that site?—A. That was immediately south of the Palace Bath-House, and north of the bridge that crosses to the Mud Hole.

Q. At the place where they have recently been excavating?—A. Yes, sir; where they have been excavating.

Q. Did you sell it to Mr. Smith?—A. No, sir; it was not a sale. He asked permission to make application in my name.

Q. Did he pay you?—A. Yes, sir; he paid me for what I did. I did nothing more than make the application.

Q. What did he pay you?—A. Well, he paid me in cash \$300 for the simple use of my name, I presume.

Q. Did he promise to pay more than that?—A. No, sir; he did not.

Q. He paid all he promised, did he?—A. Yes, sir.

By Mr. STORM:

Q. You said that Colonel Hamblen did not know anything about the facts at the time you made this application for Mr. Smith. Did he know it subsequently?—A. I think perhaps he did before the lease was received, some time intervening between the application and the receiving of the lease.

Q. Between these times do you think he became acquainted with the facts?—A. I think he did, but I could not say positively.

Q. What conversation took place between you and Mr. Hamblen in regard to the matter?—A. Well, there was nothing of that character between me and Mr. Hamblen, and never had been.

Q. What was the character or nature of the conversation?—A. There was nothing of that character with Mr. Hamblen.

By the CHAIRMAN:

Q. Was there any with Mr. Smith?—A. Yes; he said he had means by which it could be stopped or granted, and that it would be necessary for him to have it.

Q. Did he say he could keep the lease from being granted, or keep the water from being used?—A. I do not think he mentioned the water.

Q. Were you informed by Mr. Hamblen or Mr. Smith, or both of them, or either of them, at any time that he, Smith, had paid \$800 into the Republican State Executive Committee to have Mr. Hamblen appointed superintendent of the Hot Springs Reservation—

Mr. PAYNE. I object to that unless the question is first asked of Mr. Hamblen or Mr. Smith.

Mr. STORM. I desire to go on the record as showing that I believe the testimony competent, so far as it affects any declarations made by Samuel Hamblen, the superintendent of the reservation, because this committee has been charged to inquire into the management of the Government property on this reservation.

The CHAIRMAN. In that legal opinion I concur with Mr. Storm as to the competency of this testimony. If Brother Payne insists upon his objection I must overrule it.

Mr. PAYNE. I insist upon it.

By the CHAIRMAN:

Q. Answer the question, sir. Did Mr. Hamblen ever make any statement to you in reference to \$800 being paid into the Republican State Executive Committee for his appointment as superintendent of the Hot Springs Reservation?—A. No, sir.

Q. Do you know anything about this work being done on the Hot Springs Creek?—A. I know that work is being done.

Q. Do you know whether it is properly done, and the material used is proper for a work of that character?—A. I do not. I am not a judge of such work, never having had any experience in that kind of work.

EDWARD S. ROCKWOOD, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside, and what is your business?—Answer. Hot Springs, and in the jewelry business at present.

Q. What did you do anterior to going into the jewelry business?—A. For two years and six months up to the 15th of December, I was chief clerk of the Arlington Hotel of Hot Springs.

Q. Had you a conversation with any of the parties interested in the Hot Springs pool recently, and if so what was the nature of that conversation; say with Mr. George L. Smith?—A. I had no conversations with Mr. Smith except on yesterday afternoon. He came to my place of business about 1 o'clock and inquired if the illustrious committee had interviewed me yet? I replied that I had been summoned, and should appear in about an hour.

Q. What followed?—A. He said, remember, young man, you put yourself on record. Remember whatever you say is going into writing, and the writing into print, and into the Congressional Record, and whatever you say will be read by your children and grandchildren, and great-grandchildren some day, and they will say see what our father and grandfather and great-grandfather said before the committee.

Q. What further occurred on that occasion?—A. Well, he repeated, remember you put yourself on record. About two hours afterwards I met him on the street, and he asked me if I had yet testified. I told him no, that I had been down and been told to appear again in the evening, and he said well, remember you put yourself on record.

Q. But he did have an exalted idea of the committee?—A. Yes, he said it was very illustrious, and I coincided with him.

Q. So do we!—Do you know anything about the work on the Hot Springs Creek?—A. No, sir; nothing in particular.

Q. Can you give the committee any information about the general management of the Government property here?—A. No, sir; I know nothing in particular regarding the management of affairs.

Q. Can you tell us anything about the hot-water privileges, how they are used, and whether properly used for the benefit of the public, invalids, &c.?—A. Well, I do not know what statement to make in reply to that. I can reply to any direct question.

Q. Do you know anything about the number of visitors that come here annually?—A. I should judge between eight and ten thousand a year.

Q. Do you know the number of bath-houses here?—A. I know them all but not the exact number.

Q. Do you know anything about the facilities for bathing?—A. I think they are ample.

Q. Do you think they are properly managed and the water properly distributed?—A. No, sir.

Q. What is the objection?—A. I think the pool arrangement is detrimental to the public generally, or the bathing public.

Q. What is the basis of your objection? From what abuses does this detriment to the public grow out of?—A. The bath-houses, as every one knows, are not kept in proper condition, or not in as good condition as they were before the formation of the pool. When they had to compete great exertion was used to keep the houses in good condition. Now there is no necessity for this because they get their regular *pro rata* any way.

Q. Are the guests or invalids that patronize these bath-houses neglected and not attended to properly?—A. The houses are kept in a poor and dirty condition. Every one knows that whoever enters them.

Q. You think these are some of the abuses which have grown out of the pool arrangement, do you?—A. Yes, sir.

Q. Are there any advantages growing out of the pooling arrangement to counteract the disadvantages you speak of?—A. Well, the houses, if kept in better condition, would be more advantageous to the public. They would get better attention if there was no pool, and have a superior place to bathe in.

Q. Were you the private book-keeper at the Arlington Hotel during the time that General Kelley, the superintendent of the Government reservation, was boarding there?—A. Not the private book-keeper, but room clerk and cashier.

Q. Did he and his wife room there?—A. They took their meals there and had a room outside.

Q. Well, did they pay board?—A. Yes; they paid me.

Q. Did they pay in the ordinary way like other boarders?—A. Not in money.

Q. How did they settle?—A. General Kelley's bill was always paid to me by personal draft on S. W. Fordyce.

Q. And that was considered good if he accepted it, was it not?—A. I was satisfied that General Kelley's accounts were credited on Mr. Fordyce's debit. My claim was satisfied, and that was as far as I was concerned.

Q. Was Mr. Fordyce one of the proprietors of the Arlington Hotel at that time?—A. He was one of three proprietors.

By Mr. PAYNE:

Q. Was the draft charged to Mr. Fordyce's account?—A. Yes, sir.

Q. Do you know what compensation Mr. Fordyce got from General Kelley?—A. I do not know anything concerning that.

Q. Do you know of any privileges they enjoy by reason of this board being paid in that manner?—A. Nothing except the hot water; that was all. No unusual privileges were extended on account of that, that I know of.

Q. What about the hot water?—A. The hotel water used in the hotel.

Q. How?—A. The closets and three or four stand-pipes.

Q. And used for drinking purposes also, was it not?—A. Yes, sir; and stand-pipes were located on each of the three floors.

Q. Was there any scarcity of water for bathing purposes outside of that used in the Arlington Hotel?—A. There were no bath-houses connected with the Arlington.

Q. Was the water used in the Arlington Hotel used for bathing?—A. At times the water was used there; there was a scarcity in the bath-houses, but whether it resulted from the use of the hot water in the Arlington or not I cannot say.

Q. Is there not water enough here to keep the bath-houses running if properly managed?—A. Yes; if well conducted there is plenty of water and more than enough.

Q. Are you acquainted with the hotel business?—A. Yes, sir; I am.

Q. How long have you been in it?—A. About eight years.

Q. Are you familiar with the Arlington Hotel and hotels in Hot Springs?—A. I am familiar with the Arlington as far as my duties were concerned.

Q. What do you think it would rent for?—A. In public competition?

Q. Yes.—A. I should be willing to pay \$25,000 or \$30,000 for it.

Q. Do you mean furnished or unfurnished, or do you mean in the condition it is at present?—A. I would pay \$20,000 ground rent.

Q. And build a house?—A. Yes, sir.

Q. What would it cost you to build such a house as ought to be built there?—A. Such a house as should be built at Hot Springs, and especially there, ought to cost \$400,000 or \$500,000.

Q. And you say you would be willing to pay \$20,000 ground rent and put up a building costing \$500,000 at the point now occupied by the Arlington Hotel?—A. Yes, sir.

Q. How much would you give for a similar piece of ground northeast of it where the superintendent's office is now located?—A. I do not think the same amount of space is available.

Q. There are 6,000 feet there, and that is enough to build forty hotels.—A. There would be no trouble in getting \$15,000 ground rent for that.

Q. Why would that not be as good as the Arlington location?—A. It has no frontage on the principal street. It is a side street.

Q. How much would you be willing to give rental for a suitable space adjoining the Arlington? I mean that vacant property there.—A. From \$15,000 to \$20,000, according to the dimensions of the lot. It is a good lot.

Q. What was a fair rental value of the Arlington Hotel in 1872 or 1873, at the time the old Hot Springs House was burned?—A. I was not here then.

Q. Do you know its condition when Mr. Stitt took possession of it?—A. No, sir.

Q. When did you first know it?—A. Two years and six months ago, the 15th of last December.

Q. Well, what amount of building was there then? What was the size of the house?—A. One hundred and thirty-five rooms.

Q. Well, what would have been a fair rental value at the time you first knew it?—A. I judge, from a statement made to me by a prominent hotel man of Galveston, the proprietor of the McGinley House. He said that he would give \$15,000 for it as it stood, and that was before an addition was made.

Q. Did not the Gaines cottage sell for \$17,500, and is that or not a suitable location for a hotel?—A. It was reported that it sold for that, and it is a suitable location.

Q. What is the size of that lot?—A. I do not know.

Q. Is it as large as the ground now occupied by the Arlington?—A. I could not say. I do not know the dimensions.

Q. Is it as desirable as the Arlington?—A. It is desirable, but not as desirable as the Arlington location.

Q. The Arlington hotel has a lease for ten years, has it not?—A. That was the original lease, I believe.

Q. Would you be willing to give \$200,000 for a ten years' lease of that ground?—A. I would, and that can be considered as a bid.

Q. Well, we are not authorized to accept bids at present. You say the Arlington hotel uses hot water?—A. Yes, sir.

Q. Are they using it now?—A. The hot water has been shut off in the water-closets since the completion of the water-works.

Q. How long ago was that?—A. Some time along during midsummer.

Q. For what purposes has the hot water been used since?—A. In the wash-rooms and three or four stand-pipes.

Q. What are the stand-pipes used for?—A. They supply water for drinking purposes.

Q. Do all the invalids like to drink that water?—A. A small percentage use it for drinking purposes. They use it almost entirely for washing purposes.

Q. What water do they drink there?—A. They drink the cold water; the hot water cooled.

Q. But it all comes from the spring, does it not?—A. Yes, sir.

Q. Is it or not a fact that they drink that altogether?—A. They did at one time, but I do not know as they do now.

Q. Is any water to be got there except that which comes from the Hot Springs and is made cold?—A. The water from the water-works runs in the kitchen.

Q. I mean for drinking purposes; is any other water used?—A. Well, the water that is brought into the dining-room and used for drinking purposes may or may not be the hot water cooled; I do not know.

Q. Have you any animus on account of being asked to resign your position?—A. I will state that I was not asked to resign my position. I wrote my resignation on account of ill-health, and when one day in December I put it in Mr. Stitt's box, he got it out and read it and called me to his desk, saying that he was glad it occurred, because in justice to themselves they felt obliged to secure some other competent man, on account of my being sick. He said this is a resignation, and I am glad you got it in before we had an opportunity of telling you your services were no longer required, and this is a resignation in good faith. He said we have engaged somebody else, and your successor will be here in a few days.

Q. Then you were not asked to resign?—A. I was not asked to resign, and Colonel Fordyce knows it.

Q. Are you in the jewelry business opposite the Arlington Hotel?—A. Yes, sir; and my relations with the proprietors of the Arlington Hotel have been more friendly than previous.

Q. Is it a fact that Colonel Rugg, one of the former owners of the Arlington Hotel, sold his entire interest in the hotel, furniture, and good-will, and all for \$35,000?—A. I know he disposed of his interest, but what the consideration was I do not know.

Q. Mr. Rugg is not a man likely to sell anything for much less than it is worth, is he?—A. Well, hardly; he has never been known to.

By Mr. PAYNE:

Q. About when was that sale made?—A. August last.

Q. Last summer, was it?—A. Yes, sir; last summer. I do not know about dates, because I never expected to be called upon for any questions in regard to them.

By the CHAIRMAN:

Q. Do you remember when they excavated for the building of the new Rockafellow bath-house; and, if so, who was the superintendent in charge of the construction of that building?—A. I remember the excavating for the building of that bath-house, but I could not state who was the superintendent.

By Mr. PAYNE:

Q. How many rooms were there in the Arlington Hotel in 1878, when the lease was made?—A. I was not present then.

Q. Has there been an additional building built since December, 1881?—A. Yes, sir.

Q. How many rooms are in the hotel now?—A. One hundred and ninety, according to the enunciator. I never counted them.

Q. What portions of the year, if any, is the hotel full of guests?—A. The best business is from the middle of January to the 1st of June, but the business is increasing during summer. It was better last summer than the summer before, and it is getting better every year.

Q. What portion of the year is it full?—A. From the middle of January to the 1st of June.

Q. And after the 1st of June how is it?—A. A little light, but the house is comfortably filled.

Q. Up to what time?—A. Up again to the 1st of January. It is simply Southern trade then, which is not as good as Northern business, as you cannot get as good prices.

Q. How many people are in the house from the 1st of August to the 1st of January?—A. It varies.

Q. What do you think a fair average?—A. I think from ninety-five to one hundred and forty-five. It might have gone higher or lower. I would not swear as to the exact count.

Q. How many feet front has the Arlington on Central avenue?—A. I do not know.

By Mr. STORM:

Q. You say since you have come here there have been two additions to the building?—A. Yes, sir.

Q. How did the part added compare with the part that was there prior, as regards accommodations?—A. There are a hundred and thirty-five in the old part and fifty-five in the new, making a hundred and ninety rooms in the entire house.

Q. The area occupied by the new part, how does that portion compare with the old part as to the size of rooms and general appearance?—A. I think the rooms are larger and better. The dining-room is larger.

By the CHAIRMAN:

Q. Is the dining-room in this added part?—A. The present dining-room is in the new part and the old dining-room was made up into sleeping-rooms.

Q. Do you know whether or not between 300 and 400 feet of ground opposite the Arlington Hotel sold for \$30,000 in the last two years?—A. The only ground I know of that was sold for that price was the Grand Central, bought by Mr. George L. Smith, but that is not opposite the Arlington, but above it.

Q. How far above it?—A. Well, the extreme ends do not touch, I should think, from my memory. There must be from 100 to 200 feet intervening between the ends; that is the south end of the Grand Central and the north end of the Arlington.

By Mr. PAYNE:

Q. What did that property sell for?—A. Thirty thousand dollars was the reported price.

- Q. How many feet front?—A. I do not remember.
- Q. What is the condition of the land there as to rocks?—A. It is mostly rocks down to the street. There was a bath-house on a portion of it, but it only went into the hill a short distance.
- Q. How deep can they make it by moving the rocks?—A. One hundred and seventy-five feet.
- Q. Do you know anything about the cost of removing that rock?—A. By blasting?
- Q. Or any other way.—A. I do not know the expense, but I think very heavy indeed.
- Q. How high is the rock at the back end of the lot? How deep would they have to dig?—A. In excavating the full depth?
- Q. Yes. I understand you to say that you could excavate 175 feet back?—A. That is as far as I understand, individually, the property extends.
- Q. How deep would be the cut on the back line?—A. I should think 125 feet perpendicular.
- Q. Is that all solid rock?—A. It is not very much fractured.
- Q. Is it like the rock they use in work here?—A. Yes, sir.
- Q. There is no loose stone on the soil there, is there?—A. Yes, sir; a good deal of loose stone.
- Q. What portion is bed rock?—A. It comes out in loose particles.
- Q. Is it loose rock or bed rock?—A. It is bed rock in the mountain.
- Q. Is it the lot where this excavating is now going on?—A. Yes, sir; a portion of it.
- Q. What is the grade of that lot where the Arlington Hotel property is? Suppose the hotel was removed, would it require any excavating to build on it? But it is hardly necessary to ask that question, as there is a hotel there now.—A. Yes, and I think it runs back 150 or 170 feet further without any excavation.
- Q. Was any excavating done for the hotel originally placed there, or does the lot give any appearance of having been excavated at all?—A. No, sir.

J. M. KELLER, being duly sworn, was examined as follows:

By Mr. STORM:

Question. You are a doctor by profession, I believe?—Answer. Yes, for thirty-two years.

- Q. Do you live in this place at present?—A. I do.
- Q. And for how long have you lived here?—A. Seven years next month.
- Q. Are you acquainted with the improvement now being made on Hot Springs Creek?—A. As well as a man could be who is confined to his room all the time.
- Q. From your observation of this improvement, will there be an improvement by this work?—A. I do not understand you, sir.
- Q. Will the plan that the Government has in view of covering this Hot Springs Creek and using it for sewerage purposes prove a proper one?—A. Before I answer that I would like to know if that means sewerage to carry away all the excrement that may fall into it?
- Q. A sewer for the whole town?—A. I do not think it will be any improvement if all the excrement is allowed to go into it.
- Q. What would be necessary to make this work a proper improvement? What should be required to be added to it?—A. To have sewer pipe put the full length of these two valleys; Whittington avenue, Park avenue, and Central avenue, into which should run pipes from all the privies of the dwellings, instead of allowing it to go into the creek.
- Q. And carrying it down the creek in pipes?—A. Carrying it below the town in some way.
- Q. How far?—A. Far enough to get out of town.
- Q. How far is that?—A. A mile below where it now stops.
- Q. That would leave it in the improved part of your town, would it not?—A. I think not. I would like to explain my reason for that.
- Q. Well go on and explain; that is what we want.—A. The bottom of that creek is in this shape. [Witness drawing a pencil diagram.] That represents the bottom of it. In the months of July, August, and September, and possibly into November, the water does not cover that bottom. It does not cover, over at the outside, two-thirds. A pipe running into this and allowing the excrement to fall, it would fall on dry land during these months, and this water necessarily would not reach it. If you attempted to flush that creek during the months of September and October I do not think you could catch enough water in less than ten days to do it, and it could not be flushed more than once in ten days.

By the CHAIRMAN:

Q. Could not it be flushed from the water-works?—A. It would be impossible to flush as large a body as that without exhausting the supply of water that would be necessary to have on hand to extinguish a fire in town.

Q. Is not the bed of the creek filled up now by the action of a freshet, and is it not a level bed like the bed that you have drawn in this diagram?—A. I think it would not be filled up if proper amount of cement was used, and there was proper care in making the excavation.

Q. Have you examined the walls that terminate near the Magnesia Springs, to ascertain whether it is level all the way across?—A. I do not think the bottom of that has been finished.

Q. Taking it simply as a sewer to carry off the rainfall, and covering it over, and giving you more room, what have you got to say about it?—A. I think it is wonderful, and I think we ought to thank the Government for making it.

Q. I am glad to meet one grateful man.—A. In making these suggestions, I do not speak as an expert in stone work.

Q. Do you possess sufficient knowledge about masonry to give an opinion as to the durability of the material used in the construction of the sewer?—A. I can only answer by stating that the first construction was to make it of granite, which is as lasting as the hills, and get it out in any shape that the mason required, because it will stand hammering. That construction was changed, and a species of rock used that you cannot break as you wish. This stone now used breaks on the seams, and has cracks in it.

Q. Are you competent to give any opinion upon the sand used in the cement?—A. I do not know that I am competent to give an opinion, but I watched it very carefully. I do not think the bond is perfect up to now. Whether it is the fault of the cement or the sand I do not know.

Q. Suppose the Government put in a pipe along the other side of the creek, and carried the water down to the post-office, what do you think about the city laying a pipe down on the other side, and carrying it down to that point, or carrying it further on over the city's property? Do you think that would be an unreasonable proposition?—A. I think the Government is much more able to do it. The Government is going to have a grand hospital here for the Army and Navy, and I think it would be to the interest of the Government to do this work.

Q. If you were the Government, what would you do?—A. I would build both pipes to the river.

By Mr. STORM:

Q. This stream you think of sufficient capacity to carry off the rainfall, do you?—A. I do not know. I saw a flood here once that ran up to the second step of the Arlington Hotel. That was on account of a gorge. I believe, though, that it would all be carried off if the bed of the stream was kept clean and the lodgment of timbers prevented.

Q. Have you water-works sufficient to run water to your closets on the side of the hill so that if a plan should be adopted you would have something to carry all the filth through the pipes?—A. We have water-works of immense capacity. I think we can throw a stream above the flag-staff on the Arlington by the natural power of the works. I do not think it necessary to use that water in the two drainage pipes you speak of, because they can be made to enter the stream at a point on Whittington or Park avenue.

Q. And your idea is to run the stream into them?—A. Not all the stream, but a sufficient amount of water to keep the excrement from lodging in the pipes.

Q. That would not reach the privies up by Dr. Hays' house?—A. Yes, sir; it would reach as far as the park.

Q. How far would the Government have to extend the work back to do that?—A. The Government would go, I presume, to the end of the street.

Q. How far would that be?—A. Up to the park on one side and the colored church on Whittington avenue. I reckon Mr. Fordice will tell you the distance exactly.

By the CHAIRMAN:

Q. It is about three-quarters of a mile from the Arlington Hotel, isn't it?—A. About that.

Q. And to the colored church would be about half a mile, going up Whittington avenue?—A. Yes, sir.

By Mr. STORM:

Q. Then is it your idea that the original plan of the Government in putting in these sewer pipes was a proper one?—A. I do, and I say so from a knowledge of drainage in cities that have suffered from epidemics in the South. They tried in Memphis to make Bayou Gayoso, the sewer of that city, which proved an utter failure, and the

chairman of this committee will bear me out in that. Since that they have constructed a system of sewerage, paying no attention whatever to Bayou Gayoso, and I believe have guarded against epidemics arising from bad drainage.

By Mr. PAYNE:

Q. Suppose a sewer was built on the west side of the tunnel, and no drainage should be allowed in the tunnel proper, except from the Government reservation, and from the Arlington Hotel and bath-houses, do you think it would be necessary to continue this culvert beyond Reserve avenue, and would the open stream from there down be any more detrimental to the health of the town than if it was covered and extended a mile further?—A. I think the open stream is healthier than this covered one.

Q. But I speak simply of the drainage of the Government reservation passing through it. Would that be hurtful to the health of the town?—A. It is safe to say that one-half the excrement from visitors in this town is voided in the bath-houses and the Arlington Hotel. They commence going to the bath-houses at hours in the morning in which the calls of nature are generally served. I think you will find at those hours a great deal of tissue paper floating in the stream, and I do not think that above the Arlington Hotel anything but newspapers are used. You will find this tissue paper lining the stream all the way down.

By the CHAIRMAN:

Q. You are somewhat familiar with the watering places and health resorts, are you not?—A. Yes, sir.

Q. In view of the curative properties of this water, and the immense number of visitors from all parts of the country, do you think it desirable that the Government should retain supervision of this water, or should it be placed in the hands of private individuals?—A. I think, and you will pardon me if I am a little lengthy in answering that question, that when when the great Creator made this earth may be it was not all finished in six or seven days—

Q. Probably not.—A. And in view of the fact that Bacchus and a number of agriculturalists would be created in the world, and in view of the fact that old David and Solomon were not as virtuous as they might have been, thus putting an inheritance of wickedness and syphilis on the world, and in view of the fact that he had a good many misgivings as to the ability of doctors to cure these diseases, he made this place, and I think any step in the direction of taking these waters out of the hands of the greatest Government on earth would be damnable.

Q. Then you think that the Government should retain control of this property?—A. The Government should own and control it absolutely.

Q. Do you think the public and the private interests demand that?—A. Yes, sir.

Q. From your experience and large practice at this place, have you heard complaints from your patients about the way in which the bath-houses are conducted now as compared with the management formerly?—A. I will answer the question by stating this, that I intend, if an opportunity is afforded me, to urge before this committee that if in the future a change is made in the bath-house system of this town, or a new one is created, that it shall be under the best sanitarian that can be found on the continent. Nothing but ignorance and the most primitive illiteracy, lack of education and lack of knowledge of bathing exists in this town. There is not a bath-house in it controlled or managed by any one that knows the science of bathing.

Q. Do not the doctors direct the method of applying the water?—A. The houses are not constructed so that it can be done, sir. That question leads to the question of pool or no pool. I was in favor of a pool as against the then existing system. I was in favor of a pool before the pool was established.

Q. What evils were remedied by the organization of the pool?—A. Well, before that nearly every bath-house, gambling-house, hotel, and quack doctors had out ropers, drummers.

Q. What does a roper mean?—A. It means a drummer or steerer.

Q. What is a steerer?—A. A man who misguides another into a bad place.

Q. Is not drumming still carried on to some extent?—A. Yes, but as a rule it is not. Nearly all that has been corrected. This undercutting should be quit.

Q. Has the pool been the agency through which these abuses have been corrected?—A. The pool alone stopped it as far as the bath-houses are concerned.

By Mr. STORM:

Q. Of course, they would not drum among themselves, but *per se* it stopped it, I suppose?—A. Oh, of course. Properly utilized, there is enough hot water and enough bath-houses in this town to bathe 25,000 people a day, provided the bathing-hours are changed a little.

Q. Explain that.—A. The favorite hours are between 10 and 12. It is established as a rule that people ought not to bathe on a full stomach; that is an hour or two should be allowed to digest food before bathing. If these bathing hours could

be arranged before breakfast, for instance, and from 10 until 1 and from 3 until 10 at night, instead of closing at 6 o'clock, I think that would be a move in the right direction. My idea is that a large number of patients do better if allowed to bathe at night and go immediately to bed, without being exposed to the vicissitudes of temperature in going in and out of halls and doors around hotels.

Q. Do you or not think that these springs should be inclosed with substantial fences to prevent the committing of nuisances by people and cattle in and around the springs?—A. I think that as much care should be taken as is practiced around Chicago and New York in relation to the water supplied these cities for drinking purposes.

Q. Do you or not think that all this water should be collected in one large tank and distributed by pipes to the bath-houses and hotels?—A. Five years ago I wrote a letter in reference to utilizing this water and against its manipulation as at present, and suggested as a plan that two water-ways should be extended from the Arlington down to this hotel (Sumpter), and the water should be run into a pool. That all the water of a certain degree should go into one pool and all the water below that degree could go into another pool, and be distributed by meters and stop-cocks and the water be measured and saved in that way; that it ought to be pumped into two immense tanks, one hot and one cold, and then to convey it all over Hot Springs and for 2 or 3 or 3 or 5 miles. I believe if it could be transported to New York and kept hot it would be as good as when it came directly from the spring at this place.

Q. What is the number of inhabitants here?—A. I think there are 5,000 people here.

Q. Do you think by proper utilization you have facilities for bathing five times that many people?—A. With the present bath-house capacity we could bathe five times that many. I do not think, sir, that sufficient care is given by this great Government to the poor of this town.

Q. We would like to have any suggestion you could make in reference to that?—A. I think in that little cramped up pool, known as the Mud Hole—

Q. (Interposing.) There is no Mud Hole there now, is there?—A. I believe so. I believe it is a disgrace to civilization and humanity; certainly to this great Government. I think there should be a bath-house with two hundred tubs, if necessary, with pools, two or more if needed, with a division, or a number set apart for colored people who are paupers. I should think there ought to be a number set apart exclusively for those who are unable to pay, and a number set apart for colored people who are able to pay, and the same rule adopted as to white paupers and to white people unable to pay the ordinary prices. In this connection I wish to say that I am not one of the men who think 50 cents for a bath is too much. A man who procures a lease and pays \$20,000 for constructing one of these bath-houses, and pays the present rent to the Government for water, cannot get his money back if he charges less than the present bathing rates.

Q. Are the bath-houses or not utilized to the best interests of the people?—A. The proprietors may think so, but I doubt it very much.

Q. Do you think the bath-houses could be improved?—A. I do. The bath-houses in this town are characterized by primitive ignorance in building.

Q. What about the management?—A. You cannot properly manage a bath-house unless it is properly built. One of my recommendations in this connection is to transfer this thing from the Interior to the War Department. That is the only way to stop this bickering to get one man out and another man in, and wherever the Army is in possession the people of every country feel safe in going there. Another thing, you know, the Army officers take a pride in making their headquarters a garden.

F. C. STEARNS recalled.

By the CHAIRMAN:

Question. Did you or not receive \$2,000 from Mr. Smith, or sign a receipt for that sum?—Answer. I signed a receipt for \$27,000.

Q. What was the object of that?—A. I have no idea.

Q. You only received \$300, as a matter of fact, I believe you said in your previous testimony?—A. That was all I received.

JOHN A. BLAYDES, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Do you live in Hot Springs?—Answer. Yes, sir.

Q. How long have you lived here?—A. Nearly eight years.

Q. And you are a physician by profession, are you not?—A. Yes, sir.

Q. Are you acquainted with the improvement being prosecuted by the Government on the Hot Springs Creek?—A. I have looked at it frequently.

Q. Do you think the plan adopted by the Government for draining the creek and widening the street the proper one?—A. It seems to me, with the slight exception of the sewer, to be all right.

Q. But you think it should not be used as a sewer?—A. Yes, sir.

Q. And in addition to the sewer you think to make it healthy pipes should be put down?—A. Either pipes should be put down or at the branch of these two creeks there should be an arrangement for flooding the stream every eight or ten days.

Q. Do you think the water could be retained long enough above to do the flushing?—A. There is no doubt of it, sir.

Q. Is the amount of filth going in there now more than it was before the time of the fire?—A. I do not know that it is, with this exception, that before the fire the creek was covered with houses, and more debris, perhaps, went into it then.

Q. Are there more obstructions in the creek now than then?—A. Less.

Q. And the flow is now freer than formerly?—A. Decidedly.

Q. When the work is done it will present a smooth bottom and sides, and facilitate the flow, and do you think the work is sufficient for the purposes it is intended?—A. I do not know about the masonry. I only judge by past experience with this creek. Mr. Belden walled up the creek some years ago with the same kind of stone, and when the Government contractors went to remove it it was found standing there solid.

Q. What have you to say about the durability of the material used and the fitness of it for that purpose?—A. As far as my judgment goes, I think this stone the full equal of the granite.

Q. Do you think the stone they are using, which is blasted from the side of the hill here, as good as the granite first used?—A. Yes, sir; it is a kind of novaculite and almost flinty, and I do not see how they could dissolve it.

Q. How about the sand?—A. I do not know anything about the sand. I never examined it.

Q. The sewer is large enough to carry off the rainfall, is it?—A. I think it is, and especially in the manner in which they have evened off the bottom, and if from the upper portions of these creeks to the end of the work the bed of the stream is cleared of all possible obstructions that might fall in it.

Q. Have you any knowledge of the management of the bath-houses in this place?—A. Yes, sir: as far as my patients are concerned that bathe there.

Q. Well, from what you know, are there sufficient accommodations for bathing?—A. I never heard of any complaint, sir; not any more than there always was. There have always been a lot of grumblers in this place.

Q. Is there any complaint, that you know of, as to the prices charged?—A. No, sir; only by a class that has no money. They would complain just as much when they were three dollars as when they were five.

Q. Is there any complaint, that you know of, that the poor have not sufficient bathing facilities?—A. I never heard of any complaint except by rumor. To my own knowledge, I never saw a person who was deserving that did not get his bath gratis.

Q. Then you do not know that there are not sufficient bathing accommodations here for the poor?—A. My opinion is that we do not want a bath here for them. Paupers come here from all parts of the world, and they are sent here from everywhere to get rid of them, and this place is looked upon as a sort of paupers' hospital. We have more paupers here now than we know what to do with.

Q. Then you would not recommend a bath-house free for that class?—A. I would not.

Q. I speak of the deserving poor who come here to be cured and who are in indigent circumstances and cannot pay. Are there sufficient accommodations for that class now?—A. I do not think there are.

Q. Is the supply of water here amply sufficient to bathe all the people who come here all the year?—A. Yes, sir; as far as my knowledge is concerned.

Q. And ample hotel accommodations here also?—A. The hotel accommodations might be better and be on a more magnificent scale to accommodate a class that would come here; I mean Saratoga and Long Branch gentlemen.

By the CHAIRMAN:

Q. You speak of a first-class hotel, I suppose?—A. Yes, sir.

Q. Do you know anywhere in the country of a better hotel than the Arlington?—A. I do not, or a better conducted one, and I boarded there a long time.

Q. And equal to anything you find in first-class watering places, is it not?—A. Yes, sir.

By Mr. STORM:

Q. Do you know of any better hotel than the Sumpter House?—A. Yes, sir.

Q. Do you find any more complaint since the pool has been formed than before?—A. I never heard any in regard to that. This is a cosmopolitan place and you can hear almost anything.

Q. We want to get at complaints based upon some good cause?—A. No, sir.

H. A. WHITTINGTON, being duly sworn, was examined as follows:

By the CHAIRMAN:

Q. We are here as a committee of Congress charged with the duty of inquiring into the method and construction of this public work, as to the material being used and the workmanship, and into the management of the Government property generally, which would embrace the leasing of bath-houses and as to outlying property and everything of public interest. Now, you know the scope of our inquiry, and any information you may be able to give us in respect to these matters we would be glad to have it.—A. I know but very little about it.

Q. Have you observed this work going on here?—A. Yes, I noticed it some.

Q. Do you know the character of the work as to whether it is properly done?—A. No, sir; I never saw any work of the kind.

Q. And you are not competent to form an opinion about that?—A. Not about the manner in which it is done. It looks well enough to me.

Q. Have you noticed the material?—A. Yes, sir; I noticed the stone that they used.

Q. Do you regard it as good material for work of that character?—A. Yes, sir; the granite that they used in the first place, I think, was good, but I do not think any more durable than this other rock that they are using outside of the creek. I know it is as hard as any stone. I have been acquainted with that rock a long time.

Q. What conclusion have you arrived at from your observation?—A. As to that stone they use now.

Q. Yes.—A. I think it very durable.

Q. Have you had any building done with it?—A. No, but I have seen it used. The old man built a wall there forty years ago and it was just as good when it was torn down, not long ago, as when it was put up.

Q. Where was the wall?—A. Just above where the Grand Central was, and a little above this other wall. It was not the wall that Belden built. It was above that. But it was done a long time before Belden came here.

Q. When was that work done, do you say?—A. It was done from thirty-five to forty years ago.

Q. Did it stand as a good, durable wall?—A. It was just as sound as at first. It was a dry wall, and you could only see the rock.

Q. And no cement was used?—A. Not a particle.

Q. Just the rocks placed one upon the other?—A. Yes; and then the dirt raked in it from the mountain.

Q. How long have you lived here, major?—A. I have been here a little over fifty years; fifty-two years.

Q. Do you know the assessed value of the city property?—A. Well, sir; not much; I do not pay much attention to anything of that sort.

Q. Do you know what the assessment is; how much it is upon the dollar?—A. Well, it is about \$2 or \$2.25 on the hundred. Do you mean for taxes?

Q. How much of that is State, how much city, and how much county?—A. One-half per cent. city and the same for the county.

Q. You do not remember the amount upon which that tax is levied, do you?—A. No, sir.

Q. Has the city taken any measures towards constructing a system of sewerage for the town?—A. No, sir; I believe not; not that I have heard of.

By Mr. STORM:

Q. In the valuation of property, at what rate is it assessed; it is not assessed at its full value, is it?—A. It is supposed to be.

Q. But in point of fact, is not it the rule of the assessor only to assess it at about one-third or one-half of its actual value?—A. I do not know; I think some of it is assessed for its full worth.

Q. What is that property of yours on the corner of the avenue assessed at?—A. I do not recollect, and I paid my tax but a week or two ago.

Q. Is it assessed at \$65,000?—A. No, it was assessed for about—I do not know; may be \$18,000.

Q. Is that its value?—A. That front lot there, I do not know what it is worth exactly; I would not sell it for that.

Q. Does not the assessor adopt as a rule to assess property at about one-half or one-third its actual value?—A. He did not say so.

Q. Probably the law does not say they are to assess at anything but full value, but as a matter of practice they do not do it in my State.—A. Some property is assessed here for all it is worth, and then some is not.

By Mr. PAYNE:

Q. Who is the assessor here?—A. A man by the name of Samuels is assessing now; you could find out everything of that sort from him, I suppose.

By the CHAIRMAN:

Q. Do you think, Mr. Whittington, that if the Government should prosecute its work on this creek below the city that the city would be able to put in a system of sewerage on the west side of the creek without further aid from the Government?—

A. Would they be able to?

Q. Yes.—A. Yes, sir.

Q. Do you think the city would be willing to do it?—A. I do not know either. I do not know how the city could do it, but I think they could do it if they wanted to. The citizens are able to pay if there is any way of making them do it.

By Mr. PAYNE:

Q. Have not you a city authority here; a council?—A. Yes, we have a council.

By the CHAIRMAN:

Q. Cannot the committee of fourteen make them do it?—A. I do not know.

D. W. HASHAL, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Are you acquainted with the cost of bath-houses that are erected here?—Answer. Yes, sir, somewhat.

Q. To what extent, and how did you acquire that information?—A. Well, sir, by building them.

Q. Which ones did you build?—A. Well, sir, the first one that I built after the fire was the Monarch gambling-house.

Q. That is not a bath-house?—A. It was a bath-house, you will recollect.

Q. I mean those in use?—A. I built the Rammelsburg Bath-House. That is a brick bath-house.

Q. What did that cost?—A. I handled all of Mr. Rammelsburg's money, and it cost \$10,782, to turn the water on, and included furniture and excavating and all. I was with Mr. Rammelsburg when he bought the furniture in Cincinnati.

Q. And the whole cost of the concern ready for bathing was how much?—A. Ten thousand seven hundred and twenty-five dollars, I believe, was within a few dollars of it. I handled all of Mr. Rammelsburg's money at that time. The next one I built was the Independent.

Q. What did the Independent cost?—A. My contract for the Independent was for simply labor and material, without the tubs and the piping. The cost was \$8,800 and some odd dollars. I furnished the stone wall and everything. I did not furnish the piping, or plumbing, or tubs, but everything else except that.

Q. What was the probable cost of the whole concern then?—A. Well, sir, I do not know what the furniture cost, and it would be a guess. It might have cost \$10,000 with the furniture.

Q. Is it necessary to put furniture in these bathing houses?—A. Of course you have to furnish a sitting-room. You have to furnish chairs, and carpets, and looking-glasses in the bathing-rooms, and hat-racks.

By Mr. STORM:

Q. What did the bath-tubs cost?—A. These zinc tubs cost \$21 or \$22 or \$23, laid down here.

Q. How many tubs are there in the Independent Bath-House?—A. I do not know; I never taxed my mind with how many tubs there are in it.

Q. Can you give an estimate of the amount it would require to complete the building ready for bathing?—A. I suppose \$12,000 would be a big estimate for that house. The next house I built was the New Rector.

By the CHAIRMAN:

Q. What did that cost; that one adjoining the Arlington Hotel?—A. I had a partner then. I think we got \$13,500 for that without furniture. I was with Major Nelson just when they got it into running order, and he said after they struck a balance sheet it was about \$21,000. That included everything about the house. I think a little bit over \$21,000.

Q. Is it or not true that rooms upstairs were furnished, in which parties are now living, and did you or not include in your estimate these furnished rooms?—A. Yes, sir. These rooms were very neatly furnished upstairs in the New Rector, some of them.

Q. How many rooms are there up there?—A. Some five or six.

Q. Are they a necessary attachment to bathing?—A. I do not think they are; I know they are not.

Q. Would it be a convenient place for an invalid to go before or after bathing?—A. Yes, sir; I presume it would be if he was able to get up stairs.

By Mr. STORM:

Q. They are not used for that purpose, are they?—A. No, sir; they are not used for packing purposes.

Q. They are occupied as permanent residences, are they not?—A. When a man goes to bath he likes to go somewhere and lay in a blanket and rest. I call it packing.

Q. But these rooms are not used for that purpose, are they?—A. They could be used for that purpose, as I say, if the invalid could get upstairs.

By the CHAIRMAN:

Q. Are they not used for packing?—A. No, sir.

Q. Do you know who superintended the construction of that building?—A. How do you mean?

Q. Who was in charge?—A. Mr. McGowan got up the plans, and Colonel Hamblen, Superintendent Hamblen, was my master on the job.

Q. Was he or not at that time superintendent of the reservation?—A. No.

Q. State if any blasting was done at the time he was superintending the building; and if so, what transpired in connection with it?—A. We had to blast a good deal there, and we dried up the Arsenic Spring there entirely. For awhile there was not a drop of water in it. I contracted also for the blasting. We built the foundation and everything of that kind.

Q. Under whose direction was this blasting done?—A. Mr. Hamblen; we got our orders from him.

Q. State any conversations that took place between you and Mr. Hamblen in regard to that matter.—A. I do not believe I could do that. I have not taxed my mind with it.

Q. Is it true or not that Mr. Hamblen said to you that if General Kelley was there he would not permit the blasting?—A. I believe it is true.

Q. Why would he not permit the blasting?—A. On account of destroying the springs.

Q. Well, who had it done?—A. Why, Mr. Hamblen and Mr. Nelson and Governor Rector had it done.

Q. Was it regarded as dangerous?—A. Well, so much so, as I told you, that we stopped that Arsenic Spring, and I do not know but what it is stopped yet. A pipe was stuck in the back there, and I think that pipe is in there yet to supply it.

Q. Was there or not a copious flow of water in that spring anterior to this blasting?—A. I suppose all citizens know that there was a great abundance of water in that spring, and I think there must have been thousands of people who visited there every day. There was a long dipper there, and people came and went every day.

Q. Who superintended the construction of the Independent Bath-House?—A. Mr. Hamblen superintended there.

Q. Was any blasting done there?—A. Very little. Just the smallest amount, and not to amount to anything. I did that also.

Q. Was any injury done these springs by that blasting?—A. I do not think so.

Q. Are you familiar with the blasting here?—A. I am very familiar.

Q. What effect has it had upon these springs?—A. Every big blast we put in shook up some spring at some point.

Q. Did it do them any serious injury?—A. Yes, sir.

Q. What about the Old Hale?—A. I do not know what that house cost. My impression was that it cost about \$4,500 to turn the water on there; not \$5,000, I am sure.

Q. That is a house of small capacity, is it?—A. Well, I think they must have sixteen tubs; but it is a very plain, common house, and built cheap.

Q. Is there any other house that you constructed and have a knowledge of the cost?—A. I built Dr. Rockafellow's bath-house the last time it was built; but that was off the reservation. I built an addition to the Hot Springs Bath-House. I didn't build it the first time. That is a very cheap bath-house.

Q. Did you state in regard to the Ozart Bath-House?—A. I had nothing to do with that.

Q. What would it cost to put up such a building, I mean furnished and ready for bathing?—A. I do not recollect. I believe that could be furnished for less than \$5,000.

Q. What did the Palace Bath-House cost?—A. I think about the same. The man took the contract for that for \$4,500, and let down on it.

Q. What do you think it cost?—A. I do not think it cost \$10,000.

Q. Furnished and all?—A. No, sir; I would not say anything about furniture. They have expensive tubs, and tubs cost from \$10 to \$115.

Q. That is the tony bath-house of the valley, is it not?—A. They have mighty fine bath-tubs there.

By Mr. PAYNE:

Q. What are they built of?—A. Earthenware, manufactured in Scotland, and called porcelain tubs. It is a tub manufactured out of potter's clay. It is molded and shipped here.

By the CHAIRMAN:

Q. Did you construct the Big Iron Bath-House?—A. I did not.

Q. Do you know what it cost?—A. I do not.

Q. Is there any other bath-house that you have any knowledge of, as to the cost?—A. No, sir.

Q. Is it true or not that Mr. Irvy lost money in doing the brick-work of that house?—A. Mr. Irvy lost \$75. That bath-house was built without any price at all. I handled his money and built by the day. I hired all the men and paid them myself. Mr. Irvy took the contract to put the brick in the wall for \$12 a thousand, and walked out of town, when he could have got \$15, but that was all he asked.

Q. Was Dr. J. M. Keller interested in the building?—A. He was.

Q. Do you know how much they spent on the Magnesia Spring?—A. Yes, sir.

Q. How much?—A. We spent about \$2,200, and Dr. Keller paid \$100 on it. Dr. Keller furnished the \$100 bill that was paid on that work.

Q. What were you doing with the spring?—A. Trying to raise it. This \$2,200 did not come in the estimate of the cost of the Rammelburg Bath-House.

Q. What do you mean by trying to raise it?—A. We were trying to get the water up the hill. When they blasted here they broke up the spring.

Q. How much did that cost?—A. I suppose it cost about two and a half to ruin that spring.

Q. Did Dr. Keller transfer or sell his interest in that lease?—A. Yes, and he got \$1,500. He got \$1,500 back and lost the \$100 that he put in. I was an eye-witness to that contract, but I do not think any papers passed between them.

Q. You say that the Palace Bath-House cost \$10,000; do you know that to be a fact?—A. I do not.

Q. What do you base your information on when you make that statement?—A. By practice and theory both.

Q. Do you think you could build one similar to that for \$10,000?—A. I think so. I think that the New Rector is \$5,000 the best house, and we had more than \$1,000 worth of excavating there than at the Palace, because there was no excavating at the Palace at all. The vapor trough was built before the fire.

A. S. NICKERSON, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside?—Answer. Hot Springs.

Q. What is your occupation?—A. Plumber.

Q. Have you any knowledge about the public work now being constructed here?—

A. I know it is being done here.

By Mr. STORM:

Q. Do you know anything about the supply of hot water at the Arlington Hotel?—A. I do know of its going there. The hot water going in there is for drinking purposes, and I made all the changes there.

Q. Were you the plumber that made the changes?—A. Yes, sir.

Q. Just state, then, how the hotel is connected with the hot water on the reservation.—A. Connected by a 1½-inch pipe.

Q. Is that the only pipe leading from the spring to the hotel?—A. The connection is a 1½-inch pipe, and it supplies the whole hotel.

Q. You do not know of any other pipe leading to the hotel from any other spring on the reservation, do you?—A. There is no other pipe. There is a small fraction of large pipe, but it does not accomplish any object at all. It is only in there because it is cheaper to leave it in than to take it out.

Q. Do you know whether any water runs through it?—A. Only such as passes through a 4-inch pipe. It is a 2-inch pipe, but it does not use that volume of water, but only such water passes through it as passes through a 4-inch pipe.

Q. What is the water in that 2-inch pipe used for?—A. It runs into the 4-inch pipe again.

Q. Now, what is that water used for that comes through the three-quarter-inch pipe?—A. It is used there on the porches and in the place for drinking purposes.

Q. Is that the only purpose it is used for?—A. That is all it is used for.

Q. Is there no other water running in there used for washing purposes?—A. Yes; there is other water in there.

Q. I mean hot water?—A. Not now.

Q. Is it so arranged that they can use it if they wish to?—A. Yes.

Q. Can they connect this hot water with their wash-basins?—A. It is already connected.

Q. And can it be turned on when they want it?—A. It can be turned on under the building.

Q. Is any of the hot water used for the water-closets or for the urinals?—A. No, sir.

Q. How long has this three-quarter pipe been in that condition?—A. Since a year ago last January or February.

Q. What was the supply prior to that, if you know?—A. Two-inch pipe.

Q. And that is a part of it that you speak of.—A. Yes, sir. For a short distance it is left in, but what I could utilize and connect with the city pressure I did so. The 2-inch pipe runs a very short distance.

Q. This 2-inch pipe which was in there, a part of which you say you fused, was it connected with the hot water prior to January a year ago?—A. Yes.

Q. Then what was this hot water used for?—A. For general purposes.

Q. For all purposes?—A. Yes, sir.

Q. And January a year ago the Arlington Hotel was connected with the public water-works, was it?—A. Yes, sir.

Q. Have they since then used hot water, except for drinking and for the protection of the wash-basins?—A. Yes, sir; they have only used the hot water for the protection of the wash-basins in cold weather.

Q. Do these founts run all the time?—A. No, sir; they do not run all the time.

Q. Do the drinking places run all the time?—A. Yes, sir; and it all runs away. Just enough is left running to keep it in circulation.

Q. Did you run a pipe in the Arsenic Spring?—A. No, sir; I blew a pipe out. That is some time ago and not lately. That was forced out, as it often stops up.

Q. What pipe was it that you blew out?—A. I cannot say. One of my employes did it. It has been a common occurrence.

Q. What do you mean by forced out?—A. The pipe becomes stopped up.

Q. You put a force pump to it and forced it back, I suppose?—A. Yes, sir.

Q. For whom did you do that work?—A. Under the direction of Governor Rector.

Q. For the benefit of what house or bath-house?—A. It was charged to the Rector Bath-House.

Q. Then the Rector Bath-House is connected with this spring, is it?—A. I do not know anything about that. It is under the Rector Bath-House. It was under Governor Rector's direction that I charged the account to him.

Q. You do not know where the pipe ended, do you?—A. I only saw one end; I did not look for the other end; whether it ended at the spring I could not say.

Q. Does the spring run now or not?—A. I do not know whether it is running or not. It is all cement work under that. The spring water, I suppose, is somewhere else.

Q. Well, the water is not taken there just to waste. It is used for some purpose, is it not?—A. No, sir.

Q. Then as far as you know the water runs to waste?—A. It is used for drinking purposes, as far as I know.

Q. Do you know the cause of that spring going dry?—A. No, sir.

Q. Is it true that a pipe was run from the Arlington Hotel across to a house occupied by Mr. Rugg, when he was one of the proprietors of the Arlington Hotel, and the water conveyed over there, coming from the reservation?—A. I do not know.

Q. Do you or not know of work being done there one night?—A. Not since I have been in business.

Q. Do you know anything about the creek work here?—A. I observed it all along.

Q. Are the materials used in this improvement durable materials and suitable for this character of work?—A. I think so.

Q. Is the sand good?—A. I think so; I cannot speak as an expert, although I have had intimate friends here who are experts and they say so.

Q. Do you know whether the sand is proper sand to be used for that purpose?—A. I cannot say.

Q. How is the work done with reference to the masonry?—A. I think it is very creditable.

Q. What kind of masonry is it?—A. I could not say.

Q. You cannot classify it?—A. No, sir; I have seen on extensive works in the East work far inferior.

Q. Is this culvert of sufficient capacity to carry off the water?—A. I only saw it in one large freshet and it did very nicely then.

At this point the committee was informed that a delegation, appointed in connection with the matter of the sewerage of Hot Springs, desired to appear before the committee, and the delegation was informed that the committee was ready to listen to any proposition they might advance.

Mr. I. W. CARHART. I am acting simply as chairman for several other gentlemen in connection with a matter which we wish to talk about. The question of sewerage

for this city has been discussed a good deal in connection with the Hot Springs Creek improvement, and we thought it would be well perhaps to call the particular attention of the committee to that subject. It is a fact that the creek is a sewer, and will remain so for the upper part of the town, or about one-third of the town, unless the system of lateral pipes should be adopted and extended to the northern boundary of the city. The wall now stops at a point where the two creeks come together. We see no way of preventing the creek, as it is now, from being a sewer, and that being the case we wish to urge the necessity of correcting it, or the impropriety of leaving it as it is at present, at its present point of terminus. We wish that if the lateral pipe system shall be adopted, that the same may be extended below at least the corporate limits, or if the creek, as now arched over, be the sewerage for the northern part of the city, that it shall be so covered and protected that it will amount to the same thing. I mean that it shall be so constructed as not to empty at a point in the business portion of the city.

It seems to be impossible to keep the flow of water that enters this arch from being contaminated by the population in the northern part of the town, and these are simply suggestions which we wish to present. We do not propose to offer any suggestion as to what kind or style of sewer shall be adopted, as this matter is abundantly treated of in the books. Doctor Ordway is also a member of the committee, and will perhaps speak on sanitary matters a little.

Dr. L. O. ORDWAY. Mr. Carhart has spoken of the creek as a sewer. If I am rightly informed, the Arlington Hotel and some other buildings are using it now as a sewer, as they must have an outlet for their offal, and probably others will use it. If the arched creek stops at its present point, or anywhere within the city limits, the cleansing influence or purifying influence of the water will be light, and we may certainly look for a stench that this city now knows nothing about. Perhaps Chicago did in its palmy days, but, as one interested in this city, I hope that the Government, having seen the effect of arching a portion of the creek, ostensibly for the protection of its own property here, that it will continue further on, or else I feel that our town will be absolutely depopulated. Visitors will not come of their own free will to any town where there is danger of infectious diseases. We look for epidemics of different forms, perhaps more especially those of the typhoid type, if this sewer is allowed to remain open in the midst of our city. I believe that is all I have to say on the subject.

By Mr. PAYNE:

Q. Are any of the members of your committee connected with the city government?—A. No, sir.

Q. Do you know whether the city government, under the general laws, has power to build sewers?—A. I suppose they have, although I am not a lawyer and am not prepared to answer that.

Q. You understand that to be the fact, do you not?—A. I could not say. I am a practitioner of medicine, and not a lawyer.

Q. Do you know of any place which lies better, with a better fall from one end of the street to the other, and that could be more easily drained by a system of sewers than Hot Springs?—A. I expect that is true.

Q. And do you know of any reason why the city should not do its own sewerage instead of the Government?—A. I do not know of any reason, and will say that that brings up another point. I have no doubt but what the city of Hot Springs could in time accomplish this, but before it is done I believe the town would be so ruined that it never could be done by the city. My candid belief on the subject is that the town would be ruined beyond redemption before the city would be ready to undertake this work; and for that reason I think it necessary that the Government should do it, and only for that reason. If the city was rich and its citizens were able to put their hands in their pockets by taxation, or in any other way, I think it would be better for the city to do it. But I think the fame of Hot Springs as a healing resort would be gone before this could be accomplished.

Q. I do not know of a town in the United States, of the size and population of Hot Springs, where property is worth as much per foot as it is here.—A. That is, on one narrow street.

GEORGE W. BAXTER. I desire to say, in this connection, why the city cannot do the work. In the first place, the city was not able to collect taxes until within the last year, and the city and county are very much indebted for the reason of unsettled titles, as litigation has been going on thirty or forty years. I desire to say furthermore that we are citizens of the United States, and the United States has got more valuable property here than all the citizens of the town put together, and we feel that the whole people have an interest in this place, and we feel that the United States Government ought not, as a matter of justice and equity, leave this place in charge of those who live here and put upon us the whole burden. I do not think the Government should depreciate our property and endanger the health of the people who come

here! We believe that the mountain known as the Hot Springs Mountain is worth more than all the other property here put together, and we believe that it is the duty of the Government to protect its property and protect the people who come here, and we feel that this burden ought not to be left on us. As to the question asked whether this tax could be levied here or not, there is a gentleman present whom I should like you to hear on that subject.

By Mr. STORM:

Q. Do you mean whether there is a law authorizing it, or as to the ability on the part of tax-payers to pay it?—A. It can only be done by law, and I know that there is no law authorizing us to levy this tax.

Q. Do you have a limit in your constitution, and have you reached that limit?—A. Yes, sir; we cannot collect more than 5 mills on the dollar and we are in debt to that extent now on account of our schools. You doubtless have a map here of Hot Springs, showing the amount of ground owned by the United States and that owned by individuals, and by reference to that you will find that the United States owns a much larger area than our citizens own.

Q. If you include the Hot Springs Mountain that may be true.—A. I do not include the Hot Springs Mountain. You will see here [indicating on map] that the United States owns a larger area outside of the Hot Springs Mountain.

Q. These other mountains are not worth much to the Government, are they?—A. If you put them up at auction you would find what they would be worth.

Q. Has there been any voluntary contribution on the part of citizens for the improvement of the town?—A. Yes, sir.

Q. What amount?—A. I really do not know the exact amount. The citizens contributed for paving the street and raising Central avenue, the main street here, and volunteered to grade Ouchita avenue and Malvern avenue, and, when they are able, Park avenue.

Q. Have any streets or avenues been graded at the cost of the citizens since the streets were turned over to the city by the Hot Springs Commissioners?—A. Yes, sir.

Q. Was the script issued to the parties?—A. Yes, sir.

Q. And that is an indebtedness against the corporation, is it not?—A. Yes, sir.

Q. And they expect to be reimbursed, do they not?—A. They expect to get 50 cents on the dollar after keeping it year after year, and it can only be used in paying taxes on real estate, too.

Q. Is it or not a fact that this contribution on the part of citizens improved the lots owned by the Government on both sides of the street?—A. Certainly. Now, there is near me a Government lot that two years ago would not have brought \$250, and to-day it is worth \$500, and this enhancement was due to the grading of that street there. By the way, this will soon be put up for sale, and you will find that it will bring that.

Q. Has the Government ever paid anything for grading the streets?—A. Never.

A. E. Dow. I do not know that I could add to anything that has been said. I am a member of the city council. In regard to the ability of the city government to make improvements here, such as sewers and other matters, I would say that we are limited by our circumstances. We have, I understand, a law called the sewer-improvement law, which allows the city council to district the city and put it under the head of an improvement district. In that case it requires the vote of the property owners in the district, and a majority governs. Butas has been stated here, we are laboring under a great many disadvantages. We have a population of six or seven thousand, and probably all the taxes ever levied and collected up to the present time will not exceed \$15,000. We have had the municipal government to support, and we have of course been laboring under a great many disadvantages, and by the constitution of Arkansas we are prohibited from making improvements here that are really needed. I will only add that in my opinion, as the Government has a large proportion of the property here, it would be better in many respects for the Government to take the matter of the sewerage of Hot Springs under its control. In the first place they have the experience and assistance of the best sanitary engineers. There is great difficulty in adopting, even if we had the means, a system of sewerage for the town that would be sufficient. We ought to have here the best system that could be devised. It is my opinion that it would redound to the benefit of the Government to adopt a system of sewerage and to carry out its construction under its own supervision. There will be a great deal of difficulty in case the city does it in getting at the best system of sewerage. Of course, in a small town like Hot Springs, there are a great many people who think they know a great deal about sewerage, and there is a good deal of feeling one way and the other, and to get down to really the best system of sewerage that could be adopted, it could not be done unless the matter was taken out of the hands of the city of Hot Springs. If we should adopt, under the law I have referred to, a sewerage, we might levy a tax. But along the line of that sewerage the Government owns a great deal of property, and yet the burden would fall upon the property owners. I have always thought it would be best for the city and best for

the Government if the latter adopted and completed a sewerage, and a plan that whenever a sewer pipe was laid it should be tapped by other pipes from the houses as they are built. As it is now, we have no system of sewerage. The system adopted in the present creek improvement is very well as far as it goes. I think, however, that we should have the lateral pipe system, for, in my judgment, I think it is wrong to allow the creek to be used as the sewer of the town.

By Mr. STORM:

Q. What would you think of a proposition being made on behalf of your town, that the Government, in conjunction with the city authorities, through one of the Government sanitary engineers, adopt a system of sewerage, your council to accept the plan, and then, in the construction of that sewer, the Government to pay one-half of the expense wherever that sewer drained Government property, and wherever it drained individual property for the individuals to pay? In every city I know of in the North, sewers are paid for by the foot by the adjoining property holders. They get the benefit of the improvement, and it is considered everywhere an equitable arrangement for those to pay for so many feet of the sewer as drains their property. I do not see why the citizens of Hot Springs should not be willing to pay one-quarter, or one-half, or one-sixth of the expense of an improvement that would go as much to the benefit of the property of individuals as well as the Government. You should not ask the people of New York and Pennsylvania to pay taxes to build sewers in Hot Springs, although people do come here from all parts of the country to enjoy your waters. Now, we would like to have some tangible proposition, so that we may go back and say that if the Government does so and so the people of Hot Springs will do so and so.—A. I will say, in answer to that, that the people of New York and Pennsylvania get the benefit from the sale of Government lots in Hot Springs.

Q. So far as the Government is concerned, it is now behindhand on the balance-sheet.—A. But it will be solid in the end, I think. But the paramount consideration with me is the adoption of a good system of sewerage. I think that your suggestion is very appropriate, and I think it is fair; but, at the same time, I do think the United States Government can well afford to put in a sewer here, especially adjacent to the reservation.

Q. I suggested to a member of Congress from your State that the Government transfer its claims to the State of Arkansas, and let the State take care of this property as its own, and he said to me that the State of Arkansas was too poor to accept the gift. Now, I suppose you know what that implies?

By the CHAIRMAN:

Q. Mr. Dow, I will ask you if the Government would not be forced eventually, for those bath-houses that are now situated on the reservation and those to be erected hereafter, to put in a sewer system?—A. Yes; with the Arlington Hotel I should judge so. I think it is very detrimental to the health of the city for the offal of these places to empty into the creek.

Q. Are not the closets of the bath-houses largely used by the guests of the different hotels?—A. Yes, sir.

MICHAEL HALEY recalled.

By the CHAIRMAN:

Question. What is your business, Mr. Haley?—Answer I do masonry work when I get it.

Q. Are you a stone worker by profession?—A. Yes, sir.

Q. You understand that business thoroughly, I suppose?—A. Yes, sir.

Q. Have you had much experience in the construction of stone work?—A. Yes, sir; I have had experience in stone work since I was sixteen years old.

Q. What kind of work?—A. All kinds.

Q. Have you worked on railroads or aqueducts?—A. Viaducts and stone walls and bridges, and I have done every variety of stone work.

Q. Have you noticed the work done on the Hot Springs Creek under the direction of the Government?—A. Yes, sir.

Q. Would you call that a good job?—A. Not as good as it should be.

Q. What is the objection to it?—A. Well, it should be as strong a job as they could put there by hand.

Q. Is it not strong?—A. It is not as strong as if it was dimension stone.

Q. What sort of stone is that?—A. That is stone cut by a stone-cutter; square blocks.

Q. Do you think this rock got out of the side of the mountain proper material or not?—A. It is not as good as that would be.

Q. Do you think it is durable?—A. I think it is durable.

Q. Do you think it will make work that will last?—A. I guess it will.

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Q. Is it put up in a workmanlike manner?—A. Yes; it is put up in pretty fair shape.

Q. Do you regard it as first-class work?—A. No, sir.

Q. Do you know anything about the sand and mortar that has been used?—A. Yes, sir.

Q. What is the character of the sand?—A. The sand is very good material.

Q. What kind of sand would you call it?—A. I call it quarry sand; pit sand; that sand has all the ingredients that belongs to sand.

Q. Where is it got from?—A. It is got from the mountain on the side of Whittington avenue.

Q. Did you furnish the sand?—A. Yes, sir.

Q. And do you pronounce it good quality?—A. I knew it to be good before I introduced it for sale.

Q. The sand-bed belongs to you, does it?—A. Not now.

Q. Did it belong to you when you were furnishing sand for the work here?—A. Yes, sir.

Q. How did you know it to be good?—A. Because I used it in my work.

Q. What sort of work?—A. The first time I used it was on Dr. Garnett's work.

Q. What sort of work was that?—A. It was a carriage-way that I built on the side of the hill. I was then sending for sand three miles and a half. The wagon broke down and I had to stop work. I was thrown back very much in my work, and so I tried some of the sand I found on the hill and made it up into mortar, and I found that it was far better than the other sand I had been using and made a better bond, and when the other sand came I just dumped it in the carriage-way and did not use it. That sand I had been hauling cost \$3.50 and this only cost me 50 cents. I discovered this was very good sand and started to use it and have used it ever since.

Q. How much did the contractors on this work pay you for it?—A. They paid me \$2.25 a square yard.

Q. Delivered?—A. Delivered.

By Mr. STORM:

Q. How many square yards did you deliver?—A. Well, I could not tell.

Q. How much money did you receive from the contractors?—A. I could not tell just now. I believe I drew thirteen or fourteen hundred dollars. It is very expensive getting it out.

Q. How much was there in this sand-bank?—How much land belonged to it that you owned?—A. I suppose about 234 feet.

Q. Square, do you mean? How far did it run back?—A. I do not know how far back.

Q. After that you sold it to Mr. Walton, did you not?—A. Yes, sir.

Q. For how much?—A. I sold it for \$150.

Q. Did you sell it or lease it?—A. I sold him the lease.

Q. How long had you a lease for it?—A. For one year.

Q. And when you sold that lease to them, how much of the time was unexpired?—

A. I think it was some time last September I sold it.

Q. How long had it to run?—A. It runs until the 13th of next August, I think.

Q. Well, the lease ran out at the end of the year, didn't it?—A. Yes, sir.

Q. What did Mr. Walton do when it ran out?—A. I do not know. The lease is not out yet. It goes to next August.

Q. Is the sand worth 50 cents a yard in the bank, or delivered?—A. No, I was concreting when I discovered the sand there.

Q. What would the sand be worth delivered here in the city?—A. I did not own the sand then. Anybody might haul it out. When I discovered the sand, I got a lease on the place.

Q. And then you raised the price?—A. Yes, sir; I knew it would stand competition, and I introduced it for sale, and called attention to the work I did. It speaks for itself.

Q. Why did you sell out your interest for \$150?—A. Because I had other business on my mind, or I would not have done it for that. You have been talking about the water around the Arlington Hotel. There is water that would fill a 10-inch pipe wasted under the Arlington Hotel.

By the CHAIRMAN:

Q. Where does it go to?—A. To the creek. It comes from the rear of the Rockafellow bath-house.

Q. What spring do you think it comes from?—A. I heard it grumbling below the surface 3 feet at first. It comes underneath the bath-house and empties in the front there.

Q. Is it near the Arsenic Springs?—A. It comes directly near the corner of the Arlington. They used to have a bath-house there then, and this spring ran alongside of it, and it seems to me that water has been running to waste all this time.

Q. Could it be preserved?—A. Yes, sir; they can preserve all that water. Whenever you want water I want to let you know it is there. That is my reason for stating this.

NAPOLEON ROWELL (colored), being duly sworn, was examined as follows:

By Mr. PAYNE:

Question. Do you live in Hot Springs?—Answer. Yes, sir.

Q. And have for a number of years, have you?—A. Yes, sir; I came to the State of Arkansas in 1872.

Q. What is your business?—A. I have been bathing. I was in a hotel the first three years and I have been in a bathing-house as an attendant ever since.

Q. Have you made any application for a bath-house site?—A. Yes, sir; I made an application to General Kelley about three years ago.

Q. Did you state in your application for what purpose you wanted it?—A. Yes, sir.

Q. What was it?—A. I stated to General Kelley in the application that the colored population was getting extensive here, and I thought they owned one-fifth of the property outside of the main thoroughfare, and I thought it necessary that they should have a place of their own to bathe.

Q. Did you mention any particular site that you desired?—A. I mentioned a site below the Big Iron bath-house and one down near the corn-hole, and that we would be glad to have either. I went to his office and had a long talk with him, and he told me he would see what he could do and let me know.

Q. Have you heard anything from him since?—A. No, sir. There was a gentleman who came from the Interior Department and was stopping at the Grand Central Hotel, and I spoke to him.

Q. Was that Assistant Secretary Joslyn?—A. No, sir. That was another application. The gentleman's name was Hadley, and Mr. Joslyn came down here last fall or summer; I think in August or September, to the best of my memory.

Q. Did you make application to him?—A. I waited on him with fifteen colored people at the Arlington Hotel, and I got him out on the porch and told him that the colored people were prospering here and all we needed was a place for our people to bathe at; that a great many colored people were coming here daily, on an average of a hundred a day, and they ought to have baths. I told him I was a bather myself, and I told him I knew that both sects could not bathe together with much comfort.

Q. Well, he did not dispute that principle, did he?—A. No, sir; and he told me, well, that is all right, Mr. Rowell; anything I can do for you people that will relieve you, I will do it; and he said, you get up an application and I will forward it; and I did get one up, and I got Mr. McCue, our engineer, to get up plans, and we named the place below the Big Iron bath-house, and I told him there was a couple of vacant sites between the Palace and Ozart bath-houses and below the brick bath-house, and I thought either one of these would suit us if we could get either of them.

Q. Did you get the site?—A. He said, "Mr. Rowell, you people go to work and get up plans and specifications, and I will have it attended to right away." I went down to the city clerk and asked him if he would draw up one, and he said he did not know how.

Q. Did he do it?—A. He told me to see the city engineer, and I saw him, and he told me he would do the best he could; he drew up the capacity and dimensions, and I took it up and handed it to Mr. Joslyn; he was out when I went there and I waited until he came back. He said I would hear from him in a few days, as he thought it would be favorably acted on.

Q. How long ago was that?—A. That was the last application I made; that was some time about the latter part of August or the 1st of September. He then went back to Washington and I expected to hear from him, and I never heard, and I wrote to the Interior Department, and I heard nothing, and this committee of colored people asked me what had become of our lease, and I told them I did not know. It was summer time, and I told them I guessed the Interior Department was taking a vacation.

Q. Were you able to build your bath-house according to the plan?—A. Yes, sir; we made arrangements by which five or six of us would take up stock, and a good many white folks said, "You get a lease and we will help you, because we think you ought to have it."

Q. Are there accommodations now for colored people to bathe here?—A. There are a few bathing-houses where they let them have a bath in the afternoon between 5 and 6 o'clock, and towards that time in the evening it is cool, and then they would have to go a long ways, because the most of them live off the front streets, and most of the medical people think it is injurious to go so far after a bath, especially in the cold time of the day. I consulted with Dr. Franklin and Dr. Rockafellow, and they recommended and thought it something we should have, and I thought and they said that it was something we should have. The present system of colored people bathing, I think, is that the Ozart and Independent will sell them a ticket, and the

understanding is that they have to get their bath the best way they can in certain hours, so they have to come down in the afternoon or early in the morning. My experience is that in winter time, from September to the 1st of April, all the physicians recommend baths from between 10 and 12 o'clock midday, when the air is most pleasant.

Q. I believe you said you have been a bather here for a number of years?—A. Yes, sir.

Q. What arrangement do you have with the proprietor of the bath-house to pay you for your work?—A. The guests pay.

Q. And you do not get anything from the proprietor of the bath-house?—A. I have a certain fee for my services.

Q. Who furnishes the towels and soap used?—A. Well, when a gentleman comes for a bath he furnishes his own towel and soap. I always tell them my arrangement is a \$1 a week to take care of him, and you furnish your towel, and my duty is to wash the tub after each person and fix the temperature of the water, and fix the vapor and wash the towel after each bath, and I tell him each visitor furnishes his own towel. People come here for different diseases and would not like to use other people's towels.

Q. You receive a \$1 a week from the visitor and do not receive any money from the proprietor of the bath-house?—A. No.

Q. How many can you bathe a day?—A. I could bathe thirty-five odd, if I could get them.

Q. In one set of tubs, or two?—A. In four tubs.

Q. Do you have four tubs for each bather?—A. Some two or three; each bath-house.

Q. Could you bath thirty-five in two tubs?—A. In summer I could probably bathe twenty-five by bathing before breakfast.

Q. How many do you bathe now in two tubs?—A. Fifteen.

Q. Do you not bathe more than that?—A. No.

Q. I mean during the day; taking the people as they come to you, how many do you average a day?—A. They generally bathe at the time fixed by the physician.

Q. During the whole day, how many do you actually bathe?—A. I bathe fifteen nicely in two tubs a day this time, and in summer I bathe twenty-five, because I have twice as much time as now, because many bathe before breakfast.

Q. Between what hours?—A. The physicians, you know, they recommend that.

Q. We know what the physicians recommend. We want to know the hours.—A. Ten to half-past twelve. The principal bathing is done then.

Q. Can you put fifteen through in two hours?—A. Oh, yes; easy. I pray you gentlemen to present my petition before the Interior Department favorably. I speak for my people in this matter, and they would be glad to have this bath-house.

MICHAEL M. MCKEOGH, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Did you obtain a lease for a bath-house site; and, if so, did you build a bath-house on that site, and have you it now, or have you disposed of it?—Answer. I obtained a lease during the month of May or June, 1880, for the bath-house site now known as the Independent bath-house.

Q. Were there any improvements?—A. It was unimproved.

Q. How long did you hold the lease?—A. I sold it in November, 1881, sir.

Q. What did you do with the site when you obtained the lease?—A. I completed the bath-house by the 17th of January, 1881, and sold it the following November, I believe.

Q. Is that the bath-house that one of the witnesses testified to here as building for you?—A. Yes, sir.

Q. Then, what did you do with it?—A. I sold it to Major Latta, Mr. Forecyce, and another gentleman whose name I do not remember; I believe Mr. Howard.

Q. What did you sell it for?—A. The price was \$17,000, sir.

Q. What was the cost of it?—A. If I remember rightly, the actual cost including furniture, was \$15,600.

Q. What did this furniture consist of? What furniture was there in this house not necessary for actual bathing purposes?—A. There were both parlors, the office, the rugs, mirrors, &c.

By the CHAIRMAN:

Q. You do not understand the question. Those articles are necessary for properly bathing people, are they not?—A. Well, you could bathe without them.

Q. Did you have bed-room furniture upstairs?—A. No, sir.

Q. Was there a bed-room upstairs?—A. Yes, sir.

Q. But it was not furnished, was it?—A. No, sir.

Q. How many rooms were there upstairs in this building?—A. Either twenty-one or twenty-three; I do not remember which.

- Q. What were these rooms used for?—A. I never used them.
- Q. What were they intended for?—A. For bed-rooms.
- Q. For the use of seekers of health here?—A. Yes, sir; for the use of guests.
- Q. Have they been used for that purpose?—A. My idea was, when I got the lease, to use them for sleeping purposes.
- Q. After you sold the lease were they so used?—A. Yes, sir.
- Q. There is no place in the establishment for victualing, is there?—A. No, sir.
- Q. The meals are taken outside, are they?—A. Yes, sir.
- Q. Was there a pool in operation then, and what did you charge for baths?—A. Yes, sir.
- Q. Was there a pool when you got the lease?—A. No, sir, not when I got the lease; but when I opened the bath-house the pool was in operation.
- Q. What were your prices?—A. I commenced charging \$5 a course of 21 baths.
- Q. Did that continue?—A. Up to a certain period, till we got to fighting and cutting and slashing around.
- Q. What did you cut down to?—A. I ran a banner across the street to come in and pay what they pleased. I do not think that I ever sold tickets less than \$3 a course.
- Q. Did other bath-houses have streamers out; and if so, what were their rates?—A. Three dollars, and as low as \$1 a course.
- Q. By a course you mean twenty-one baths, do you?—A. I mean twenty-one baths; I do not mean to say that they were all down to that; I say that some went as low as \$3 a course, and some as low as \$1.
- Q. After you sold out what was the charge for bathing?—A. After I sold out they went immediately up to where they are now, almost immediately; several months before I sold out the Secretary of the Interior issued an order to the effect that tickets should not be issued at a cost of over 30 cents, and if so the lease would be revoked; they were then charging from \$10 down to \$4, according to the grade of the bath-house.

By Mr. STORM:

- Q. Was that the first limitation put on the bath-houses?—A. Yes, sir; that was the first; in the spring of 1881.
- Q. Is it or not true that you had a great deal of trouble in securing water during the time that you ran the Independent bath-house?—A. I had exceeding trouble; I made application, and sent petitions to the Department to Washington through my friend, Col. Casey Young, but never got water from the elevated point on the mountain side for my vapors or douches, as they are called; I only got water from the Government tank and the old Hale bath-house. There have been several bath-houses built since then that have had a good supply of water, and while I was in the bath-house business they got it when I could not.
- Q. Had the houses below you any prior privileges?—A. They were not built then.
- Q. Is it or not true that you had to pay men to carry water in buckets and for pumping it?—A. The great bulk of my water came from the Government tank, which was not high enough to supply my cold-water tanks. I was compelled to build a tier of low tanks, and every night I had men with force pumps filling these cold-water tanks to supply my house the next day. I had worked myself when I could not get an employé, getting water from a spring, with a bucket, that was going to waste on the ground, and had to bale the water from this spring into these tanks I speak of.
- Q. How was it after you sold out?—A. I do not know, sir. I expect they got plenty of water; although I do not know positively whether they have or not. I know the tanks are not there and they do not employ these workers that I had to employ.
- Q. Do you know whether or not your house was the house last opened to business, and the last one built outside of the New Rector?—A. Your house (referring to Mr. Fordyce) was opened after mine. When Mr. Fordyce was erecting his bath-house mine was in operation.
- Q. Was or was not the Palace bath-house built upon the site of the bath-house that was burned, and had it or not a prior right to that location and the water, and had it or not been paying rent for the same all the time?—A. I cannot answer that question. I do not know what prior right Mr. Fordyce had.
- Q. When leases were granted to any one was there any provision in the lease subjecting it to the rights of prior lessees to have their quantity of water?—A. There was no proviso of that sort in my lease.
- Q. Was not it so provided in all the other leases? I only ask for information.—A. I do not know; it was not in mine.

Mr. PAYNE. The lease will show for itself.

By Mr. STORM:

- Q. What are your ideas of the present pool, its manipulations, and the manner in which it does business here?—A. In regard to the pool I was always opposed to it on general principles. I do not think it is beneficial, and it is not for the good of the

visitor and citizens, as it tends to make bath-house management indifferent. I have heard complaints from visitors and physicians in regard to the present inattention to visitors in the bath-houses. I can mention several doctors who talk that way—Dr. Lawrence, and others.

Q. Have you had any experience in the hotel business; and if so, how long?—A. Nearly all my life; since I was a boy.

Q. Where were you engaged in the hotel business?—A. In Montreal, Canada; Memphis, Tenn.; Hot Springs, and the Shenandoah Valley, Virginia.

Q. Do you know the premises known as the Arlington Hotel?—A. Yes, sir; I suppose I do.

Q. What would you give per annum, or what is a fair rental for it per annum?—A. Hotel and ground?

Q. Just as it stands, with the furniture.—A. I should judge \$25,000 a year.

Q. If you know anything about its capacity in the way of number of rooms, &c., state it.—A. I understand they now have in the neighborhood of two hundred bedrooms. I have never been through the hotel to examine it.

Q. Is the Arlington Hotel or not more desirably located than any other in the town of Hot Springs?—A. I think it is the most desirable location in town.

Q. Do you think you could find a purchaser for the Arlington property for \$100,000?—A. I am not prepared to answer positively, but I do not think I would have any difficulty.

Q. You stated that there was no provision in your lease in reference to the other bath-houses having prior claims. Here is your lease [handing paper to witness]. Please see what it says. It is the last clause there.—A. (After looking over paper.) Well, I have no means of ascertaining whether that lease to Colonel Fordyce or the Rector lease were issued before mine. I know I started the erection of my house first, and it was in operation before they had finished. I am mistaken about that proviso not being in my lease.

Q. Did you or not sign the first articles of association of the first pool that was established in Hot Springs?—A. I never belonged to that crew. I was elected secretary.

Q. Did you sign it?—A. I will not answer that positively.

Q. Were you present with the owners of the bath-houses, and did you or not help to organize that pool and sign the articles of organization?—A. I never cast a vote in the organization.

Q. Were you present when this first pool was organized?—A. Yes, sir.

Q. Were you then elected secretary?—A. Yes, sir.

Q. And your house was not erected then, do you say?—A. No, sir.

Q. After your house was erected did you refuse to go into the pool?—A. Yes, sir.

Q. You said that the pool reduced the rates of bathing, and that they forced you to sell. Do you pretend to say that the pool was in operation when you sold the Independent?—A. I do not pretend to say so.

Q. Had the pool expired before you sold the Independent?—A. Certainly it had.

Q. Then the formation of that pool which expired had nothing to do with enforcing you to sell your bath-house, did it?—A. Yes, sir, unquestionably. War was made on me.

Q. After the pool expired?—A. Yes, sir; and through your influence (referring to Mr. Latta, who was conducting the examination through a member of the committee) and the control of General Kelley. I will say that if you want to go into these matters. Through your joint influence you forced me out.

Q. How?—A. Because I could not get water. You employed drummers, and the first move was made by you to put down the prices. I am talking with reference to the pool before it expired.

Q. Is it or not true that the pool was disbanded and reorganized?—A. Yes, sir.

Q. Is it or not true that you sold your bath-house at your own price after the expiration of the pool, and months afterwards?—A. That is a fact.

Q. And the pool expired and no pool existed at that time?—A. That is correct.

Q. Did you or not solicit Mr. Latta time and again to buy you out?—A. It came about through Mr. Miller. Mr. Miller came to me and told me of the proposition. Mr. Latta had sent Mr. Miller to Jacksonville, Fla., or some of them had. He got the money from some members of the pool to pay his expenses to see Mr. Holmes, to transfer the lease, which I had declined to do up to a certain period. Mr. Holmes refused to go into the pool and sell.

Q. The question is, that after the pool expired, did you or not go to Mr. Latta and solicit him time and again to buy you out, stating you wanted to go out of that business, and wished to empark into the hotel business?—A. Certainly I did.

Q. Did it or did not Mr. Latta pay you the price you asked?—A. He paid the price we agreed upon.

Q. And did he pay you the money?—A. Yes, sir.

Q. Is it or not a fact, or do you know, that since the sale of the Independent bath-

house to Mr. Latta that the Independent bath-house up to the present day has suffered the same in reference to hot water as when you had it?—A. I do not know that as a fact. I have paid no attention to the bath-house business since I went out of it.

Q. Is it or not true that the pool from time to time would organize and then dissolve?—A. I only know of two pools that have been in existence that I can remember of.

Q. Now, this gentleman, Mr. Holmes, that you speak of, the committee does not understand who he was.—A. George H. Holmes, of Jacksonville, Fla.

Q. What was he doing here?—A. He was a visitor here, and he subscribed the money to erect the Independent bath-house, he owning a three-fourths interest, and I one-fourth.

Q. Well, who is Mr. Miller?—A. Subsequently Mr. Holmes could not remain here and he rented his privilege in the bath-house to Mr. Miller.

Q. Since that time has the bath-house changed hands?—A. I have only common report to testify to that. I do not know anything definite.

Thereupon (at 5 o'clock and 30 minutes p. m.) the committee took a recess until half past 7 o'clock p. m.

AFTER RECESS.

Committee met pursuant to adjournment.

SAMUEL WALTON recalled.

By Mr. STORM:

Question. You have been living here, how long?—Answer. Since the middle of September, 1883.

Q. At what have you been employed since you have resided at this place?—A. I have been engaged as contractor on the Hot Springs improvement; that is, I am not the original contractor, but that is my business, and I am at present engaged in doing the work, and have a half interest with the original contractor.

Q. The work is being done under the firm name of S. Walton & Co., is it not?—A. Yes, sir.

Q. The firm in which Samuel Walton (yourself) and George H. Bardwell are the members?—A. Yes; the two of us compose the firm.

Q. Well, Mr. Walton, you are a witness here in your own behalf, so you may just state what you desire concerning this work.—A. I will state from the commencement of the original contract. The original contract was awarded to Mr. Bardwell. I was at that time engaged in finishing up a railroad contract in Southwestern Virginia. He told me to come to Washington; that he had a contract in Washington and wanted to see me in reference to it. I went to Washington immediately after receiving his telegram, and he proposed to me to take the subcontract for the masonry. I entered into a conditional contract with him and came out here to look at the work. I found that his representations as to the nature of the work and the surroundings about the creek were true, and I notified him that I would accept the subcontract for the masonry and concrete work. I had my tools shipped on here and telegraphed for a number of men whom I had on the railroad. I started the work by putting up shanties $3\frac{1}{2}$ miles from town, where we had our quarry located. I put up these shanties for the purpose of filling them with our quarrymen, stone cutters, &c. I then returned to Virginia. Two weeks after I left here I entered into another contract with Mr. Bardwell, I to receive one-half of the profits and to pay one-half of the losses on the contract, whatever it might be. We started the work out here in the woods $3\frac{1}{2}$ miles, where we had put up the shanties, accommodating from 75 to 100, which we considered sufficient for the force we wanted to use out there, in the shape of woodcutters and quarrymen, to do the work under the original contract. I did not expect any change in the contract, but expected to go to work under the old contract. About the 25th of August I was in Washington, and Mr. Bardwell told me that the Department had notified him to give them a bid on rubble masonry, as there was a prospect of the plan being changed.

Q. State how much work you had done in getting out stone before this. Had you laid up any wall then?—A. Not at that time. The 25th of August, do you mean?

Q. Yes.—A. Yes; we commenced laying then. We had then been cutting and commenced delivering the stone and laying it up in the side walls under the original contract. In the latter part of August, about the 24th or 25th, I was in Washington and met Mr. Bardwell. He told me that the Department requested him to make a bid for rubble work; that they proposed to change the plan and arch the stream. He asked what would be the proper price to bid on it, and I told him \$12 per yard for the work. I believe he did make that offer at \$12 a yard, and to the best of my knowledge and belief it was not accepted. I told him to accept \$10.50 and nothing less; that we had a good profit in the original contract, and unless we got a fair price not to accept the change, and to go ahead under the original contract, as the contract specified that it should not be annulled until \$60,000 had been expended.

I then went on to New York to attend the letting of work on the Southern Pennsylvania or Vanderbilt road, and while there he communicated to me that his bid of \$10.50 had been accepted. I immediately notified our superintendent, Mr. Suddarth, to go ahead and prepare for the rubble work, and get out the material in town, not specifying where in town, and Mr. Suddarth, by the way, was not in Hot Springs when I left, but immediately on my return to Virginia he came here. We had never met in Hot Springs, I mean. I telegraphed him to commence getting out material for the rubble work, that the plan had been changed. I went back to Virginia, and on or about the 20th of September started for this place. When I arrived here they were about finishing up the laying of the cut stone on hand, when the notice was given to prepare for the rubble work. Perhaps a few days after I got here they finished laying the last. We commenced the rubble work on the plan, as I supposed to be the plan, the quality of work, &c., according to my directions, and a few days after I arrived here Mr. Joslyn came. They had then been laying in a few days the rubble work. He examined the work and said that is the kind of work we want. He said to Mr. Hamblen, who was standing by, is this the kind of work you are going to do? He said yes, I believe so; and then Mr. Joslyn said that is just the kind of work we want; work of that character, and see that that kind of work is done. But I must say that the work done since that has been done better than that was. We were doing that work up to the 15th of January, and have been doing a little work since.

Q. The appropriation run out on the 15th of January, and you stopped, did you?—

A. Yes sir, and we have been doing some little work since.

Q. As to the sand, how did you come to get the sand north of Whittington avenue?—

A. Mr. Suddarth commenced quarrying. I was not there myself when he commenced using that sand.

Q. Was Judge Joslyn here at the time?—A. He was here at the time and examined the material in my presence, and said that it was good sand and said use it.

Q. Did you submit the question of using that sand to him when he was here?—A. Col. Hamblen submitted this sand to him.

Q. And you were informed that he submitted that sand to Judge Joslyn and that he said it was good?—A. I heard that part of the conversation myself. I heard him say that it was sufficiently good sand to make good mortar.

Q. What was the character of the masonry after the change of contract?—A. We had commenced and had been doing up to this time a good job of rubble masonry.

Q. It is not range-rubble work, is it?—A. It is what you might term a broken range. It is not laid in regular courses. It is not what you term course rubble, but broken range. Range rubble, of course, is not supposed to be perfectly parallel. It may be six inches at one end, and in the course of thirty or forty feet a foot might not be perfect or regular. It is not like what we term ashler work. Range work might be put in, but the joints are not dressed, or not vertical joints, but lapping over. We have dressed all out-face stone and made vertical joints and horizontal beds. We are not required to do that in rubble work, and could not be required to do it under our contract, but we have it to protect ourselves, but I think we lay it faster by cutting than by allowing the mason to dress the stone with a hammer. We cut our joints in the bed.

Q. But the face is not dressed?—A. No; but the joints and the beds are dressed.

Q. This stone that you use is incapable of being dressed for range work proper, is it not?—A. It is not a stone that I would like to make nice course work out of.

Q. It is a stone that you could not dress and get out in certain shapes? That is, it could not be dressed with a hammer as granite could be?—A. No, sir; this stone is very hard.

Q. You lay it in courses, but the courses are not regular, like in range work?—A. No, but better than most of range-rubble work.

Q. What is the difference between granite and this stone beside this difference in dressing?—A. The granite is not as hard as this stone. The granite, although the quarry is rather inferior, comes out in larger blocks.

Q. This stone that you are using has a great many seams in it, has it not?—A. Yes, sir; a great many iron seams. It is a hard stone, and harder stone to cut than what we term the granite, though I do not call that blue stone granite.

Q. Is the wall built according to the specifications?—A. I think the wall is built better than the specifications.

Q. I mean as to the size of the wall, the thickness at the bottom and at the top?—A. Yes, sir.

Q. Do you think the wall is 5 feet wide at all points at the bottom?—A. Yes, sir; there might be a place or two, but not to amount to anything where it might vary an inch or two, but not to occupy a space of 50 feet of wall in the entire work.

Q. The wall that you had built prior to the change of the contract was torn down, was it not?—A. That was on the upper end. We took out two or three courses and lowered it. The specifications on the original plan called for a wall 8 feet high and 3

feet thick, laid in courses, or not less than 1 foot backed with concrete. The specifications did not say that we would not be allowed to lay a stone of more than 1 foot in thickness, according to my interpretation of the original specification, and we could have built the wall almost solid and demanded pay for it. All we had to do was to put a small quantity of concrete on the back, so as to say that we did put in concrete.

Q. You used one course of small stone and followed by a course of large, did you not?—A. We could have made it all broad and taken up the whole 3 feet.

Q. That would depend upon whether your contract for the stone work was more profitable than the one for the concrete.—A. Yes, sir.

Q. I was asking you what you did with the wall that you first constructed of granite?—A. That is there.

Q. Then you have not taken it down?—A. The top course we took down. We took off about 2½ feet, I judge.

Q. How much did that leave in the bottom?—A. That left about 5½ feet.

Q. I mean how wide was your wall?—A. We went out full 5 feet. We dug out and built a wall back of that, and built up with rubble masonry.

Q. That was 3 feet, and to increase it 2 feet you backed it up and carried it out 5 feet?—A. Yes, sir.

Q. How did you bind the two walls together?—A. We worked the concrete as much as we could and got a hold wherever we could, and backed the rubble against the other.

Q. So you did not have to tear down but 2 or 3 feet of the top course?—A. Yes, sir.

Q. The work done up to that time had been estimated, and you were paid for it under the rate of the old contract?—A. Yes; paid \$18.45 per cubic yard.

Q. When this work was altered, how was this work that you altered paid for? How was that estimated?—A. The stone we took from the top of the wall we moved up to the upper end. We took that which we moved to the upper end and formed the face of a new wall of the bluestone, and built in with that stone a rubble extension up the other creek.

Q. How did the engineer estimate the work, then, when this old work and the new work together were completed?—A. All of it as rubble work; all the new work rubble work.

Q. Then, so far as the granite went you got paid for the granite work at the rate of \$18.75, or whatever it was; and for the new work, at what?—A. At \$10.50. The taking off the two courses, I do not suppose, would make over forty or fifty yards.

Q. For the quantity of stone that was taken from the granite quarry and laid up you got your pay on the basis of \$18.45 per cubic yard, and the same quantity of stone went into your new contract was estimated for you at the rate of \$10.75 per cubic yard?—A. That is correct, but it formed a wall as it mixed with the rubble work.

Q. Then, the wall in the part that you first made up was afterwards extended to the full width of 5 feet, which you have already explained?—A. Yes, sir.

Q. Now, how high were you to carry the new wall in your new contract? Was anything said about carrying it up to a point higher than in the original contract?—A. Yes, sir; 5½ feet, I believe it is.

Q. Well, is that the height of the wall throughout the whole distance?—A. From the foundations?

Q. Yes.—A. It will average more than that height.

Q. You say that the contract was that you should carry it up more than 5½ feet?—A. From the established grade of the creek; I think 5½. I have not examined it since we commenced the work, but I think it is that.

Q. Were not the walls under the old contract to be carried up perpendicular, and under the new contract the same?—A. Yes, sir.

Q. The distance across the stream, how is that?—A. Seventeen feet.

Q. That remains the same?—A. Yes, sir.

Q. How thick was the arch at the spring?—A. Three feet.

Q. And what at the crown?—A. Eighteen inches.

Q. What were the sizes of the skewbacks?—A. Six inches at one end and 18 inches at the other.

Q. Are they granite all the way through?—A. They are what they call granite here.

Q. I mean this blue granite.—A. Yes sir.

Q. You intended to use that all the way through, did you?—A. Yes, sir. There may be half a dozen skewbacks from this other quarry but not to exceed that. They were made from the most solid stones we could get without seams.

Q. Do you know the length of your work as contracted for in feet?—A. I think two thousand eight hundred and fifty feet, if I am not mistaken.

Q. That carried you from where down to where?—A. From the commencement of the wye and this added since.

Q. Do you know how many feet it makes from the place you started down to the place where you have stopped here near the post-office?—A. From the commencement of either of the wings about 3,000 feet, taking one single wing.

Q. And by adding the other, what?—A. Thirty-one hundred feet.

Q. What proportion of the whole work of your contract has been done?—A. About seven-twelfths of the masonry; I judge perhaps three-fourths—no, about seven-twelfths at the present time.

Q. The excavation, is that all done?—A. Very nearly; there is some little to do yet. I could not tell you exactly as to that.

Q. The preparation of the bed of the stream you consider about finished, do you.—A. There is some of that to do yet.

Q. How is the bed prepared between the walls?—A. Where it is rough we are required to level it off and concave and pitch it to the center.

Q. What is the effect on the debris in the channel as now prepared? Does the slope show where the ground is washed out?—A. No, sir.

Q. Will it not be the effect, notwithstanding you sloped it, that the water will spread over the whole bed of the channel?—A. That the gravel and sand will not be carried out?

Q. Except in extraordinary occasions?—A. In freshets I think it will be.

Q. Have you noticed where it is not covered, that the bed of the stream is as even as a floor, showing that the depression you made in there has filled up?—A. You know the excavation has not all been taken out. After the whole thing is completed, I think any ordinary freshet will sweep everything through the tunnel. The fall is 1 foot in a hundred, and the stream flows quite rapidly.

Q. Were you in Washington when the new contract was made?—A. I think I was in New York.

Q. Were you in Washington pending these changes?—A. I was in Washington the 25th of August or along there.

Q. Was that before or after the change was made?—A. Before the change was made.

Q. Did you go to the Interior Department?—A. No, sir; not then.

Q. You never had anything to do with the Department in these changes?—A. Yes, sir.

Q. Is there anything else you wish to testify to concerning this matter, Mr. Walton?—A. I believe I have testified as to the material and construction.

Q. Did you assist in the measurement of the work?—A. Oh, yes; I measured my own work every month as the work went along.

Q. And kept an account of it?—A. Yes, sir.

Q. Did you aid the superintendent when he made his measurements?—A. I had nothing to do with his measurements.

Q. When he made them did he inform you?—A. Of course, when the estimates were made out, he always gave me a copy.

Q. How did you agree?—A. I claim that 65 yards are due us on the work up to the first day of January.

Q. Have you your figures?—A. No; I made my calculations monthly, and every day or so would make a note of what was done.

Q. You have not, then, preserved your calculations which you made?—A. No, sir; I did not think it was necessary.

Q. Have you the figures given you by the superintendent?—A. No, sir; I have not. Major Bardwell has those.

Q. Where is he?—A. He is in Washington.

Q. When you spoke about figures that he gave you, were they a full estimate?—A. A monthly estimate.

Q. Did he say so many cubic yards, or furnish you with the figures of each cross-section?—A. No; it was not customary.

Q. His estimates did not show how many feet there were in the arch, or in the side wall, or anything like that, did they?—A. No sir.

Q. Or how much there was in length or breadth, or anything of that sort?—A. No, sir; the estimates did not show that. It is not customary to give that to the contractor, unless he requires it.

Q. Is there any other branch of this case which you desire to say anything about?—A. I think I testified as to the sand submitted to the Secretary, and also the quality of the work and material, and as to the measurements. As I stated, my measurements exceeded Colonel Hamblen's up to the 1st of January, 65 yards.

Q. Did he pay you on your estimates, or on his?—A. He paid me on his estimates.

Q. Could you estimate about how much it would cost to finish the work under the plan?—A. I can give you an estimate before you go away from here.

Q. And you cannot do it now? I do not care to have it exactly, but approximately.—A. I can give it to you approximately before I go out of the room. I have to make a few calculations.

Q. Has Mr. Bardwell any other interests here outside of this contract?—A. Not that I am aware of.

Q. Is there any other person interested in the contract besides you and Mr. Bardwell?—A. No, sir.

Q. Was an attachment ever issued against the company?—A. No, sir; not that I am aware of.

Q. Do you know of any attachment process issued in which, I believe, George L. Smith claimed that certain funds in bank attached he had a sixty per cent. interest in?—A. Nothing at all of that kind.

Q. Do you know of any claim having ever been made at any time that he had a 60 per cent. interest in the earnings of your firm?—A. No, sir; Mr. Smith has no interest whatever in the work or any other person except Mr. Bardwell and myself.

Q. Have you no interests here yourself, except in this contract?—A. No, sir; I did not, when I telegraphed Mr. Suddarth, the superintendent of the work, to open a quarry in town, I did not not specify any particular place.

Q. Well, where did you get the stone after the change of contract?—A. The stone came from near the opera house, from Mr. Smith's property, I believe.

Q. Did you have to pay for this stone?—A. No, sir; I did not pay a cent.

Q. The owner of the property was willing to let the stone be taken away for the improvement of the property, was he not?—A. Yes, and we were glad to get it there.

Q. And does he pay you nothing for taking the stone out?—A. No, sir.

Q. The filling in over the arch, who does that?—A. We have been doing what has been done.

Q. Is that provided for in the lease?—A. The Department requested the contractor to put in a proposition or bid on the work, and I made out that bid and made it as low as could be done for, and lower than any other parties could do it, and the bid was submitted. I do not know whether it was accepted or not.

Q. What was the bid?—A. I believe 80 or 84 cents for solid work and 24 cents for earth, or 44 cents a yard including both earth and rock. The specification required the rock on the side of the arch and an earth filling on top of 6 inches, and then gravel or broken stone on that.

Q. Has that filling been done by you?—A. Yes, sir.

Q. And you are still doing it?—A. Yes, sir; because it is necessary.

Q. Suppose the Secretary does not accept your bid?—A. Then we will be contributing something to Hot Springs and to the Government.

Q. That filling is quite considerable, is it not?—A. Yes.

Q. What will it amount to?—A. I judge between forty and fifty thousand yards; that is approximately, including the filling over the reservation out here.

Q. How is the Government to ascertain how many cubic yards you have put in?—A. I suppose they can ascertain that by getting cross-sections of the space.

Q. But you cannot get the cross-sections after it is filled?—A. I have nothing to do with that.

Q. Who does do that?—A. It is the business of the superintendent.

Q. But you did the filling?—A. Yes, sir.

Q. Well, have the cross-sections been made?—A. I do not know. I suppose they have.

Q. If they have not been made they cannot be made now, after the filling has been put in, can they?—A. Well, it can be done approximately.

Q. Do you know whether Mr. Hamblen made cross-sections of the street?—A. I do not know whether or not.

Q. Then really you are filling in with stone and dirt, not knowing whether the Government will accept your contract, or not knowing whether the Government will ever be able to ascertain what amount of filling you have done, and not knowing yourself the amount of filling you have put in?—A. I only know the approximate estimate. That is all we have to work on under any contract. I was told it would be between 40,000 and 50,000 yards.

Q. You speak of approximating estimates, and I ask you would you be governed by approximate estimates in the payment of the contract price for your work?—A. We never know the exact number of cubic yards.

Q. But all estimates of fills is based upon a measurement of the space to be filled before it is filled, is not that the fact?—A. Yes, sir.

Q. And in excavating a bank, it is paid for on the actual measurement of the bank before the excavation is made, is it not?—A. If it is a bank, it is paid for as a bank.

Q. And if you are to be paid on any estimate, it must be on a measurement of the street where the earth has been dumped?—A. Yes, sir, in the bank.

Q. Then, if the Government engineer has not made a survey of the street, and ascertained the dimensions of the street by cross-sections, the Government has no way to get at it, except by an approximate estimate?—A. An approximate estimate.

Q. Well, an approximate estimate in that case would be about equal to a guess, would it not?—A. It would be a guess, and not correct, unless cross-sections had been taken before the work was done.

Q. In a fill how is the proportion of earth and stone to be determined?—A. We guess. That could be calculated from the specifications required for the filling.

Q. You dump the ground and rock together in the street, do you not?—A. No, we

commence on the spring of the arch and fill with rubble stone or coarse gravel. All filling done commences in that way, and the crown of the arch we fill in with 6 to 10 inches of earth, and on top of that stone again.

Q. This stone all comes from the spawls about the work, or fine stone out of the quarry, does it not?—A. We are excavating at two points.

Q. Where?—A. Just opposite the quarry in one place.

Q. That is earth, is it not?—A. It is cemented gravel.

Q. Whose property is that?—A. That I only know from hearsay. I understand it belongs to Mr. Fordyce, Dr. Garnett, and Mr. Clayton, I believe. That is only hearsay.

Q. The excavating and carting away of this stuff improves that property, does it not?—A. I would consider it an improvement.

Q. You do not have to pay anything for that dirt, do you?—A. No, sir.

Q. Are you paid anything to take it away?—A. I have made no arrangement with the parties owning it for taking it away. I do not know whether they intend to pay for it or not.

Q. Do you go to a man's property and commence hauling away the dirt from it without making any arrangement with him?—A. Colonel Alexander commenced excavating there, and was getting, I think, 20 cents a yard for it for taking it out. I, of course, expect the same.

Q. Although there is no verbal or written contract?—A. Nothing, except Mr. Fordyce said he was willing to pay, and I expect the same amount that was received by Colonel Alexander.

Q. Is not that rather a loose way of doing business?—A. Rather loose; but we wanted to get in there and open another quarry, provided you allow us to go ahead with the work. By the way, if the Department allows us 44 cents, and Colonel Fordyce pays 20, we will not make anything on that portion of the filling.

Q. But the Government has not accepted your contract?—A. Well; we have to fill over the arch anyhow.

By Mr. PAYNE:

Q. You must open the quarry anyhow, and you can afford to do it for nothing?—A. No, sir; it costs us 50 or 60 cents a yard to remove it.

By Mr. STORM:

Q. Do you expect to reach the stone in the quarry where you are taking out this earth?—A. Yes, sir.

Q. Then, of course, you intend to take the stone out of that too?—A. We do, if suitable, and the surface indications indicate that it is fine material.

Q. So from this place opposite the quarry where you have been getting out the stone, you expect to get material enough to finish the work, do you?—A. Well, we expect to get a good deal of it from the new quarry.

Q. That is from this quarry that you are opening on the left-hand side of the street as you come down Central avenue?—A. Yes, sir.

By Mr. PAYNE:

Q. What proportion of the masonry did I understand you to say was done?—A. Seven-twelfths.

Q. Up to the present time, or up to the 1st of January?—A. Up to the present time.

Q. How much work have you done on this improvement since the 1st of January—how many yards of masonry?—A. I have not measured it; I have been away three weeks and just got back last week.

Q. Has that not been measured at all?—A. No, sir.

Q. Could you give an approximate estimate?—A. I cannot.

Q. Well, as to this seven-twelfths, is that a guess or a measurement?—A. That is just a guess; it is the whole thing lumped or approximated.

Q. Have you never figured up to see how many yards of masonry the whole job would amount to?—A. I think there will be in all between 11,000 and 12,000 yards; perhaps about 11,000.

Q. That is in the whole thing, including the extension, is it?—A. Yes, sir; of course, that is approximated.

Q. Well, you had only done about 5,000 yards up to the 1st of January, had you not?—A. Five thousand one hundred, I think.

Q. You say that of the wall at first built of granite you took down the upper course, or $2\frac{1}{2}$ feet?—A. About that; from 2 to $2\frac{1}{2}$.

Q. And moved that up above the branch?—A. Yes.

Q. Now, was that which you moved measured again?—A. Measured again, but called rubble work.

Q. Now how about that which remained?—A. We did not get any more pay for it; we did not measure that.

Q. Your answer before indicated that you did.—A. No, it was not measured the second time.

Q. You are content to be paid for that once, are you?—A. Yes, sir.

Q. Have you taken any cross-sections there for the filling so that you might know how much filling you did?—A. Only approximate.

Q. How approximate?—A. Well, I do the filling for 45—I say between 40 and 50 thousand yards.

Q. Is not that a guess?—A. That is an approximate and rough calculation.

Q. Without any measurement?—A. Well, occasional measurement. Every 200 or 300 feet we measured.

Q. Did you make cross-sections every 200 or 300 feet?—A. Only occasionally. I got the width and the approximate depth only for my own curiosity.

Q. What was done with the material excavated?—A. That was put in on the different parts of the street.

Q. Along by the work?—A. Along this upper end of it. I think rather close to the wall. Six or 8 or 10 feet, perhaps.

Q. Well, does that constitute part of the filling?—A. No, sir.

Q. The filling is aside from that, is it?—A. Yes, sir; the filling is aside from that.

By Mr. STORM:

Q. Did you lose on your contract?—A. No, sir.

Q. Did I understand you to say that in many cases the wall was more than 5 feet?—A. In thickness?

Q. Yes, sir.—A. Yes, sir.

Q. When you estimated the wall, did you estimate for more than 5 where it was over 5 feet?—A. Where it was over 5 feet, where it went down below the grade, I estimated sometimes 5 feet and 3 or 4 inches, and sometimes 5½ where it went below the grade line. Of course, as I went down in many instances it was necessary to make the bottom wider.

Q. Well, the grade-line would be sometimes above the bottom of the wall, would it not?—A. Yes.

Q. How often did you go down below the grade line?—A. Over one-half of the work is below grade.

Q. How much below?—A. To average the entire work, do you mean?

Q. Yes.—A. Well, it will run a foot.

Q. What would be the increased slope above 5 feet?—A. Only 2 or 3 inches; but that would make a very little difference in my calculation, and I seldom take that into consideration.

Q. The engineer says he calculated on the basis of 5 feet?—A. I suppose that would make a little difference in his estimate and account. I occasionally called it over 5 feet; but seldom.

Q. And you estimated occasionally for more than 5 feet in the bottom of the wall, did you?—A. Occasionally.

Q. The contract says that it shall be 5 feet at grade line, does it not?—A. I think so.

Q. And says it shall be 5 feet on the bottom of the wall, does it not?—A. I think 5 feet from the bottom of the plan; I do not know whether it says 5 feet from the bottom of the wall or plan. It is customary when you go below a certain line in the plan you increase the width with the depth.

Q. Where you got bed rock there you commenced to build at 5 feet the foundation, and I take it that is what the contract calls for.—A. The plan shows 5 feet at the bottom of the creek. It is customary to extend the same down. If you go down 3 feet below grade line, it is customary to extend the latter below.

Q. When you excavated for the wall you did not excavate the back of it, did you, for the outside wall? You did not dig out the part next to the ground, did you, to let it slope inward; or did you make it horizontal?—A. Yes; horizontal.

Q. I understood your engineer to say this morning that the bed was not cut down horizontally, but the part next the ground was not cut down so much, because the pressure of the arch was in that direction, and that it made a better wall; is that true?—A. It might be in some instances.

Q. I mean when you prepared the foundation for your wall, and it was in rock, that foundation was not exactly level, was it?—A. Very nearly it. We leveled it off with broken stone and made it very near level.

Q. Colonel Alexander prepared that part of the work, did he not?—A. Yes, sir; he prepared that part of the work.

By Mr. PAYNE:

Q. Did you use any sand besides this you got up on Whittington avenue?—A. Yes, sir.

Q. Where did you get that?—A. I cannot state that, but I understand from the Ouachita or somewhere out there.

Q. What did that cost you a cubic yard, delivered at the work?—A. Delivered at \$2.25 or \$2.35—perhaps \$2.50; I am not certain.

Q. Was it carted here from the river by teams?—A. Yes, sir.

Q. How much sand did you pay for by the load or the cubic yard taken out on Whittington avenue?—A. I do not know exactly.

Q. About how many loads or yards?—A. I suppose 400 to 500 yards; 400 yards.

Q. About how many yards have you used up to this time?—A. I do not know. I can give you the exact number by looking at my books.

Q. Can not you now approximate about what it was?—A. Well we have used a thousand yards I reckon; at least that much.

T. C. PEEK, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Where do you live?—Answer. Hot Springs.

Q. How long have you lived here?—A. Seven or eight years off and on.

Q. What is your occupation or profession?—A. Attorney-at-law.

Q. Well, you are acquainted with the improvements that are being made on the Hot Springs Creek, are you not?—A. Yes, sir.

Q. Have you any opinion to express with regard to the character of that work that is being done here?—A. Well, I have an opinion. I am not sufficiently versed, perhaps, in that kind of business to express a very intelligent one. I do not know any more about this kind of work than any other man of ordinary intelligence.

Q. We have heard such witnesses and will hear you.—A. I have paid close attention to this work. I was present at the laying of the first stone and watched it closely simply from curiosity, and from a sort of natural desire to see that kind of work go on. I have perhaps seen more of it than any other man in the town, but I could not tell you whether it was first, or second, or third class work.

Q. But from your observation what would you say about it?—A. I would say that it was a good substantial wall, that would last there perhaps a thousand years if there were no violent change in the surface, by volcanic eruptions or something of that kind.

Q. Do you think the stone used was proper for that class of work?—A. I should suppose so. It is not pretty stone like the blue stone.

Q. Is the cement and sand used good?—A. I could not tell about that. That is the only thing about which I have any doubt at all. I am not capable of expressing an intelligent opinion about the cement, but if the cement is good the wall will last there, I suppose, a thousand years.

Q. Do you know the geological name of this stone taken from the quarry on the side of the hill?—A. It is some kind of a sandstone, I should judge.

Q. Do you think the plan of the improvement itself a proper one?—A. Yes, sir; I do. I like this plan better than the original one.

Q. Do you think it is sufficient to carry off the rainfall here?—A. Yes; I did have some doubt about that, and that is the only thing I did have doubt about, thinking that it was not quite large enough, but if the bottom of it is cleaned out and made level, and especially if it is cemented, I am satisfied the capacity is sufficient to carry off all water that will ever flow through that valley. The bottom, though, is not in that condition now, but I presume the workmen will make it that way before they complete it. There is a good deal of rubbish going in there, and it will require a smooth surface. We had a pretty fair test of it some three or four weeks ago, when we had a heavy fall of rain, and I noticed that the arch was not half full.

Q. Is there any thing further you wish to say in connection with this matter?—A. I do not think of anything.

By Mr. PAYNE:

Q. Do you know anything about the thickness of the wall?—A. It is about 5 feet, I should think.

Q. Did you see them measure it?—A. I only speak from my observation. There were some places in laying the foundation where I noticed they had to go pretty deep before they came to solid rock; perhaps 3, 4, or 5 feet below the level of the creek.

By Mr. STORM:

Q. What material did they excavate in those places?—A. Sand. It seems that these little brooks between the ranges of hills empty in this creek and accumulate matter in there.

By Mr. PAYNE:

Q. What proportion of the whole distance did they have to go below the grade line?—A. Mr. Walten says a foot. I should think it would average every bit of that, because in some places they had to go down 4 or 5 feet below, and I should judge that it would about average that anyhow.

C. D. HAY, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Upon what point of this inquiry have you been summoned, if you know?
—Answer. I do not.

Q. I suppose touching the sanitary condition of the sewer?—A. I have not any idea at all; I was just summoned by your clerk and came here.

By Mr. PAYNE:

Q. How long have you lived in this town?—A. About six or seven years.

Q. And you are a physician and surgeon, I believe?—A. No; I have practiced physic in my younger days, but have given no attention to it for a number of years.

Q. You now keep a hotel, do you not?—A. Yes, sir.

Q. Are you familiar with this improvement on the Hot Springs Creek?—A. Yes, sir; somewhat so.

Q. Do you claim to be an expert on building material, or masonry, or anything of that kind?—A. No, sir.

Q. Have you anything to say in regard to the management of the springs?—A. Well, I would say that I have heard it suggested that an attempt might be made to retain all the water on the reservation; that would cut off the two bath-houses near me and be a great hardship to a large portion of the visitors who board in that part of the town. That part of the town is regarded as the healthiest and most salubrious. It is the best part of the town, and visitors naturally seek that location, and by robbing them of the advantages of a bath-house near at hand, it would be inflicting upon them a great hardship, and I would be sorry to see it done.

Q. Then you think they ought to be allowed to have a bath-house up there, provided they pay for it?—A. I do; I do not see any reason why they should not.

Q. Do you think more liberal provision should be made for the bathing of poor people?—A. Yes, if the Government will undertake to support the poor people and feed them while here. There is ample provision already for all that can get a living here. Most of these poor people come here poor and have to be fed by our people, and I think if the Government is going to have free baths these people ought to be able to get their living free from the Government. There is no difficulty in getting free baths, but the difficulty these poor people have is in getting a place to eat and sleep. If the Government undertakes to feed and house them while here, they will get any amount of free bathing. We have swarms, of them here, and they come by the thousand.

Q. Well, after you get to that point, you will have to branch out a little further and ask the Government to transport them?—A. I suppose so. Of course they will have to bring them here, and send them home.

Q. Do you think there is enough water here for the fifty million people that Uncle Sam has?—A. I will say that I think Uncle Sam has got more poor than we have water for.

Q. Is there anything else you wish to say in regard to Hot Springs matters?—A. I believe not.

I. L. BUTTERFIELD, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Do you live here?—Answer. I do.

Q. How long have you lived here?—A. Nearly ten years.

Q. What is your occupation?—A. Superintendent of the street railroad.

Q. Do you hold any other office?—A. Yes, sir; I am county treasurer.

Q. Well, sir, do those offices enable you to give an opinion upon this Hot Springs Creek improvement?—A. I do not know.

Q. Have you seen this work?—A. Yes, sir.

Q. What have you to say of the materials used in its construction?—A. The material used is the same kind of rock I have used ten years.

Q. What have you been using it for?—A. Bridges and culverts.

Q. What have you to say about this sand and cement?—A. Some portions are good and other portions I do not consider very good.

Q. As to the manner of the workmanship; what have you to say about that?—A. The only thing I have had experience in is the side wall. The arch I have not examined. I consider the side wall very good, indeed.

Q. What kind of masonry do you call the side walls?—A. The technical name, do you mean?

Q. Yes, sir.—A. I hardly know how to distinguish that. It is similar in character to that used by the railroad.

Q. It is simple rubble work, is it?—A. Yes, sir.

Q. But railroads usually build rubble work in ranges?—A. That depends on the work altogether. I know some do.

Q. Is this range rubble work?—A. I do not know the technical name of it.

Q. But the work, so far as you know, is well done, is it?—A. Yes, sir.

Q. Of course you did not help to measure it?—A. No, sir.

Q. Is there anything else that you wish to say anything about it?—A. Only as to the character of the rock. The rock is good itself, and becomes harder as it is exposed to the air.

Q. It is hard enough now, I suppose, but it has iron seams in it, has it not?—A. Yes, sir; some of it has very light seams, but not enough to let water in, to any amount.

ELLIS WOOLMAN, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Do you live in this place?—Answer. Yes, sir.

Q. How long have you lived here?—A. Something over ten years.

Q. What is your occupation?—A. Newspaper.

Q. What is your age?—A. Twenty-four.

Q. Do you know what you were subpoenaed for, or as to what branch of this inquiry you were to be examined upon?—A. No, sir.

Q. I do not know either, and will ask you if you know anything about the material used in the culvert here.—A. I do not know that I am qualified. I haven't had any experience in that kind of business.

Q. Do you know anything about the manner of workmanship?—A. No, sir.

Q. Have you anything to say about the bath-house system here?—A. Only that I have heard that the bath-houses have been kept in poor shape lately.

Q. And have you heard complaints about it?—A. A great many complaints among visitors.

Q. Do you know anything about the management, of your own personal observation?—A. No, I do not.

Q. From what class of people does the complaint usually come?—A. From the visitors.

Q. Have you heard complaints made about the blasting round the springs?—A. Oh, yes; I have heard a good deal of complaint about that.

Q. Have you heard complaint made about the general management of the Hot Springs by the Government?—A. Yes.

Q. Have you heard any suggestion about any remedy?—A. Only as to the management of the reservation. I heard that it would be better to change it to the War Department and make it a military reservation.

Q. Have you heard any suggestions about changing the manner of letting the hot-water privileges?—A. I have heard it a number of times spoken of.

Q. Has there been complaint here from the indigent, the poor, about the bathing facilities?—A. In what way? In not being sufficient?

Q. Yes; not sufficient to accommodate them, and they not being able at times to get water when they wanted it.—A. I have heard some complain; not very many.

Q. You are the editor of a newspaper published here, are you not?—A. I am the proprietor. I do not write very much myself.

Q. Well, you said you heard complaints about the management of the reservation; from whom did you hear those complaints, and what was the nature of the complaint?—A. I say that the reservation is not kept in such a condition as it ought to be.

Q. Cannot you explain further?—A. Well, tramps are allowed to loaf around at the foot of the mountain about the bath-houses. The reservation is not fixed up and kept in the condition it should be.

E. H. SUDDUTH, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Do you live here?—Answer. No, sir.

Q. You are not a resident of this place?—A. No, sir.

Q. Where is your place of residence?—A. Virginia.

Q. You have been employed here, have you?—A. Yes, sir.

Q. How long?—A. About eight months.

Q. Did you help to do some blasting over here below the Mud-Hole Spring?—A. Yes, sir.

Q. Who employed you?—A. Mr. Smith.

Q. What is his first name?—A. G. L.

Q. What did he employ you to do?—A. He employed us to excavate for a bath-house site.

Q. Well, you were working for him alone, and he was employing you, was he?—A. Yes, sir. Well, I think Mr. Smith employed me in Mr. Gaines' interest.

Q. How were you doing the work below the mud-hole? working by the day or not?—
A. Working by the day, and keeping an account of our expenses, and they paid them.
Q. And you blasted there up to what time?—A. I do not remember when we stopped; about two weeks ago, I think.

Q. Why did you stop blasting there?—A. We were notified to stop.

Q. By whom?—A. Mr. Walton notified me.

Q. What was the reason given for stopping?—A. I do not know, sir; he told me to move the force next morning.

Q. You did not hear that it was because of the effect upon the spring above, did you?—A. I heard some talk.

Q. Mr. Hamblen did not say anything to you about it, did he?—A. No, sir.

Q. Well, what had Mr. Walton to do with stopping you?—A. I went into the contract with Mr. Smith, and I suppose Colonel Hamblen, or somebody, or Mr. Walton got the information from some one thinking it proper, that as he made the contract, to take out the material.

Q. For whom did you work?—A. I represented Mr. Walton.

Q. And you were taking out the material for him?—A. No, I was taking out the material for Mr. Smith, but after we suspended—that is, after we checked upon the work, we took these pieces of work to keep our men employed.

Q. I understand you now. So you were working upon the blasting and excavating of that rock for Mr. Smith, were you?—A. Yes, sir.

Q. And Mr. Walton was your employer under the whole job?—A. Yes, sir.

Q. Who paid you for your work?—A. Well, we got the money from Mr. Gaines.

Q. Did he pay you individually?—A. Yes, sir.

Q. Who paid you for your services, Mr. Walton or Mr. Smith?—A. Mr. Walton.

Q. Then you were working for Mr. Walton, and not for Mr. Smith?—A. I represented S. Walton & Company.

Q. Did he pay you by the day or month individually?—A. Well, he has been paying me ever since I have been with him for over two years. I say I got this work in Mr. Walton's absence to keep the men employed.

Q. So you went on with your task, and the parties for whom you were doing the work furnished the pay?—A. Yes, sir.

Q. And Mr. Gaines furnished you the money?—A. Yes, sir.

Q. Were you or not warned repeatedly by Mr. Smith and Mr. Gaines to be very careful in blasting?—A. I was, sir.

Q. Was it before or after the damage was done to the saloon?—A. As I remember from the time we started.

Q. What did you understand by the caution to be careful in blasting?—A. On account of the water, as they thought it might affect the springs.

Q. Well, did you feel it your duty to obey the instructions of your employer?—A. Certainly.

Q. And you did blast carefully?—A. Yes, sir.

Q. Did they see you working there?—A. Oh, yes, sir.

Q. And yet, though working under instructions to be careful, you did, in fact, affect the spring?—A. I do not know.

Q. Do you say you do not know what the result of your blasting was?—A. No, sir.

Q. Were you or not given to understand that you were to blast so as not to crack the rocks?—A. We could not do that.

Q. Did you understand that careful blasting to refer to the throwing of debris out and thereby injuring property or persons, or passers by?—A. I understood on account of the water.

Q. Did they show you where to excavate?—A. Oh, yes.

Q. Were you not to excavate by using powder and dynamite, and did you not so blast as you were ordered to do?—A. Yes, sir.

Q. Who charged those holes?—A. This man, John Mooney, or some man there.

Q. You were foreman, and you ought to know.—A. I do not know.

Q. Who was arrested for doing the blasting?—A. John Mooney.

Q. Well, where were you when that charge was loaded?—A. Up town somewhere. We had another piece of work going on up at the arch, and I was up there. I could not be here all the time.

Q. Do you know how deep those holes were put in?—A. I do not.

Q. Do you know how much powder was put in?—A. We didn't use much powder, and used cartridges.

Q. Well, how many cartridges?—A. I do not know how many.

Q. How could you be careful, then?—A. A foreman was in charge there, and he ought to know all about it.

Q. Did you instruct this man left in charge how deep he should drill the holes, and how much of a load he should put in?—A. I only told him to be careful.

Q. Did you observe the effect of the blast?—A. The blast sent over light rocks and stones.

Q. Would, or not, a light blast near the surface be more apt to throw out the rock than a larger blast deeper?—A. This blowing out of the rocks was because the foreman, when he put the loads in the holes, left them open. I know the foreman was fined for doing this shooting and we had to pay.

Q. When that matter was up, did not you state that it was between yourself and the party who put you there, and that this blasting was done upon your own part, and not by reason of instructions from those who employed you?—A. I stated that to show that Mr. Gaines and Mr. Smith cautioned me about blasting. I know that for the damage we were brought up by the police and had to pay up for it.

Q. How far did you go down?—A. We excavated on a level with what had already been taken out.

Q. Well, you were not below that when you did this blasting, were you?—A. I think not. If we were, it was very little.

Thereupon (at 9 o'clock and 15 minutes p. m.) the committee adjourned until tomorrow morning at half past 9 o'clock.

THURSDAY, March 20, 1884 (9.30 a. m.).

Committee met pursuant to adjournment.

GEORGE G. LATTI recalled.

By the CHAIRMAN :

Question. I suppose you are acquainted with the scope and purpose of our investigation here, and I will ask you a few formal questions, and if you are not competent to answer them, you need not do so. I will ask if you are competent to judge of this work on the Hot Springs Creek?—Answer. I am not a competent judge of the work. I only know that the work progresses, but I am not competent to pass upon that character of work.

Q. Do you regard this improvement as a public necessity?—A. Yes, sir; and a natural necessity.

Q. For the interest of the Government and the public?—A. Yes sir.

Q. In your opinion, how far is it necessary for the interest of the public to prosecute this improvement?—A. Do you mean as to distance?

Q. I mean as to distance.—A. Well, sir, my opinion in that matter is that it would have been far better, so far as the Government and the city are concerned, if the work had not commenced at all, than to complete it only so far as Reserve street, and I think it ought not to stop, to say the least, nearer than the gas works.

Q. How far would that be from the present terminus?—A. That would be three and a half blocks.

Q. How many feet or yards would that be?—A. Probably four hundred yards.

Q. Do you think it should be covered that far, or that the walls should be open?—A. I do not think it would require a covered wall further than two blocks, which is a distance of probably three hundred feet.

Q. And the balance might be, you think, an open way?—A. Yes, sir; the balance might very well be an open way. I state that it might stop at the gas works for this reason, because at that point disinfectants are thrown in the creek from the gas works that would entirely do away with the odious features of drainage. There would be an overflow of this coal tar, which is a powerful disinfectant, and it could be easily arranged. This coal tar in the creek is now an injury to horses and we take good care to keep them out of that stream.

Q. Do you think the lateral pipe system the proper one for the sewerage of the town, or do you think it should be turned into the creek?—A. I do not, and let it stop there. I think it ought to be separate, and I tell you why: There is no way of getting water into that creek as the water works are constructed at present, except by breaking through the arch at different points along its course. For instance, you take the sewerage from the west side of the street and there is no chance for it to get out, and there is no way to drain the water-closets from the west side except in this creek. The walls should have been left open, so that sewer-pipes could be laid in.

Q. Have not openings been left in the wall?—A. Only where parties furnished the pipes.

By Mr. STORM:

Q. Did not Mr. Hamblin say that he left openings every 50 feet?—A. I have not seen it. Mr. Walton and his assistant, when any party interested furnished him a sewer-pipe, did put them in. I know that I furnished pipe for my buildings, the bath-house on one side and my property on the other side.

Q. And you say that no other openings were put in except those requested by private individuals?—A. They put them in as we furnished them in the progress of their

work, and I have insisted that that ought to be done uniformly along the whole line of the wall. As it is now I don't see how you are going to get into it. If you go along and complete that work, and then you have to break into this arch, it will be very bad. I will say this also, that down in some places they have put in this 2-feet tiling to make under-drainage—terra-cotta tiling. In some places they have done that.

By the CHAIRMAN :

Q. For stream water?—A. And for drainage. Some from the east as well as the west. They do not provide for the sewers though that I spoke of, because they are too low.

Q. Do you think that if the sewerage on the east side of Central avenue were turned into this stream, say, from the Avenue Hotel down to Malvin crossing, that it would be hurtful to the health of the town?—A. I think that two-thirds of the necessity of drainage is from the bath houses. I say this because it is the invariable custom of visitors to patronize the bath house water-closets, and they wait for that and prefer using closets in the bath houses to the hotel, and that is the great necessity in reference to the bath houses. Another thing the waste water is not the cleanest thing in the world after these people bathe in it.

Q. No, I should think not. Now, take the Government reservation from the Arlington Hotel to Gaines avenue. Do you think the sewerage that comes from that part of the town should be turned into the creek?—A. I do, if you carry it further.

Q. Is it your judgment that there ought to be a separate system of sewerage outside of the creek?—A. It is.

Q. Do you not think the city could be induced to contribute something towards that?—A. I think it might be.

Q. Do you not think it would?—A. If the Government would meet us, I think it would.

Q. If the Government completed this sewer, do you not think that the city would sewer the west side of the town?—A. I think probably that they might, but it would be a big undertaking now.

Q. What is the reason it was not done before? I know myself, but I want it before the committee.—A. The city has had no means of revenue from taxation until the last year.

Q. Do you mean no legal power to levy a tax?—A. No property, in the first place, to levy a tax on; because the title of the real estate was in the Government, and the patents had not been granted, and the final certificates had not been issued by the Government. For these reasons we could not tax the real estate, and the only revenue we raised was on personalty, and the right of taxation under our constitution is 5 mills, and it cannot exceed that. That taxation was not sufficient to do this work and keep up the city government. All these streets have been raised from a half to 6 and 7 feet. This whole street—I mean our principal street—has been raised from 1 to 7 feet. Some streets here are only partially graded, and some not at all. All the city could possibly do was to take care of the streets, and it could not do that if it had not been for private subscription on the part of citizens who received city scrip and get 50 cents on it, while they paid dollar for dollar for it. For the removal of this engine-house the citizens took the money out of their pockets and paid the expense.

Q. What is the value of your property here?—A. About \$2,500,000, personalty and real estate.

Q. Is not that rather low?—A. It is a very high valuation. This property in front of this hotel (Sumpter) is assessed at \$250 a foot.

Q. Would it not sell for \$500?—A. Yes, \$400 or \$500; but then the rate of taxation is about \$2.30, county, city, and State.

By Mr. STORM:

Q. On the \$100?—A. Yes, sir; on the \$100.

Mr. PAYNE. Mine is \$3 at home.

By the CHAIRMAN :

Q. Have you ever made any estimate on the cost of sewerage?—A. No, sir; I do not think they have.

By Mr. STORM :

Q. Do not you think that for any sewerage system that might be put in here the burdens should be borne by the property benefited by the sewerage?—A. That is the general rule; but there are circumstances that alter cases. Here the Government has got a big property.

Q. And I want you to include the Government as a property-holder.—A. Well, treating them as an individual, of course, the expense should be borne by those benefited. I think it should be borne one-half by the party and one-half by the Government.

By the CHAIRMAN:

Q. Do you think the citizens and the city government would make an effort to do that?—A. Yes, sir.

Q. Your constitutional limitation of taxation does not apply to municipal corporations in the assessment of property holders for the construction of sewers, &c., does it?—A. No, sir; not upon realty. The constitution provides that an act of that kind by the counsel shall be ratified by the voters in the district where the sewers are to be constructed.

Q. How much unsold property has the Government here?—A. The Government has a good deal.

Q. Can you give the approximate value of that property?—A. Well, I suppose their property here, to get the real value of it, is worth probably \$200,000.

Q. Does that include the reservation and all its property?—A. The property unsold is worth \$200,000. If it was sold it would amount probably to more than that, I think. I could take it as an individual and get more money out of it than \$200,000. But the Government I do not suppose could get more than that. I would rather have the 250 odd acres that the Government has, not subject to sale, than have all the other land put together.

Q. Well, what is that worth?—A. That is hard to tell. It is worth a heap of money. We are not in the habit of going up into large figures here, as we are all pretty poor, but I would like to take it in if I could get somebody to go in with me, and I think I could go to New York and Pennsylvania and get the money to pay for it.

By Mr. STORM:

Q. You might even raise it here?—A. Well, I guess not. We have got the will but not the way. It is very valuable, sir. I think that property is worth anyhow one or two million dollars.

By the CHAIRMAN:

Q. The whole Government property here you say would be worth in the neighborhood of \$2,000,000?—A. Yes, sir.

Q. You are president of the Bath-House Association, are you not?—A. I am.

Q. How many bath-houses are there here?—A. We had—I never counted them—about ten altogether.

Q. Now, what was the cost of these bath-houses; I suppose you have the figures pretty accurately?—A. I have the cost of some of them, and I know pretty well about what they cost. The Rector bath-house cost, from vouchers that they have and statements that I have seen of their business, \$27,000.

Q. Does that include everything ready to go to bathing?—A. That includes their total expenditure, but not in furniture or in furnished rooms, but only furniture connected with the bath department, such as a parlor for ladies and a parlor for gentlemen and the office furniture, and tubs, and things of that kind, and cost \$27,000.

Q. Now, the next one?—A. The Big Iron. The original cost of the Big Iron as originally built was stated at about \$17,500, but Mr. French knows more about that than I do.

Q. How many tubs are there in the Rector?—A. There are in the Rector 26 or 27 tubs, I believe.

Q. How many in the Big Iron?—A. I think they originally put in there 40.

Q. Are they there yet?—A. I suppose so; in the neighborhood of 40.

Q. Now, the next house, and how many tubs has it?—A. The Old Hale has 21 tubs. The Old Hale cost, including everything there originally, between \$9,000 and \$10,000 or \$11,000, or somewhere along there. That included the excavating and tubs and everything. The tubs are very expensive in that house, and they are slate tubs, and then the excavating there cost a large amount too.

Q. Now, the next one?—A. The next one is the Independent. This house cost, Mr. McKeogh says, \$17,000. When I purchased it he said it cost \$17,000 to them; \$17,000 is what I paid, and what I understood to be the actual cost.

Q. How many tubs are there in the Independent?—A. Twenty-one.

Q. Now, the next one?—A. The next one is the Palace.

Q. What is the cost of that?—A. The Palace cost—that I can testify to exactly from the figures I have on that. The first cost of the Palace was \$23,729.42, for which I have the books here showing everything. After this was expended, for pipes and tanks and other things that were put in there a sum amounting probably to nearly \$3,000 more. That cost between \$25,000 and \$26,000 for the whole outfit, pipes and all. We had to do all of that, as the Government did nothing there.

Q. But this bath-house cost ready for bathing twenty-six or twenty-seven thousand dollars, did it?—A. Yes, sir; about \$26,000.

Q. Which is the next one?—A. The Ozark. That I am interested in and can tell you exactly. The first investment was \$14,632.34. In addition to that was paid, for pipes running to the reservoir, over \$500 dollars, and then another pipe which cost \$200 or \$300 more, and then for tanks, &c., a sum making the total \$16,632.34.

Q. How many tubs are there in the Ozark?—A. They have twenty-three tubs.

Q. Now, the next one?—A. The next is the Rammelsburg. The gentleman who was superintendent of that building has already testified before this committee as to that. Mr. Irvy had the contract there for the brick work, and it broke him up here. He was the contractor for me in the blasting of one of my houses, and while doing that told me he lost over \$3,000 on the brick work of the Rammelsburg bath-house.

Q. What did it cost?—A. The contract was low. The whole cost was ten or eleven thousand dollars. Mr. Rammelsburg claimed that it cost him sixteen thousand and some hundred dollars for everything.

By Mr. STORM:

Q. How many tubs are there in the Rammelsburg bath-house?—A. At first they had two swimming-pools, and they got in twenty-two or twenty-three tubs. They converted the swimming-pools into bath-tubs afterward and abandoned the pools.

Q. Which is the next one?—A. Those are all the bath-houses upon the reservation.

By the CHAIRMAN:

Q. What other bath-houses are there here?—A. There is the Hot Springs bath-house.

Q. What is the capacity of that?—A. That has some 18 or 19 tubs.

Q. What was the cost of it?—A. The cost of it was about \$6,000 or \$7,000.

Q. That much?—A. At first; yes, sir; you see the plumbing in that house cost over a thousand dollars; plumbing is very expensive; the plumbing alone in these houses cost from \$1,000 to \$2,000.

Q. How about the Grand Central?—A. The Grand Central is a small house originally connected with the Grand Central Hotel.

Q. How many tubs have they there?—A. Eight or nine.

Q. What is the value of that house?—A. I do not think it cost over \$500 or \$600.

Q. Are the Avenue Hotel and the Rockfellow bath-houses embraced in the association?—A. The Rockafellow is; the Rockafellow was built new three years ago and fell down this last year; it rotted out and had to be built over, and there was spent in building it again something in the neighborhood of \$3,000 or \$3,500; it cost him originally between \$4,000 and \$5,000, and he spent about \$3,500 last year in rebuilding it; the bathing department rotted out, but the front part was all right.

Q. How many tubs are there in the Rockafellow?—A. Twenty or twenty-one.

Q. Now, what was the aggregate cost of these?

By Mr. STORM:

Q. That makes ten you testified to?—A. Yes, sir.

By the CHAIRMAN:

Q. Now, what is the aggregate cost of these to the association?—A. Well, the association does not own them.

Q. Do not they pool the proceeds?—A. Yes, sir; they pool the proceeds. This paper I hold in my hand is the articles of association of the Hot Springs Pool Association. This is the agreement upon which the association has been working. Now, that expired on the 10th day of August, 1883.

By Mr. STORM:

Q. How have you been running since the 10th of August?—A. By an extension of the agreement up to the 1st of January.

Q. How have you been running since the 1st of January?—A. We have just continued by consent, from month to month, under the same agreement.

By the CHAIRMAN:

Q. What is the aggregate cost of these bath-houses?—A. I never figured on that. I gave you the respective amounts.

By Mr. STORM:

Q. Why were some bath-houses allowed by the pool for more bath-tubs than they actually had, and others credited for less than they actually had?—A. Because, sir, it was difficult to form the pool without doing so.

Q. And you had to class them differently, according to the cost of the bath-houses, I suppose?—A. Yes, sir; and the approximate amount of business that each bath-house did. Some houses did more than others, and some houses are paying in a good deal more money than they get out. For instance the Palace pays in more than it gets out, and probably loses by the arrangement.

Q. Then you allow the Palace the full number of its bath-tubs and increase the Rector up to 42?—A. Yes, sir; they are regarded the best, because of being next to the Arlington.

Q. That is an arbitrary arrangement of equalization is it not?—A. Well, it is like railroads; they will not go in unless they get a certain part of the freight.

Q. And the Rector sells 21 tickets, or a course, at \$6.30?—A. Yes, sir. The Palace and the Rector are the only ones. They are next to the Arlington hotel, and they claim that their patronage is better than any other house.

Q. And the two other bath-houses below there only receive \$6 for a course of 21 tickets?—A. Yes, sir; the Old Hale and the Big Iron get \$6, and the others range from that downward. Upon the question of the formation of this pool I desire to say that the pool was formed because we had a very great nuisance. We had a great many nuisances, but the prime object in the formation of this pool was for the purpose of suppressing drumming in our city. It extended to doctors, boarding-house keepers, and all over the whole town. This was a nest of drumming, you might say, and in connection with that we desired also to make the bath-houses sufficiently remunerative for the outlay. Now, take the Palace bath-house, that ran nearly 6 months outside of the pool, and the net proceeds of that house was \$340 for that time on the investment.

Q. Was there any arrangement between the pool and these houses that had the hot-water privileges for bathing? Was there any understanding, directly or indirectly, between the pool and these hotels that had the hot-water privileges?—A. Only one house, and that the Avenue hotel. There was an understanding in the Avenue hotel that they should only bathe their guests. Their house was not open to outside patronage, at least they did not use it only for their guests, and they agreed with us that they would charge the same rates that the Rockafellow bath-house did, which was at the upper end of the valley near it, namely, \$5.

Q. And that house was never in the pool?—A. No, sir.

Q. Well, the other house that was not in the pool, that had the hot-water privileges; what about that?—A. No other house except the French hotel has hot water. No other house had any hot water for bathing, but had it for drinking purposes, and the Hay house had hot water for drinking purposes, I believe. I believe the Hay house and the Sumpter and the Avenue and the French hotel were the houses that had water for drinking purposes, while the Avenue was the only hotel that had hot water for bathing purposes.

Q. Do you know the number of tickets that are received for bathing annually?—A. We do not keep it that way. We keep a monthly statement by which it could be arrived at. We settle every Monday. The proceeds are then paid in, and the executive committee meets and makes the distribution.

Q. Can you tell us for any given year what the income of these bath-houses in the pool has been?—A. I cannot tell you the correct amount, because we do not keep it exactly in that way, but I can show you the reports, at given times, of some of the houses in which I am personally interested.

Q. Is the distribution of profits made monthly?—A. Weekly.

Q. You have a statement somewhere, have you not?—A. I have the statement of business of two houses for six months.

Q. You have for two of them, but why not for all?—A. I do not keep the books of the association. I have the books of certain houses in which I am interested.

Q. Where are the books belonging to the pool by which they adjust the accounts among the different parties interested?—A. The auditor has them.

Q. Who is the auditor?—A. Mr. Rector. I know I have in my possession some of the statements. For instance, the business of the two leading bath-houses, the Ozark and the Palace, and in which I have an interest, I have statements in my hand rendered every six months. We settle for these between my partner and myself every six months. I can show you the business for six months in the year of 1882 and six months in the year 1883.

Q. What was the six months' business of those houses, and have you those statements with you?—A. Yes, sir; here is, for instance, the business of the Ozark bath-house for six months from May to October, 1882. The aggregate amount received or total receipts were \$2,679.88. The account is as follows:

HOT SPRINGS, ARK., October 31, 1882.

Investment, Ozark bath-house.....		\$14,634 32
Cr.		
Saml. W. Fordyce, 75 per cent.....	\$10,975 74	
Geo. G. Latta, 25 per cent.....	3,658 58	
Total receipts May 1 to November 1.....		2,679 88
Disbursements:		
Insurance.....	75 00	
Expense.....	270 75	
Superintendent's salary.....	450 00	
Water rent.....	137 50	
		933 25
Cash on hand.....		1,746 63
Cr.		
Saml. W. Fordyce, 75 per cent.....	1,309 97	
Geo. W. Latta, 25 per cent.....	436 66	

Q. That is not the best season of the year. Is it the period covered by that statement?—A. No, sir.

Q. Give us something covering the months of December, January, February, March, and April.—A. I have the statement here of the business of the Ozark for six months ending April 30, 1883, as follows:

Receipts, November 1, 1882, to April 30, 1883	\$3, 124 14
Due S. W. Fordyce	10 00

3, 134 14

Disbursements:

Insurance	\$85 50
Water rent	165 90
Superintendent	450 00
Wood	183 25
Expense	281 91

1, 165 66

Receipts in excess of expenditures.....1, 968 48

Divided:

Saml. W. Fordyce, 75 per cent.....	1, 476 36
Geo. G. Latta, 25 per cent	492 12
Due S. W. F.....	1, 476 36
Due amount paid New Orleans paper.....	10 00

1, 486 36

Q. What does this expense item of \$281.91 consist of?—A. Under the general expense item of \$281.91 a number of things are included, such as thermometers and rugs and soap, and things of that kind.

By Mr. PAYNE:

Q. And it does not include repairs, does it?—A. No, sir.

Q. The rubbers are paid by the visitors, are they not?—A. Yes, sir.

Q. What are the receipts of the Palace bath-house for any given time?—A. I hold in my hand the receipts of the Palace bath-house, and will read them. They are as follows:

Palace bath-house business from May 1 to October 31, 1882, inclusive.

HOT SPRINGS, ARK., October 31, 1882.

Building—total investment..... \$23, 729 42

Cr.

S. W. Fordyce, 75 per cent	\$17, 797 06
G. W. Latta, 25 per cent.....	5, 932 36

Total receipts from May 1 to October 31, 1882

3, 184 44

Disbursements:

Superintendent's salary	\$450 00
Water rent	172 50
Insurance	90 00
Expense	243 77
Wood	16 85

Cash on hand

2, 211 32

Cr.

S. W. Fordyce, 75 per cent	\$1, 658 49
George W. Latta, 25 per cent	552 83

Amount paid into pool more than was returned

315 76

Business of Palace bath-house six months ending April 30, 1883.

Receipts from November 1, 1882, to April 30, 1883..... \$3,549 07

Disbursements :

Insurance and taxes	\$152 00	
Water rent	172 50	
Superintendent's salary	450 00	
Wood	229 22	
Expenses	196 61	
		<u>1,202 33</u>

Receipts in excess of disbursements..... 2,346 74

75 per cent. to Samuel W. Fordyce..... 1,760 05

25 per cent. to George G. Latta..... 586 69

Six cords dry wood on hand, sawed up and in cellar.

I can show you later for six months upon this point as to the percentage of profit on the investment. The statements are as follows :

Statement of business of Palace bath-house for six months, ending October 31, 1883.

Building investment.....	\$23,729 42	
S. W. Fordyce, three-fourths interest	\$17,797 06	
George G. Latta, one-fourth interest	5,932 36	

Receipts from baths.....	\$3,428 77	
Rent (S. W. Fordyce) \$60. Furniture sold, \$50	110 00	

3,538 77

Disbursements :

Insurance	\$90 00	
Water rent, six months, \$28.75	172 50	
Expense	348 50	
Wood	45 40	
Superintendent's salary, six months, \$75	450 00	
		<u>1,106 40</u>

Net profits..... 2,432 37

Divided :

S. W. Fordyce, 75 per cent	\$1,824 27	
George G. Latta, 25 per cent	608 10	

Due George G. Latta \$27.50, his portion of rent and sale of property, it not having been included in settlement made from memorandum.

Statement for George G. Latta.

Statement of business of the Ozark bath-house for six months ending October 31, 1883.

Building investment	\$14,634 32	
S. W. Fordyce, three-fourths interest	\$10,975 74	
George G. Latta, one fourth interest	3,658 58	

Receipts for six months 3,016 61

Disbursements :

Insurance	157 50	
Expense	539 78	
Wood	53 10	
Superintendent's salary	450 00	
Water rent	165 00	
		<u>1,365 38</u>

Net profits..... 1,651 23

Divided :

S. W. Fordyce, 75 per cent	1,238 42	
George G. Latta, 25 per cent	412 81	

Q. It does not make much difference under the combination whether they are the leading bath-houses or otherwise, does it?—A. No, sir; it does not make any difference, only this far, that this shows the cost and income of each house. I will say here now that the life, so to speak, of the bathing department of a bath-house is five years. Where this hot water comes in it rots everything very fast. There is the Rockafellow bath-house, which fell down last year, a complete wreck. That is the experience of every man who has had anything to do with the bath-house business. I have been connected with the bath-house business seven or eight years, and I know something about them.

Q. What bath-house have you been connected with seven or eight years?—A. I have been connected with the Palace bath-house seven or eight years.

Q. Did you build it?—A. Yes, sir; I built it.

Q. Eight years ago?—A. Oh, no; not this one, but the old Palace I referred to. We had an interregnum in which we could not build on the reservation of the Government.

Q. Have you been connected with any bath-house eight years?—A. Well, the one I was connected with has gone out of existence—the Weir and George; I bought that in 1877.

Q. How long did that stand?—A. It fell down on me and I tried to raise it.

Q. Do you mean to say that no bath-house here now has been standing five years?—A. I do not say that. Of course there is.

Q. Which one?—A. The Big Iron, built under Mr. Morgan, the receiver, when he was here.

Q. Are you able to say what the repairs cost on that?—A. It is now rotten and you can drive your fist through it.

Q. Do you know what it cost for repairing that bath-house?—A. I know it has cost a good deal. Wherever this hot water comes in contact with wood in the bathing department it will not last longer than five years.

Q. The true test of anything like that then would be to show what the bath-house cost for a space of five years or longer?—A. Well, most of these bath-houses have been built in less time than that, except the Rockafellow, which has fallen down. I want to say this here that the rates charged by the bath-house association in this agreement has never been changed since the commencement of the pool. Although the department fixed the rates higher than \$6.30 cents for a course of 21 tickets, we now have but two bath-houses charging that rate, and all the others are below it and the rates have never been changed by the pool. Last spring the Secretary of the Interior made a revision of the rates. It was an order of May 7, 1883, and it was communicated to us that the rates might be changed, allowing certain houses to charge higher rates. For instance, the Rector 50 cents and the Palace 50 cents, and those others were put below that, regulating the different rates according to a certain schedule, but there has been no change by us whatever. That order was made May 7, 1883.

Q. How did he come to make that order?—A. Ever since the organization of our association we have been solicited to place the best houses at a rate that would make them somewhat exclusive. Some people wanted to pay fifty cents rather than to bathe with people who wanted to pay only twenty-five cents, so as not to come in contact with certain persons that were objectionable on account of disease and otherwise. I have had a number of solicitations myself to put the Palace up to such a rate as to make it such a house as would be somewhat exclusive, and we asked the Secretary of the Interior to make a rate of that kind.

Q. And you applied to him for that reason, did you?—A. Yes, sir.

Q. And it was granted on your application, and by you I mean the association?—A. Yes, sir; but we afterwards considered the matter and we thought it was better for all interests here and for ourselves to leave the rates as they were, and there never has been any change. You will see by our agreement how this matter is guarded. We cannot change the rates unless two-thirds of the parties to the agreement vote to change the same, and all parties are to have notice of any meeting that may be held for the purpose of changing the rates, and any change that may be made, unless the notice is given, shall not be binding. For your information I will read the agreements of the association. They are as follows: "Henry M. Rector, A. B. Gaines and George L. Smith, Harry Rammelsburg and Charles W. Long, J. J. and W. H. Tobin, William Nelson, A. S. Garnett, C. N. Rockafellow, James Griffith, S. W. Fordyce, George G. Latta, and George G. Latta agent and attorney, all being engaged in the bath-house business in the city of Hot Springs, county of Garland, State of Arkansas, have agreed together at Hot Springs, on the 18th day of April, 1882, and do hereby agree and promise to and with each other, for and in consideration of the sum of \$1 paid by each of said parties to the other, respectively, as follows:

That in order that the said parties as aforesaid may render more profitable the investments they have made in bath-houses at Hot Springs, Ark., they agree, obligate, and bind themselves to pool, merge, and place in a general and common fund the en-

tire proceeds received for baths and bathing at their several and respective bath-houses; and they further promise, obligate, and bind themselves to demand and receive for a course of twenty-one baths the following prices at their respective bath-houses, that is to say, at—

New Rector bath-house	\$6 30
Big Iron bath-house	6 00
Old Hale bath-house	6 00
Independent bath-house	5 00
Palace bath-house	6 30
Ozark bath-house	5 00
Rammelsburg and Long bath-house	5 00
Hot Springs bath-house	4 00
Grand Central bath-house	3 50
C. N. Rockafellow bath-house	5 00

And the said parties covenant and agree that the rates should be charged for a course of baths can be changed during the term of this agreement whenever two-thirds of the parties hereto vote to change the same; but all parties hereto are to have notice of any meeting that may be held for the purpose of changing the rates as herein agreed upon, and said changing of rates shall not be binding on the parties hereto unless the notice as aforesaid is given to each of the parties hereto; and when the rates of bathing are changed the same shall be indorsed on this agreement, and for the purpose of making such indorsement E. W. Rector is hereby appointed attorney in fact for all of the parties hereto.

And the parties hereto further obligate and bind themselves to receive from an executive or managing committee, to be chosen and elected by and from amongst the parties to this agreement, all tickets that shall be sold for baths or bathing purposes at the respective bath-houses, and that they will not sell or cause to be sold any other tickets, or copies or duplicates thereof; and that when said tickets are sold and disposed of that they will render and pay to said committee, or their auditor, accountant, or representative, the full amount received for said tickets, at the rate heretofore stated and mentioned.

And the said parties further obligate and bind themselves to receive as their portion and pro rata of the said common and general fund, created and formed from the proceeds of the entire number of the said bath-houses as aforesaid, the rate of per cent. that the number of tubs allotted to them is to the aggregate amount of proceeds received from same as aforesaid.

And they further agree, promise, and obligate themselves, that the following shall be the allotment of tubs to each bath-house:

New Rector bath-house—Rector, Smith & Gaines	40 tubs.
Big Iron bath-house—A. S. Garnett	33 tubs.
Old Hale bath-house—William Nelson	20 tubs.
Independent bath-house—G. G. Latta, agent	18 tubs.
Palace bath-house—S. W. Fordyce	25 tubs.
Ozark bath-house—G. G. Latta	22 tubs.
Rammelsburg and Long bath-house	20 tubs.
Hot Springs bath-house—J. J. & W. H. Tobin	10 tubs.
Grand Central bath-house—J. Griffith	6 tubs.
C. N. Rockafellow bath-house	12 tubs.

And the parties hereto further promise and agree that they will keep their respective bath-houses in as good condition and repair as they are now, excepting the ordinary wear and tear incident to use, and that they will replace all worn-out rugs, mattings, and furniture in their respective houses.

And it is further agreed that all repairs and expenses connected with their said bath-house shall be paid by them out of their dividends received from said general fund, and in no wise are said parties hereto to be charged or connected therewith.

And the parties hereto further promise and obligate themselves to faithfully carry out and perform each and every agreement, covenant, and obligation herein contained for the period from the 19th of April, 1882, to the first day of August, 1882, and this obligation and agreement is to expire on the first day of August, 1883, unless a special agreement to continue the same is indorsed herein by the parties hereto.

And the parties hereto acknowledge themselves indebted each to the other in such sums of money as they may lose or be damaged by non-performance of the agreements and obligations heretofore set forth and stated.

And any party hereto may bring his or their action at law or equity against any one or all others of said parties to recover said losses or reimburse him or them for said losses or damages sustained.

And the parties hereto further obligate and bind themselves, that if they should sell or otherwise dispose of their bath-house property interest or privileges during the

term of this agreement, that the same shall be sold and transferred subject to the provisions of this agreement, and that the transfer shall be by proper indentures and agreements required to perform the covenants, obligations, and agreements herein contained.

And the said Rector, Smith, and Gaines specially agree and bind themselves that the Arlington bath-house for the purposes of this agreement shall be regarded and considered as a component part of the New Rector bath-house, and be subject to the covenants and obligations that pertain to said New Rector bath-house; but the said parties shall close said bath-house at any time they may desire.

And the parties hereto further agree, promise, and bind themselves that in the event of their violation of any of the agreements or obligations herein contained, that they will forfeit not less than \$50, nor more than \$100, for each violation of the agreements and obligations herein contained, and the executive committee, as heretofore referred to, shall be the judges of said acts complained of, and shall determine the same after the accused party or parties have had a hearing before them, and said amount so forfeited shall be paid into the general or common fund, as aforesaid, for general distribution among all the other parties hereto.

And it is further agreed and promised, and the parties hereto bind themselves that at any time during this agreement that any complaint is made against the manager of any bath-house, and the executive committee, for the good of the entire parties hereto, think it best and expedient that said manager should be removed, that the said executive committee is hereby fully authorized to remove any manager of any bath-house, and to place in charge of said bath-house a competent manager, who shall be paid a salary by the owners of said house, whose manager is removed, but the salary so paid to said manager shall not exceed the amount as paid to the manager so removed.

In testimony whereof the parties hereto have interchangeably affixed and annexed their hands the day and year first above written.

H. M. RECTOR.

GEORGE L. SMITH.

C. W. LONG.

WILLIAM NELSON.

C. N. ROCKAFELLOW.

S. W. FORDYCE (by GEO. G. LATTA, *Agt.*
and *Atty.*).

GEO. G. LATTA (*Agt. and Atty.*).

A. B. GAINES.

HARRY RAMMELSBURG (by C. W. LONG,
Agt.).

J. J. & W. H. TOBIN (*and Atty.*).

A. S. GARNETT.

JAMES GRIFFITH.

GEORGE G. LATTA.

We the undersigned parties hereto, for and in consideration of \$1 by each party hereto paid, respectively, to the others, agree and obligate ourselves to continue and extend the within agreement, subject to all the provisions therein contained, until the 1st day of January, 1884.

In testimony whereof we have herunto set our hands this 25th day of July, 1883.

A. B. GAINES.

C. W. LONG.

A. B. GAINES, *successor to William Nelson.*

A. S. GARNETT.

GEORGE G. LATTA.

H. M. RECTOR.

HARRY RAMMELSBURG.

A. B. GAINES, *successor to J. J. & W. H.*
Tobin.

SAM'L W. FORDYCE.

D. C. RUGG, *Successor of Thomas Howard.*

GEORGE L. SMITH.

By Mr. STORM:

Q. Have you the rates posted up in the bath-houses?—A. Yes, sir.

Q. Are the rates the same as you have given them?—A. Yes, sir.

Q. I will ask you if the association paid the expenses of the man Long, whom you sent on to Washington in reference to this change of rates?—A. No, sir.

Q. Was not he a member of the association?—A. He did not go for that purpose.

Q. Did he or not go with a Senator to the Interior Department and ask that that change be made?—A. I helped to pay a hundred dollars toward his expenses, but not for that purpose.

Q. Was not the order made while he was there?—A. He had nothing in the world to do with the order made.

Q. Is he a member of the association now?—A. He is not. He sold out his interest. I want to explain why he went there. Mr. Long went to Washington, and I paid a hundred dollars of his expenses. His visit was in reference to the Army and Navy Hospital. They were talking about taking in the location of our bath-houses, and we were advised of it from Washington, and Mr. Long went on there to save our bath-house sites, and to have the Secretary of the Interior and the War Department to reconcile that matter. They wanted to take in the Ozark and Rammelsburg sites, and we did not want that done.

Q. Had the association anything to do with the paying of Mr. Long's expenses?—

A. Not at all; I did that individually. The association did not know anything about it.

A. Are not the Rammelsburg and Ozark bath-houses in the pool?—A. Yes, sir.

Q. Why did you pay his expenses, then?—A. It was my individual property, and they were talking about taking that location.

Q. You did not think that the Secretary of the Interior would take away your lease, did you?—A. He might do it when it expired.

Q. When did it expire?—A. All leases expired here at the same time. They were made on the 7th day of April, 1881, and expired on the 16th of December, 1879. Here is the original lease. I will read it: "This agreement, made and entered into this 7th day of April, 1881, by and between D. F. Kelley, superintendent of Hot Springs reservation, for and on behalf of the United States of America, party of the first part, and George D. Latta of the Hot Springs, Garland County, Arkansas, party of the second part, for his heirs, executors, administrator, and assigns, witnesseth, that the party of the first part doth covenant and agree to lease to the party of the second part a site for a bath-house on the permanent reservation for five years from the 16th day of December, 1878, commencing at a point on the east side of Hot Springs Creek, 30 feet north of the line of the bath house of Rammelsburg & Long, thence running north 100 feet, thence east 100 feet, thence south 100 feet, thence west 100 feet to the place of beginning, according to plan attached and set forth and made a part of this lease.

"And the party of the first part further agrees to supply the party of the second part hot water sufficient for twenty-two tubs for his bath-house now erected.

"And the party of the second part covenants and agrees to pay the United States \$1.25 per month per tub, payable monthly in advance.

"At the commencement of any year over which this agreement extends, the number of tubs used by the party of the second part may be diminished or increased within the limits allowed by law, upon the request of the party of the second part in writing, and the rent shall be diminished or increased for said year in proportion to the number of tubs.

"Upon the destruction of the said bath-house, by fire or other cause, the rent herein provided for shall cease until the bath-house shall be rebuilt.

"In witness whereof, the undersigned have subscribed their names, and affixed their seals, this 7th day of April, 1881.

"B. F. KELLY.

"GEORGE G. LATTA."

Q. Then this lease had been renewed before this Army and Navy hospital grounds had been laid out?—A. No, sir; it had never been renewed.

Q. I will ask you whether you thought the Secretary had a right to terminate your lease before it expired of its own limitation?—A. He had not.

Q. Then why did you send a man to Washington to protect your buildings?—A. If they took this in as a part of the territory, when the lease did expire they would take it in.

Q. Then you were looking out for the future?—A. Yes, sir; I tried to look out for the future.

By the CHAIRMAN:

Q. Do you look out for the future or the hereafter?—A. Generally, both.

Q. Who has the lease for the territory just below you?—A. The Rammelsburg site was originally given to Dr. Keller, and was by him sold to Mr. Long for \$5,000.

Q. Is he or was he then a member of the pool?—A. Yes, he was; but he is not now.

Q. When was his lease obtained?—A. After that.

Q. About when?—A. He was building about the same time I was.

Q. I am speaking of the lot below, which is not built upon?—A. That is Mr. Gaines; A. B.

Q. When was the lease obtained for that?—A. I think, last summer.

Q. Was it after the Army and Navy surgeon had been here looking after the location of the hospital?—A. Yes, sir; after the location was made. When he went on to Washington he brought the matter up in the War and Interior Departments, and then they fixed the location where it was to be, and this lease was fixed afterwards.

Q. Had your visit to Washington anything to do with the vacant lot on the corner?—A. Oh, no; we had no interest in it at all. That vacant lot on the corner had been taken, I understood, at that time, by him, to be used for the Government bath-house.

Q. The surgeon who came here wanted that lower lot to be a part of the Army and Navy hospital, did he not?—A. Yes; and did take it.

Q. Where is Mr. Smithmeyer's lease located?—A. It is between the Old Hale and the Independent, where that pump-house is.

By Mr. STORM:

Q. Well, there is no lease executed for any property or water privileges on the corner, site, is there?—A. No, sir; the Government has that, it is understood, for its bath-house.

Q. How many feet are there in that lot?—A. I think about 211 in all.

Q. I am speaking now of the frontage on Hot Springs Creek?—A. That is just exactly what I am talking about.

Q. Well, what is the frontage of the Government lot on Hot Springs Creek?—A. A hundred or a hundred and thirty-five feet.

Q. How many feet front has the Rammelsburg bath-house?—A. One hundred.

Q. How many feet front has that lot leased to Mr. Gaines?—A. I do not know.

Q. Do not you know that there are only a hundred feet front in the Government site?—A. I do not know it. I understood that the Government lot was a hundred and thirty-five feet long.

Q. I ask you whether the surgeons who were on here on behalf of the Government to select this Army and Navy hospital lot, did not include in that lot all the ground up to this lot at the corner [indicating on the map]?—A. Yes; and they did worse than that.

Q. And the Secretary of the Interior did not allow them to interfere with those two leases, but agreed at that time to let them have from this point down [indicating on map]?—A. Well, what I heard was that they did not intend to include in the lot the Ozark and the Rammelsburg.

Q. But this lease was obtained after they had been here and located the site for the hospital?—A. Yes, sir. Now, as to the exact measurements, of course you must get that from the lease itself. I want to say something about the transferring of leases. The act of Congress referred to has no provision against the assignment of leases or the transfer of bath-house privileges.

Q. Yes; we have looked at that.—A. I want to say this in reference to that, that in purchasing bath-house property here, I, of course, as a lawyer, and desiring to make an individual purchase, looked into that law before purchasing, and there is nothing in the act prohibiting this. The only bath-house property I own an interest in are the Ozark, Palace, and Independent bath-houses. Two of these houses I was interested in building. The third house, the Independent bath-house, was constructed by Mr. McKeogh and Mr. Holmes, and before that house was constructed, and about the time they were getting ready to build, the first bath-house pool formed herewas organized at that time. Mr. McKeogh was a member of that bath-house pool, and secretary, and Mr. McKeogh participated in its proceedings. His house was not then constructed, and the agreement was that when it was it should have a certain rating according to the furniture, style, &c. The pool went on, and he signed that agreement, which we can show. When his house was constructed the pool went into force, and when it became necessary for him to go into his house, we met and asked him what he wanted, and we conceded the number of tubs he asked, which was the full number in his house. He afterwards repudiated the whole thing, and would not go into the matter, and we considered that he acted in bad faith. The pool was then in operation, which he brought into operation, and we had to put down prices to meet his house. We ran on just in that way until that pool ceased and ran out by limitation.

Q. Who else belonged to that pool except Mr. McKeogh?—A. Every one in the place.

Q. Was the French Hotel in it?—A. No, the French Hotel was not a bath-house.

Q. But all the other bath-houses were in it, were they?—A. Yes. We did not regard the French Hotel as a bath-house. It had bath-tubs connected with it, and so had the Avenue Hotel, for the benefit of their guests.

Q. Is not the French Hotel in the pool, now?—A. No, sir; and it never has been in the pool, that ever I knew of. The French Hotel has never been recognized as a bath-house, and never was in the pool.

Q. Why is hot water running in there, if they have no bath-tubs?—A. The house has been locked up and turned over to the bats and owls for a year, and I have not been in there lately.

Q. Does not that hotel pay for four tubs now to the Government superintendent?—A. I do not know. I think if I owned the hotel I would pay for twenty in order to secure the hot water.

Q. I am asking you as to what you know; not what you would do?—A. I do not know.

Q. By paying for tubs they get the hot water, is that the idea?—A. Yes, sir; and it is quite an advantage for a hotel to get hot water, and he sold it with the hot-water privilege.

Q. If the lease provided that you could not assign or transfer without the consent of the Secretary, would you consider this arrangement of the pool a violation of the lease? I ask would such an arrangement between yourselves be considered as a violation of such a provision, if it were in the lease?—A. I do not think it would be any

violation. This is only a pooling of interests and no transfer of the property. It is only the profits that are dealt with.

Q. If the provision in the lease intended to prevent one man from having more than one piece of Government property, or one water privilege, and he had more than one, when one had only been granted him, it would be, would it not?—A. I do not see how it could be then. The pool is only formed as to profits and no interest is conveyed.

Q. Why, then, did not the Government rent out all its water privileges to one party?—A. I do not know about that. The bill itself was created by the parties in interest.

Q. Is there anything to prevent the Secretary of the Interior from leasing all the property to one man?—A. Under the law, there is.

Q. What is it?—A. The provision is, that no one house shall have over forty tubs.

Q. Well, that went to show that the Government intended limiting the number of tubs that any one person might control, and then would you consider an arrangement by which all the bath-tubs were brought under the arrangement of certain parties, would you not consider that getting around a provision of law?—A. No, sir; that was done by parties, to protect their interest, who had bath-houses here belonging to different individuals. There is nothing in the law which says one man cannot own a dozen or a half dozen bath-houses, only that he cannot have more than forty tubs in any one house.

Q. Is not the language of the law to prevent monopoly? The law says no bath-house shall have more than forty tubs.—A. The law is the best evidence of that. Now, I want to say in reference to the transfer of property, the impression was tried to be created before the committee that the pool had forced Mr. McKeogh to sell his interest in the bath-house he owned. Now, this pool I spoke of to which he belonged, and in the meetings of which he voted, had expired months before he sold his interest. Mr. McKeogh came to me and solicited me to buy that house, and insisted that I should buy it, though I refused time and again. He was so anxious to sell it and get his interest out of it that we were given one, two, and three years, with 6 per cent interest on the investment. This was offered us as an inducement to buy, and which time has not expired up to this period, and I bought it under those circumstances. The pool had nothing in the world to do with my buying this bath-house, or his selling it to me. I could not get parties to go in with me in the purchase, and finally I got Colonel Fordyce to take a fourth interest in the house, and then he saw Colonel Howard in Saint Louis, who took an interest also.

Q. Did Mr. McKeogh ever vote in that organization?—A. Yes, sir, he did.

By Mr. PAYNE:

Q. I do not see what this has got to do with the inquiry. What we want to know is whether there is a pool in existence now?—A. Yes, sir; and I say that this pool now in existence was formed long after the old pool expired.

By the CHAIRMAN:

Q. Do you think the pool a good thing, and subserves the public interests?—A. I think that if these hot-water leases were given to men with no interests here it would be the worse thing that could happen the property interest of Hot Springs.

Q. We are not looking after the property interest so much as the public interest.—A. Yes; and I think it would be best for both interests, and for the benefit of visitors coming here. You gentlemen not living here do not know what visitors were subjected to when this drumming was going on under the old bath-house system, and I think the pool is decidedly better for them, if the rates are reasonable, and I think they are reasonable.

By Mr. PAYNE:

Q. Do you have a report of your association showing the number of baths given each day in the different bath-houses?—A. Well, at the Palace and Ozark I have them. I do not know that I have them for the other bath-houses.

Q. How do you find out when one is cheating the other by not making full returns?—A. We think we have honest men conducting them.

Q. You do not mean to play that on us, do you?—A. That is not a great presumption down here in Arkansas.

Q. A dozen men do not go into business unless they watch each other, no matter how honest they are, do they?—A. The tickets are signed by the auditor and he gives those tickets to the managers of the different bath-houses. When the week expires he redeems those tickets.

Q. Are those season tickets?—A. Course tickets.

Q. How many individual tickets does the superintendent return?—A. He reports to the auditor outside of his tickets.

Q. Who issues those tickets to the different houses?—A. The auditor, and then he settles with the executive committee every Monday.

Q. You have a check on season tickets, but not on individual tickets?—A. No, sir.

By the CHAIRMAN:

Q. Individual tickets do not amount to much, do they?—A. No, sir.

Q. The dead-heads go in on season tickets, do they not?—A. There is where the kick is; we have very few of them.

By Mr. PAYNE:

Q. Do you know what the gross receipts of the whole pool were for the six months ending October 31, 1883, say?—A. I do not know; the books are kept by the auditor, tor, and he can probably give you that information.

By Mr. STORM:

Q. Now, where is the book that contains that information? I think that is what Mr. Payne wants.—A. With the auditor—the auditor reports to the executive committee of three.

By Mr. PAYNE:

Q. Will you produce the books that will give this information?—A. We will give you anything at all connected with the matter, or that you may call for, whatever it is.

Q. I suppose that land on the creek occupied by these bath-houses is worth fully as much per foot as property on the other side of the street, for business purposes, is it not?—A. No, sir.

Q. Why not?—A. Because it is not on as desirable a side of the street.

Q. What is the difference in the two sides of the street?—A. Considerable; in the first place the business is not on the other side; now, you might make it by proper investment as attractive as the other side.

Q. Well, suppose you put up a building worth four or five hundred thousand dollars; is that what you mean?—A. The approach and everything is not as accessible as on the other side of the street.

Q. The approach is being made now.—A. When it is filled in and sidewalks are laid, and storehouses are built, and good merchants go over there, then you might make it as valuable as the other side.

Q. Now, the naked land, without improvements, is worth as much per foot as the land on the other side of the street, is it not?—A. No, sir.

Q. It will be when the creek improvement is finished, will it not?—A. No, sir.

Q. What is the percentage of difference?—A. It is not easy to build there and it is not as accessible for building purposes as the other side. You go right into the mountain there. I own property on that side, and, if I was buying land, I would pay twice as much for it on the west side as I would on the other side.

Q. Do you think it is worth half as much?—A. I think that the property on the west side is worth twice as much.

Q. Take where the Arlington Hotel property is, do you not think the land there is worth as much as any land on the other side of the street, for business purposes?—A. No, I do not think so.

Q. Why not?—A. Well, it is a better location than below.

Q. And you can get deeper lots there with digging, can you not?—A. Storehouse and business property always rents according to the business around it. The territory over there for storehouses is limited. For example, you could not get three or four storehouses there when you could get twenty or thirty over on this side, and the throughfare is where the most houses are. Property up at that end of the town is not worth what it is down here. I would not give 1 foot down here for two up there.

Q. Is there any appreciable difference in the value of lots down here and those up near the Arlington Hotel?—A. Yes, sir.

Q. How much difference?—A. A good deal.

Q. What percentage?—A. Probably a hundred to a hundred and twenty-five dollars difference.

Q. Of course where the Arlington is you get a deeper lot than at any point on the street?—A. No, sir; you do not.

Q. Where is the point on the other side where you get deeper lots?—A. Down here. You cannot get a lot at the Arlington over 125 feet deep, except at the upper end of the Arlington lot, but lower down you cannot. Down here you can get a lot 160 feet deep; up around my property down to this point the length of the lots increase, and right down here they are 200 feet deep.

Q. In building sewers and making improvements of that kind, the tax is generally on the property abutting on the street thus improved, is it not?—A. Yes, sir.

Q. And the tax is graded by the number of feet front, is it not?—A. I believe that is the system, and I believe that is the law under our statute passed by recent legislature in reference to sewer system.

Q. And it applies to all cities in the State, does it not?—A. Yes, sir; you cannot pass a special act under our constitution; it must be general.

Q. So that, under that law, if the city should build a sewer through that street, all that could be required of the Government would be to pay its pro rata portion of the expense; that is, assuming that you could tax the Government?—A. Yes, sir, that would be it; and then, when you got on the other side in the valuation, you would have to take the water into consideration.

Q. I understood you to say that the assessment was according to the number of feet fronting on the street improved?—A. And that is its value.

Q. Well, the value would have nothing to do with the number of feet frontage, would it?—A. No, sir.

Q. Do you know whether W. P. Walsh has been a continued and persistent applicant for the position of manager of this Government reservation?—A. I know from the best evidence we have of things of that kind that Mr. Walsh would like very much to have it, but of course I do not know this myself, never having been present when he applied for it, and not having been on such terms with those he had aiding him and those to whom he applied, and not having a statement from him to that effect. But the general impression is that he desired the position at various times in the past four years. I know personally nothing about it, because I have not been to Washington and he has never told me that he was an applicant. That is the general report, however.

Q. Then you only know by hearsay?—A. That is all; general report. I have never seen his application and have never had conversation with the parties he applied to, but that is the report here.

Q. Have you ever heard, also, the report that \$1,000 was paid for the appointment of the present superintendent?—A. No, sir; I never heard it. It was a perfect surprise to me when he was appointed. I had no idea that General Kelly would be removed.

Q. Have you ever heard this in reference to Mr. Walsh from any person, who said that they had seen his application, or knew personally any fact connected with Mr. Walsh's application?—A. I only know it in the way that you hear a man spoken of for a certain office, and it is rumored in the community in which he lives that he is an applicant for postmaster, &c. Being interested in bath-house matters, I naturally pay some attention to things of that kind. I am just in the same situation about Mr. Hamblen as I am about Mr. Walsh.

By the CHAIRMAN:

Q. What is the interest upon your investment in this bath-house property—about what?—A. It varies, of course, at different times. When in the pool, from 10 to 15 per cent.

Q. It will average about 12 per cent., will it?—A. Yes; and that is not considering the decay of the building. Not taking that into consideration at all. I want to say here that I have the books of both those houses, and I have also filed a statement, and you can calculate for yourself. They show the results.

Q. Do you have any unnecessary waste of hot water here?—A. Well, sir, upon that point, I think that the hot-water system here is very defective. Now Mr. McKeogh, when he was one of the owners of the Independent bath-house, spoke of having considerable trouble about securing hot water, and I wish to say that we have had a great deal of trouble, too, and we have it now, and I introduced our manager to show you that in the past three weeks the house has been several times entirely without water sufficient to do bathing. The same may be said of the Ozark. We have to send men to other houses, and the Ozark has stood three weeks at a time without enough water to bathe 20 men a day.

Q. What is the cause of that?—A. It is the defective system for the distribution of water.

Q. What is the system?—A. The main tank, and one tank will not supply the lower houses with the water that they ought to have.

By Mr. STORM:

Q. Do you think you ought to apply the present bath-house system to the springs and get them into one reservoir?—A. And distribute the water by meter and regulate the distribution.

Q. And supply the water to the tub through a meter?—A. Yes, sir; and there is no man who has a bath-house that is not willing to do that.

By the CHAIRMAN:

Q. Is any additional legislation needed, in your judgment, providing for a proper distribution of the water? Is it the fault of the law or the management?—A. Fault of the management.

Q. Do you think the Interior Department has the right to distribute this water as the public require, or do you think there should be additional legislation in this respect?—A. I do not think so, unless the Department says that it has not the means to make the distribution as it should be made. Now it may be that the revenue is not

sufficient to do this work, but my impression is, that under the statute, the Department has that right.

Q. Do you think that under the existing law the Government could derive sufficient income to pay for the expense of properly distributing the water?—A. Undoubtedly. What we want here is a perfect distribution of the water. There is plenty of water here, if utilized and put in the proper channel for distribution, to supply the bathing public. In many of the bathing-houses people are inconvenienced by the want of water.

Q. What improvement would you recommend in this regard?—A. I recommend a system of tanks, and that the water be put into these tanks, placed at convenient points on the mountain at the different locations of the water, and then convey it to a general reservoir, having one general pipe connecting the bath-house with it. I think the Government should have entire charge of the distribution. If we had a tank like the Government, lower down, and the water now going to waste was pumped into it, we would have plenty of water and get it all together. We have a great deal of water going to waste, and the tendency of this water is downward. The springs near the creek can be utilized, if there is any way of getting the water up.

Q. Do you think there is any impropriety in allowing the hotels to use the hot water for bathing and drinking purposes?—A. I think they ought to have drinking water in the hotels, if it does not interfere with the bathing interests. The basis of the property interest, and public interest, in this place is the bathing interest, and that should be served first, and if there is any water over and above that, then I think they should have the hot water for drinking purposes in the hotels, and not before.

Q. Do you think there is enough water for bathing purposes and also to furnish the hotels?—A. There is now, but when all the bath-house sites that are leased have been built upon I do not know that there is.

Q. Do you think there is any necessity of building any more bath-houses?—A. I think there are enough now; but the number of visitors is increasing all the time, and our physicians have a way of recommending their patients to bathe in given hours, and in the morning from 9 to 1 o'clock it is impossible for the bathing-houses to bathe them all at certain seasons.

By Mr. PAYNE:

Q. During what seasons?—A. During the busy season.

Q. How many months in the year are covered by the busy season?—A. You may say that our season is lengthening out and getting better all the time.

Q. Take last year, for instance?—A. About seven months in the year, and I think that the first thing that the Department ought to do—and I tried to impress it upon Mr. Joslyn when here, and explained it to him—and that is to remedy the present inconvenience on account of the lack of hot water.

Q. Do you not think that the system ought to be so regulated as to produce enough revenue to make it self-supporting, so that the Government would not be to the expense of collecting and distributing the water?—A. I think so. Now, you can see from the accounts of one of these bath-houses, which I have submitted to the committee, and you can make your own deduction from that, what rate per tub could be paid, allowing a fair interest upon the investment. I think the bath-tubs can pay more than they are now paying, but cannot pay anything like what has been said here. Some said that it should be \$60 a year for each tub. Now, if you calculate the amount taken in and the expenditures for running the bath-house, for repairs, and keeping it up, you will find that there is not a cent in it at that.

Q. During these busy months, how many will each bath-tub bathe each day?—A. It depends entirely upon what kind of a bath it is. Do you mean a common bath?

Q. Take them as they ran the last year. How many a day to each tub were bathed during the seven months of the busy season?—A. I suppose twenty-five for each tub; twenty-five or thirty.

Q. And you say they were crowded?—A. Oh, yes, crowded; and you see one great trouble is the lack of water. We could get rid of people easier if we had plenty of water, but sometimes we have not got it, and the physicians crowd in the patients between these certain hours.

Q. Well, I say, take them as they ran the last year.—A. I do not suppose there is any man a member of the bath-house pool that is depending upon the bathing interest alone. There is not a single man connected with the bath-house pool but has some other business or profession outside, and we are all large property holders, and the hot water being the basis of all property interests here, when the hot water is gone it hurts us more than it does anybody else.

Q. But you are like everybody else, you look out for your own interests.—A. Yes; and the hot water is their interests, and we manage that so that there may be no detriment to the whole town. These members of the pool are the largest property owners here, and they are more interested in the proper management of this reservation than anybody else. I can say for one that I am perfectly willing to pay such com-

pensation to the Government as the business will justify, provided it is expended in such a way on the Government property.

Q. People look out for the interests at stake in different ways. Some are a penny-wise and a pound foolish, and some are not. We do not know which class you belong to.—A. I speak for the whole pool, and I do not think there is a man in it but who is in harmony with me. None of these men are adventurers.

Q. Would you make any suggestions as to the change of the management to a different Department of the Government?—A. It is a source of anxiety, and makes everything fluctuate here, more or less, as to how the property is managed, and I would like to see it put upon a permanent basis, where there would be no variation, and we would know what to expect and what we are to have for a basis for property here.

Q. That is not answering my question.—A. It ought to be placed in that Department where it would have a permanent basis.

Q. What Department is that?—A. It ought to go to the War Department. I think it ought to go to a Department where it would be placed under a Government officer not actuated by any influence for appointment, &c.; where it would make no difference whether he would be a Republican or a Democrat; and probably the next time we will have as much trouble with a Democratic superintendent as we have had with a Republican.

Q. You have not got over that old hope yet?—A. No, sir; while there is life there is hope. We want to put it where it will be permanent, and we will have a Government officer who will only look to one source, and will not be dependent upon any body.

Q. Would longer terms of leases be more conducive to improving the present system?—A. I think there should be a longer length of time as to the leases of property, and put it under such rules as you see fit, making them as stringent as you like, but the leases should be long enough to justify parties in making improvements and keeping up bathing facilities. A man cannot go and put expensive improvements on property on a five-years' lease. Formerly they would not allow a house built unless completed according to certain plans and specifications, these plans and specifications being forwarded, and if not approved by the architect of the Department the applicant was not allowed to build. When we executed the lease they came here and construed the five-years' lease to commence from the adoption of this law in 1878, when the house had been built three years. They gave a lease for five years, when practically it was only for three. When this was done, and the matter came to me, I protested against it, and I filed my protest. I contended that he ought to give me a lease for the full period of five years, to say the least of it.

Q. Some of the leases seem to have been granted after the five years expired?—A. I do not know of any. Well, that is a point we have not understood here. They granted leases for five years, and we thought at the time they began from the date of the lease. We communicated with Mr. Teller, and we have his letter here, in which he stated that under the law these leases could be renewed at the expiration of the time; that was his construction of the statute, and we acted upon that construction. That was his version of the law, and we have his opinion to that effect.

By Mr. STORM:

Q. They can be renewed; there is no question about that. The question is whether he is under any legal obligations to renew them.—A. He holds now that he cannot. He has made another ruling. When we made application for renewal, and after he gave us to understand that he could renew, he now says that he cannot renew the leases.

Q. Then, according to your theory, as to the Ozark and Rammelsburg bath-houses, he cannot help you and he cannot hurt you?—A. It is with you gentlemen now.

By Mr. PAYNE:

Q. Do you think further legislation upon this point is necessary?—A. Yes, sir; I do, under the second ruling.

By Mr. STORM:

Q. That shows that no discretion should be left in the officer that administers this matter?—A. Yes, sir.

Q. Do you think the public interest requires that some legislation should be had in regard to the term of lease?—A. Yes, sir; the term should be increased and all the guards put on.

Q. What do you think about the Arlington Hotel in this connection?—A. I think that if the Arlington Hotel was torn down to-day it would be a public calamity. I do not know a man who has got a dollar's worth of property here that would not so consider it. This is one of the only truly first-class hotels we have here.

Q. Is there any other location near the springs that could be had at a reasonable price for a hotel site—I mean in the immediate vicinity of the springs?—A. No, sir; none at all that I know of; certainly none that would compare with that.

Q. In respect to the Government property, do you think the public interest would

be subversed and the public benefited by putting these outlying lots on the market now?—A. I think the Government owns property in locations that are appreciating in value, and I think sales should be made from time to time, and it would pay the Government; and it is due to the Government and people here that they should be sold. The Government owns property in localities that should be improved, and I think these lots should be sold at stated intervals. I do not think that this property should be put upon the market in a lump; I think that is wrong.

Q. Is not there enough property here in private hands, which, if sold and improved, would benefit the town?—A. No, sir; it is being taken up and improved.

Q. Is not there a good deal of property here belonging to private individuals for sale?—A. Yes; but they are on sale at such prices that people cannot reach them.

Q. Should not the Government hold its property until it reaches that price?—A. The Government can sell its property for a good sum. For instance, they put up Government property here, and sold it for \$1,500 and \$1,600. These lots were sold at that price, and I would not to-day pay that much for them.

Q. Five years from now do you not think that this property will be much more valuable than now?—A. I think it is appreciating all the time. I think, however, that by the selection of certain lots, and selling them from time to time, it will have a tendency to increase the value of its other lots. For example, take a block and sell out of that block half a dozen lots, you will see how you appreciate the balance of that property.

Q. What has been the method of the selection?—A. That has been the way, and a good selection, too.

Q. Under whose direction was the property sold?—A. Under the Secretary of the Interior, through the land office at Little Rock, or the land office of this district.

Q. There are some lots advertised for sale here now, are there not?—A. On the 6th of May.

Q. How many?—A. A hundred and fifty.

Q. Where are they located?—A. All over the reservation; different portions of it.

Q. Do you think the Government will be benefited by that sale?—A. I think so. I looked at some lots which I think were well selected for the purpose of sale, and I think it will take a good deal of time to sell that number of lots. We had a sale a year ago, and I think this is a good time to make another sale.

By the CHAIRMAN:

Q. Do you think any advantage would accrue to the Government by leasing out any more property?—A. I think that it would be perfectly ruinous to lease out any of these mountains. The policy of the Commissioners was that the mountains, with the trees and shrubbery, should be left that way forever. If you lease any portions of these mountains parties will begin cutting timber, and you will have a barren hill—a bleak and barren mountain. This growth of timber is the health of the community, and I would not allow, if I had a say so, a twig or a sprig to be cut.

Q. Do you not think that the property and springs of the Government and the buildings would be enhanced in value if fenced in and protected from individual and stock nuisances?—A. There ought to be some kind of inclosure. For instance, I have seen on that mountain men with sore legs bathing in the springs, and you and others bathing in the bath-houses in water coming from these springs, and that is the reason they should all be cemented and closed up. They used to leave the springs open, but they had to be closed.

Q. Do you think there are sufficient hotel facilities here now?—A. No, sir; I do not. I think you have a good deal of experience as visitors here upon that point, and you must know that certainly there are not sufficient facilities of the character and kind that a large number of visitors coming here want.

Q. And you think there is no danger of a man getting the gout here?—A. No, sir; not as a general thing. They do not get the gout here from eating. They do not come here to fatten, but to diet.

By Mr. PAYNE:

Q. A good many people bathe here that have contagious diseases, do they not?—A. Yes, sir.

Q. Do you not think that there ought to be some arrangement by which a man who has no disease may bathe in tubs where none of that class of people bathe?—A. I do think so.

Q. On the certificate of a physician, or something else, that he is healthy?—A. If I had my say-so, I would put a house up here and charge such rates as generally all that kind of people could not bathe there.

Q. Would it not be for the interest of this pool to make such an arrangement as that?—A. We try to do that at the Palace. If a man comes in that we can see is objectionable we do everything in the world we can to get him to go to some other house, and generally do it.

Q. Suppose you compelled every man to show a physician's certificate that he had

no contagious disease, do you not think it would be the most popular bath-house in the place?—A. I think it would be for you, and gentlemen like you.

Q. But would it not be to your own interest, at even 30 cents a bath, to do it?—A. It might do, but the way these gentlemen think in the pool is that every bath-house should be made to earn every cent it can, and do its part of the work, and we have not been able to effect that kind of arrangement.

Q. Something has been said about bath-houses paying for hot water and not using it. I believe the Grand Central was spoken of. What do you know about that?—A. They make their report to the auditor, and that bath-house has been kept open. If it has been closed, it has been for repairs, and without my knowledge. If I knew it I would not submit to it; and another thing, they charge a low rate for a certain class that bathe there who are not willing to pay a higher rate. There was a time when the Grand Central was cut off on account of the Government work, and had to suspend, and that was a great inconvenience to that house. If it was closed longer than that was remedied, I do not know it.

Q. Are there sufficient facilities here for the bathing for those who are poor and not able to pay?—A. I know quite a crowd bathe here, and the facilities have been increased, but I really do not know much about that department.

Q. Did you ever refuse to give anybody a bath because he did not have the money?—A. No, sir; not unless he was a very objectionable party. If he is a decent man, he can get a bath. I know that it occurs every day in the week that a man comes here and gets out of money, and his physician will send a note to that effect to the manager of the bath-house, and he bathes him and does not charge him a cent, and he is instructed to do it, and there is no discrimination in that way. I suppose every manager will make that statement. A worthy case of that kind is never turned off.

Q. In regard to the Grand Central and Hot Springs bath-houses, do you say they make their returns of the receipts?—A. To the auditor.

Q. How much have they turned in in the last six months?—A. I could not tell you about special amounts. The auditor can do that.

Q. Who is the auditor?—A. Dr. Rector, and he will be here before the committee. I will say the receipts have been small.

Q. Is it or not a fact, that a white man by the name of Ross, who has charge of the bath-house, is the only person now in the bath-house, and there are no rubbers there?—A. I do not know that. Under our regulations we have an executive committee of three members, and it is their duty to settle with the auditor, and also visit the bath-houses and see that they are kept in the proper condition, and that the necessary accommodations are there.

Q. What are their names?—A. C. N. Rockafellow, A. B. Gaines, and S. W. Fordyce. I appointed Mr. Fordyce three weeks ago, or longer than that. When Mr. Long left, I appointed Mr. Fordyce in his place.

Q. These bath-tubs under the Arlington hotel, are they also comprehended in your pool?—A. Yes, sir.

Q. How many tubs are there there?—A. They connect with the Rector.

Q. How many tubs are there?—A. Not more than four or five, and I do not know whether they run. They have the privilege of closing them if they desire.

Q. But are they comprehended in this pool?—A. Yes, sir.

Q. And the owner receives his pro rata, does he not?—A. That is not a separate pro rata from the Rector.

Q. I mean these four or five tubs under the Arlington Hotel, although not used, receive the pro rata from the pool?—A. Oh, no; they do not.

Q. Just understand me. You say that they are included with the Rector bath-house?—A. Yes.

Q. Well, is the Rector not in the pool?—A. Yes.

Q. Then, why does not the owner of these four tubs receive his pro rata?—A. Because they were not presumed, at the time of the organization of the pool, to be in condition to bathe people. We did not consider it doing anything, but the pool did not want them to be opened outside of the pool.

Q. What becomes of the water of those tubs?—A. It goes into the Rector, I think.

Q. Then there is no water running into the Arlington Hotel to supply those tubs?—A. I cannot tell. I was never in the Arlington bath-room over twice in my life, and have not been in there for a year and a half. My understanding was that when they made the excavation that the supply to the Arlington was to be used in the Rector bath-house.

Q. Are there as many as five people a day that bathe at the Hot Springs bath-house?—A. I cannot tell you; that is in the hands of the executive committee, and the members of that committee will give you that testimony.

Q. Do you know where most of the springs are located on this reservation?—A. I know where a good many are.

Q. You were not here anterior to the construction of the Arlington Hotel, were

you?—A. Yes, sir; I have been a resident of the Hot Springs since 1873, and of the State since 1870.

Q. Have you ever heard of any springs being under the Arlington Hotel?—A. I heard of one being back in the mountain there, but not directly under the Arlington. I do not know of any. The man who excavated there would be the best witness on that point.

WILLIAM P. WALSH being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. You may make any statement you wish, Mr. Walsh.—Answer. I am a resident of Hot Springs, and have lived here seventeen years. I am not an applicant for the position of superintendent of the Hot Springs Reservation, nor have not been for years. At one time I was an applicant for it. That was four years ago, I believe; but after filing my papers, I concluded that a friend of mine would make a better superintendent, and I recommended that friend. That was Mr. Johnston, who is now clerk at the Arlington Hotel, and ex-cashier of the National Bank of Hot Springs. I wrote a letter in his interest to the Secretary of the Interior, the Hon John A. Logan, and others. I urged his appointment with what little power and strength I had politically and otherwise, and I went to Little Rock in his interest, and did what I could there to obtain letters to have him appointed. When I was at Washington on this last time, I was not an applicant for this position. The chairman of this committee understands that, for I had a talk with him about another matter. The Republican central committee recommended me for the position of special land agent of the United States, at its last meeting. Senator Garland, and every member of the Arkansas legislature, regardless of politics, have also recommended me officially during this session, as also the governor of the State and nearly all the officials and men of prominence in the State. The President told Mr. Garland, in my presence, that my indorsement was the strongest of any that had been before him during his administration. I have no interest in this investigation in any shape, manner, or form, other than the public good. I have no enemies to punish or friends to reward. I only hew to the line, let the chips fall where they may. That is all, gentlemen.

D. C. RUGG, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. I will ask you, inasmuch as General Kelly's name has been brought up, if you know as a fact that from the time Mr. Kelly came here until he left that Mr. Fordyce acted as his banker, taking his checks for his salary from the Government, and checking against it whenever General Kelly wanted money, and whether or not General Kelly's board at the Arlington Hotel was charged up to Mr. Fordyce and taken out of the latter's dividend from the hotel regularly every month?—Answer. Had I not better state what relation I bore to the matter at the time?

Q. Go on, and make your statement in your own way.—A. I was one of the original owners of the Arlington Hotel, and in connection with Mr. Stitt and Mr. Fordyce; we three built it and remained in the management until last August. I was familiar with every transaction in the house, and made myself very active in pushing its affairs along. As a fact, General Kelly paid his board, most assuredly, as everybody else did who was there any length of time. I personally know that General Kelly used to give his checks for his pay to my associate, Colonel Fordyce, and that often when his board was due it was charged to the interest of Mr. Fordyce in the hotel, but the hotel got the benefit of it. I have known, personally, checks to pass between them and payments between them in that way. From the question, gentlemen, I infer that somebody has stated here that General Kelly paid no board in that hotel. I think that is a mistake.

By Mr. STORM:

Q. I think it was stated in this way, that the board was paid by draft; that it was paid for by an arrangement of that kind and the payment was not formal, or by money, as customary with guests?—A. Oh, yes; and charged to Colonel Fordyce's interest. Colonel Fordyce's interest in the hotel was good for his board. I cannot remember now how it came to my knowledge, but I think it began by General Kelly's borrowing money from Colonel Fordyce. At any rate, when General Kelly's draft came he frequently—I do not say always—turned it over to Colonel Fordyce. Since I come to think of it, General Kelly told me, and his wife also, that Colonel Fordyce acted as his banker.

Q. That is, if he was short of funds, he got them from Mr. Fordyce?—A. He was not often short of funds; no. He lived within his means. He had no unusual expenses to defray that I am aware of. I know General Kelly and his wife very well, and esteem them both very highly.

Q. Is it a fact that General Kelly and Colonel Fordyce came from the same part of the country, and that his father and Colonel Fordyce's father were friends, and that General Kelly's friends were Colonel Fordyce's friends, and that when General Kelly came here he relied upon Colonel Fordyce's friendship, &c.?—A. I believe he had confidence in Colonel Fordyce and reciprocated his favors, and there was some feeling felt by myself about this matter being brought up here, because he is a very estimable man.

Q. Is it a fact or not that you sold your interest in the Arlington Hotel last August for \$35,000?—A. I do not consider I got quite that much. But we will consider that I got that sum in round numbers.

Q. Do you not consider that you got a good round price?—A. Oh, yes; I got a very good price, and I am satisfied. Why do you ask?

Q. Did this sum of \$35,000 represent your third interest?—A. Yes, sir; and I have been glad I sold it.

Q. Then of course you now have no interest in the Arlington Hotel?—A. No, sir.

Q. Do you think that the gentlemen who built that hotel are entitled to a certain equity over anybody else?—A. Yes, sir; and they will certainly get it. It is so plain a case that there can be no doubt about it. I state that as my view, and that view is derived from long familiarity with that hotel.

Q. At the time that house was built, it was the only decent house in Hot Springs, was it not?—A. I regarded it from the day it was built as a public necessity, and it is to-day, and any citizen in town will state that. I think no one hears me but will coincide in that statement.

Q. There are plenty of good hotels here, though, are there not?—A. Well, yes; but none so well situated for a certain class of visitors.

Q. Do you not think that if the gentlemen who put their money into the Arlington Hotel had been dealt with here as liberally as other people here were dealt with, that they would have had that ground in fee-simple?—A. Oh, yes, indeed. The builders of the Arlington Hotel did not actively interfere with anything which was proposed to be done for its benefit. They went right along with its business, I among them, and, when the Commissioners were here, submitted their affairs to the Commission without argument and without the employment of an attorney, and I believe without any effort to control its action whatever.

By Mr. PAYNE:

Q. The improvements put on there were appraised by the Commission, were they not?—A. But never paid for.

Q. How much was the appraisement?—A. \$22,000.

Q. That was for the buildings there then, was it?—A. Yes, sir.

Q. And when was that?—A. That was a very low appraisement.

Q. Was a certificate issued?—A. Yes, sir.

Q. Why was it not paid? Was it because the Government did not have enough money, or why?—A. No, sir; there were other certificates issued for property condemned like that. Do you know that?

Q. Of course I do.—A. I only wanted to make it intelligent. When a bill was introduced into Congress looking to the payment of these certificates for condemned property, we had some conversation about our certificate, and we concluded that as that sum was considerably larger than any other, and as we had never been interfered with in the occupancy of our property as others had been, that no hardship had been put upon us by the issuing of this certificate, and we would not insist upon its payment. We did that because other persons here, many of them poor, had had their houses taken down or removed and their business destroyed or badly damaged, and were illy able to afford it, and the fact of our certificate being in existence, it might perhaps interfere with the passage of the law providing for the payment of these individuals, and we did not want to stand in their way. We had not been damaged like they had been, although our house was condemned and appraised, but we were not asked to tear down and destroy our business, as other people.

Q. Now that was in 1878, or about that time, was it not?—A. Yes, about that time.

Q. At the time that certificate was issued, until you sold your interest, what permanent improvements had your firm put on that property, if any?—A. There was an addition put to the rear of the north wing.

Q. Do you know how much that cost?—A. It cost in the neighborhood, I think, of \$5,000.

Q. Since you sold your interest another addition has been put upon the building, has it not?—A. Yes, sir.

Q. Did or did not the investment up to the time you left there exceed, in round numbers, \$80,000?—A. Just about, for furniture and all.

Q. Was or was not this hotel built under disadvantageous circumstances?—A. I would not undertake it again.

Q. There were then no mills or railroads here, were there?—A. We built it under singular and hazardous circumstances.

By Mr. STORM:

Q. You do not regret it, do you?—A. No, sir; but it required great vigilance and great care to bring that hotel to the status it is to-day.

Q. Did you dispose of your interest in the certificate?—A. Yes, sir.

Q. Do you not consider that you can get your money whenever you want it?—A. I suppose so; but there is no law providing for its payment, and it was expected from the provision of law by our own request, on my request, made for the reason I stated.

Q. These certificates were paid in part by allowing persons to buy in their property at a low price, were they not?—A. These certificates were issued in payment to people whose property was damaged, torn down, and removed. Our property, while appraised and condemned, had not been taken down or removed, and our occupancy not disturbed in the least. Then there was some opposition raised as to the amount of the certificate, and I simply got up a letter, of which we have a copy on file, to our Senators and Representatives setting forth these facts.

Q. Opposition from what quarter?—A. Opposition to the passage of a bill authorizing the payment of these certificates for condemned buildings, because it was alleged that the Arlington people had received \$22,000 for their improvements and allowed to occupy their property.

Q. Was not it the same law that provided for the payment of these other certificates that authorized the lease of the Arlington to you gentlemen for \$1,000 a year?—A. No, sir.

Q. As a business man, and having had the experience you have had, what do you think that ground where the Arlington stands is worth?—A. That belongs to the Government, and I think the hotel pays a large price for it now, and I come to that conclusion for several reasons. I have noticed, for instance, the terms upon which the ten acres of ground, including seven hotel sites, have been leased to certain parties in the Yellowstone Park. It is leased in seven parcels, comprising seven hotel sites, for \$200 a year for the whole seven sites. This one acre and one hotel pays \$1,000 a year.

Q. Does this ground here occupy just an acre?—A. How do you mean?

Q. The grounds upon which they have a right to exercise possession?—A. Just one acre. At the time that the plat was made, in conformity to the law authorizing a lease to be made of one acre of ground to us, certain grounds were inclosed up that mountain side to protect the property from the tramps that then occupied the whole side of the mountain. When that plat was made, I asked the authority under which it was made if it was necessary to remove those fences to conform to this line, and I was told no—let the fences remain where they are.

Q. You do not claim the right to it, but simply allow the fence to remain there to keep out trespassers?—A. No, sir. The building there now cannot cover so much as two-thirds of an acre, including the verandas, &c.

Q. And not including the space between the buildings and the streets?—A. I should say considerably less. If you will notice, there is a three-cornered piece of land to the north that we had authority to inclose—to beautify, but not occupy—and we have never occupied it and never contemplated to occupy it.

By Mr. PAYNE:

Q. At the time the law was passed excepting the certificate of the Arlington Hotel people from payment, you were then occupying the hotel under a lease from the Government, under the law of 1878, were you not?—A. Yes, sir, and that exception was made in the act, for the reason stated, because we were not damaged as our neighbors had been.

Q. It was stated here yesterday by an ex-clerk of the Arlington Hotel that he would give \$200,000 for a lease of that ground for ten years. Do you think any set of capitalists, or any man, would pay that for the house itself, and the ground, and furniture, and certificate, and all?—A. I would not join in that purchase. We built that hotel prior to the Government taking possession of Hot Springs.

Q. Who claimed to own the hotel then?—A. I got it under lease from Governor Rector. We built the house and continued to do business there until the decision of the courts placing the property in the hands of a receiver on behalf of the United States, and we paid such rent to him as he demanded. In course of time this other act, with which you are familiar, came into force, and the property here was laid off into streets and lots, &c., and the claimants were authorized and allowed to buy them at a nominal price, but the builders of the Arlington Hotel did not get any benefit from that, because the Commissioners who represented the Government included the ground on which the Arlington Hotel stands in the permanent reservation which they were required by law to lay off. That laying off placed the Arlington Hotel upon Government ground, and that created a great hardship to the persons who built it. That fact became known to Congress, I presume, and it was known to prominent gentlemen in Congress at the time that a house of that kind was a necessity to the

public who visited Hot Springs, and the members of Congress themselves fixed this price of a thousand dollars. It was not suggested to them at all by the owners of the hotel. The price was fixed by the committee by whom the matter was being considered, without any suggestion of any member of our firm. We employed no attorney and made no effort to control or shake legislation in any manner whatever. As a matter of equity and right, it has always seemed to me that the owners of that hotel should be allowed to remain an indefinite length of time, and I think this is due to these gentlemen, who came into a wild region and put up a creditable house and helped to put the town on its feet, and give it the reputation it enjoys to-day.

Q. Then you built that hotel while you occupied the ground under a lease from Governor Rector?—A. Yes, sir.

Q. How long a period was that lease?—A. Five years, I think, sir.

Q. At what rental?—A. Three thousand dollars a year. I am not going into the details.

Q. What other building did you rent?—A. There was a hotel there when we rented the ground.

Q. How much of a hotel?—A. I never actually saw it. It was called the Rector House.

Q. Where did it stand?—A. It stood where the Arlington stands now.

Q. Did you tear that down?—A. Not all; part of it was torn down and removed.

Q. Then you improved and added to it?—A. Yes, improved and added to it. We rented from Governor Rector house and the grounds on which it stood at a rental of \$3,000.

Q. Is it or not a fact that you gentlemen paid in this final settlement in the neighborhood of 10,000?—A. I thought more than that. We paid that in the shape of a promise. There were some interests in dispute, and to avoid litigation we came together and made him a bid.

Q. Are you familiar with the bathing facilities of Hot Springs?—A. Well, sir, reasonably so.

Q. What do you consider the present character of bath-houses in Hot Springs; are they good?—A. I have heard no complaint for a long time, and I mix with visitors freely.

Q. What do you know about the management of the bath-house business under the pool? Has that been satisfactory to visitors?—A. I think more than satisfactory. I think it a great improvement on the practice that prevailed before the organization of the pool.

Q. Why?—A. Because everything runs along smoothly. There is now no drumming of visitors or annoying them as to where they should go, and, in a town like this, anything which tends to make affairs go smoothly and noiselessly along is good.

Q. How are the rates of bathing?—A. I think very reasonable indeed. More so than an ordinary bath is elsewhere.

Q. You are a large property owner here, are you not?—A. I own some.

Q. Have you any interest in the bath-house business?—A. None.

Q. Do you think that the best interests of the public are subserved by the management of the bath-house business as it is now managed?—A. I think it a great improvement on the old one, and I cannot imagine a better system than the present for visitors. I cannot see why any visitor should complain, except of the lack of water, but that is only temporary.

Q. Does that grow out of the manner of distributing the water, or the management of the bath-houses?—A. I think the distribution. Of course it is a matter of common knowledge to us all that the water is not properly utilized.

A. S. GARNETT, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. What is your vocation?—Answer. I am a physician; doctor of medicine.

Q. Are you familiar with the bath-house system of Hot Springs?—A. I am.

Q. I will ask you if you are the owner of a bath-house?—A. I own the Big Iron bath-house.

Q. And you are familiar with the management of the bath-house business under the pool?—A. Yes, sir.

Q. Were you familiar with the system before the pool was inaugurated?—A. I was.

Q. Which system do you regard the best? Is it better for your patients and for the visiting public here to run the bath-houses under the present system, or was the old system more satisfactory?—A. The present system, and for this reason: that it has shut off a certain disreputable class of a means of living, namely, drumming patients from one bath-house to another.

Q. Was not it also the case that patients were drummed from one doctor to another?—A. Oh, frequently.

Q. How are the bath-houses, as managed now? Are they under proper control, or

how is that? Tell the committee all you know in this regard.—A. I do not believe the bath-houses were ever so systematically managed as at present. All the facilities they ever possessed they still possess, and a man gets a bath more cheaply and more comfortably and cleanly now than ever before.

Q. When they were cutting and slashing rates, did visitors receive the attention they now do, or was the attention better?—A. They did not receive the attention they now do.

Q. As to the rates, do you think they are reasonable?—A. I think, as a general rule, they are too low. I think the rates ought to be higher for a certain class, and the accommodations ought to be better. I think that the bath-houses ought to be more commodious and more palatial for a certain class of people who come here.

Q. Have you had any suggestions made to you, as a physician, by visitors that there should be bath-houses established here at higher rates, so as to make some of the bath-houses more exclusive?—A. I have, often.

Q. I will ask you whether or not your patients are confined pretty much to that better class of people?—A. Oh, yes; a good many of them.

Q. If you have any statement you desire to make in reference to this bath-house matter, we should like to hear it?—A. Nothing occurs to me. I have stated all I could say if I took an hour.

Q. What about the term of leases? Do you think the term should be short or of reasonable length?—A. I think that a long lease ought to be given. I think bath-house property should be transferred and the lease sold like any other property. It should be like anything else that capitalists take hold of. No man will put his money into any enterprise that ceases to be profitable. If a man has a lease from the Government for a bath-house and spends a hundred thousand dollars, and that lease is not transferable, it ceases to be a profitable and good property. As it is now, it is only a courtesy, and a short courtesy at that. I think we should have leases that would be transferable, and be like any other property. I have had patients that would be glad to pay from \$5 to \$10 a day for a good bath-room and private parlor, and have a key to it themselves. Under the restrictions of the Government no one is permitted to build any such house and ask any such price.

By Mr. STORM:

Q. Some witnesses here have stated that there are not sufficient accommodations for the indigent to bathe. What have you to say about that?—A. I think that there ought to be larger facilities for the indigent to bathe.

Q. In view of the fact that the mud hole has been damaged, which was the principal resort of the poor, do you not think it would be well for the Government to build a bath-house for the accommodation of people who cannot afford to pay?—A. I think the amplest facilities should be given to the poor. I think this, that if a bath-house is built for the poor it ought to be for them exclusively, and ought not to be mixed.

Q. The danger always is, that if persons are allowed to bathe in a house of that kind by paying something, the tendency is to crowd out the poor. In other words, those who can pay anything have the preference. Do you not think so?—A. Yes, sir. I think the Government ought to build a comfortable bath-house and give ample facilities for bathing the indigent. I do not think it should be as it was when I first came here. The Hot Springs Mountain was almost destroyed by paupers bathing in the springs, and they drove away the better class of people. I have seen people coming here from the North, who would stay over night and the next morning looking at that hill would say we do not want to bathe among the Lazaroni. It really did not do the paupers any good, as they would lie out there at night and die by the hundreds. I think there ought to be a good house for the paupers to bathe in, otherwise they would bathe outside and be exposed to the climatic changes, and a great many would die from the pneumonia.

Q. What do you think of the idea of the Government selling some privileges outright to parties with proper restrictions?—A. I do not know but that there might be simply another mode of lease.

Q. What period of lease would you suggest?—A. I think twenty or thirty years. Some such lease as has been established at the Yellowstone Park is a good precedent. The longer of course the lease, the greater would be the stimulus for the party having the lease to build a good house and keep it up well.

Q. Of course the wealthy people can take care of themselves, but what would you think of a bath-house, to which none would be admitted except those not tinged by infectious diseases, requiring the certificate of a physician, or something of that kind to entitle the applicant to a bath?—A. It would be impossible to do it. There are so many men who have syphilis, for instance, in its late stages, and who would escape detection almost by anybody, and it would be almost impossible to have a house of that kind. The persons who did not have an active case of syphilis, that is, visible upon their face or flesh, might go into one of these houses so restricted undetected and bathe with impunity.

Q. And there is some danger of contagion in that case as well as in an active case of syphilis?—A. Yes, sir; but I do not think there is much danger of inoculation in that way.

Q. Did you ever know of a case here of inoculation of that kind?—A. Never; no, sir. Another thing I wish to say is, that if you established a bath-house here of the character you suggest, you would not get many patients into the other houses, because it would be a confession of judgment for a man to go to any other bath-house than that admitting only those who were free from syphilis.

By the CHAIRMAN:

Q. What do you think of the sewerage of this town being turned into the creek?—A. I think the original plan of putting pipes down near the base of the vertical walls is the real true system of sewerage. It is the safest. All sewerage matter is poisonous or not poisonous as exposed or not exposed. If you hermetically seal an iron pipe and allow the sewerage to pass through it, there is no danger to those along the line of the sewer, provided it will be carried along and emptied at a point remote from the town; Whereas in an open system, there must be more or less danger at the junction of the sewer pipes with the Great Canal.

Q. What is your idea of the proper sewerage of this town?—A. My idea is that the plan drawn by Captain Handbury is the proper one—to have two large cylinders laid down at the base and the iron pipes connect with them.

Q. How far do you think these pipes should be extended?—A. I could not tell.

Q. Would you turn them into the creek?—A. You might, at some remote point.

Q. Would it be safe to turn the sewerage into the creek about the neighborhood of the gas works?—A. I should turn it in at a lower point. The fact is that it ought to be turned in below the point where there are any houses.

Q. A witness here spoke of the gas tar acting as a disinfectant.—A. Yes, I suppose it is.

By Mr. PAYNE:

Q. I would suppose there would be more danger from noxious gases generating in this tunnel than down the stream where it is exposed to the air and sun.—A. Yes, sir.

Q. Now, is it not just as dangerous to health at the upper end of the tunnel as below?—A. Yes, sir. Now the hot water is turned into this stream, which, coming in contact with the sewerage, would form a poisonous vapor, which would be the most dangerous condition the sewer could be placed in.

Q. And these gases being light, the tendency of course would be for the great volume to find its way out at the upper end?—A. Yes, sir.

Q. In other words, to make this a perfect sewer you must extend it out of town both ways?—A. Yes, sir.

By Mr. STORM:

Q. And unless you had plenty of water to flow in your sewer pipes, of course you must not overcome the difficulty?—A. No, sir.

Q. Where is the water to come from?—A. We could get water from the water-works.

Q. You could not get a continuous supply every day or two, could you?—A. Yes, sir. You might easily flood the iron sewer pipes, and I think it safer to have the water from the water-works.

Q. Could you not use the creek water?—A. No; I do not see how you could do that.

By the CHAIRMAN:

Q. Could not a dam be put up on Whittington avenue?—A. Yes; but I do not see why it could not be put up at the water-works.

By Mr. PAYNE:

Q. I suppose the chief value of property here is on account of these springs?—A. Yes, sir; that is the only reason why any place is valuable here. This is a place of no commercial import at all.

By the CHAIRMAN:

Q. Do you think that the creek work should be continued further than it is on account of the Government property, the hospital, &c.?—A. Yes, sir; I think so; for this reason: if not continued beyond the limits of the Government hospital, the atmosphere around the Government buildings will be so bad that the patients at the hospital will die from atmospheric poison. In order to make this place healthy, that creek or canal should be carried down at least to the gas-works, and on either side have pipes connected with the surface drainage.

Q. Do you not think it right that the city should pay a little towards that sewer?—A. Well, if we cannot get it any other way, I think it should.

By Mr. PAYNE:

Q. If the city did that there would not be much occasion for the Government to extend this masonry down over private property as far as the gas-works, would there?—A. I think it ought to be done.

Q. I will ask you if the owners of that private property could not well afford to carry it down, on account of the improved condition of their property, so as to build their houses over it?—A. That is a metaphysical question.

Q. Do you think that the citizens of this town could construct that sewer in sufficient time?—A. Which sewer?

Q. The parallel sewer—the side pipes. Would not the ill effects from the arch be so bad by the time the city put in the sewer as to make it impossible to do anything?—A. It is almost impossible to answer that question. I do not know what contribution on their part would be required.

By Mr. STORM:

Q. Were you here when Judge Joslyn recommended the change?—A. No, sir.

Q. Did you hear afterward that he was at the Arlington and explained this change, which consisted of the omission of these side pipes, and that a large body of citizens were present when he explained about the covering of the arch with stone instead of the iron beams?—A. I heard that he had a consultation with several doctors here, and amongst them was my friend, Dr. Franklin, but this is mere rumor.

Q. I am asking whether you know the fact of Judge Joslyn making a speech at the Arlington Hotel, in which he stated his purpose or desire that these iron pipes on the side would not be put in, and that this arch would cover the stream instead of a flat covering across the stream composed of iron beams and brick?—A. No, I did not hear it at all.

Q. Well, if it is a fact that Judge Joslyn, at the Arlington Hotel, in the presence of 150 or 200 people, spoke of making this change, it must have been pretty well known by the people, must it have not?—A. I suppose so.

Q. Do you know of anybody protesting against that charge at that time?—A. No, sir; but I was not here when he made that speech. I heard that he made a speech, but I do not know what it was.

Q. Did you learn somewhere, in the course of time, that these pipes were to be omitted?—A. I did hear of that.

Q. Do you know whether the citizens or doctors of this place protested against it, or wrote to him that it was a mistake?—A. I do not know that they did, but I know I wrote to General Logan about it. I know that I said, in my opinion, that these iron pipes ought to be put down.

Q. He said that it was his purpose not to do so, and the people of this town stood by and allowed it, and know that it has created a nuisance. Isn't it remarkable that a public officer should come here and make a statement of his plan and design in the presence of a large number of citizens, and then that they should raise the question of a Government creating a nuisance? This seems to me very strange.—A. When I heard the question raised I wrote to Senator Logan. I was away when this transpired, but I wrote him and gave my views about the matter, and asked him to use what influence he could in having these iron pipes put down, as I believed that the safest and best sewer we could have.

By Mr. PAYNE:

Q. If there was sufficient sewerage outside of this creek to carry off everything except the impurities in the bath-tubs, would you then think the stream would be dangerous to the health of the city in any way?—A. No, sir; not at all.

Thereupon (at 12 o'clock and 40 minutes p. m.) the committee took a recess until half-past 2 p. m.

AFTER RECESS.

Committee met pursuant to adjournment.

EDWARD HOGABOOM recalled.

By Mr. STORM:

Question. How long have you been a resident here?—Answer. I have been here over seven years. I came here eight years ago this spring.

Q. Are you acquainted with the bath-house interest before and during the pool?—A. I have been familiar, by association and contact, with a large number of visitors and on behalf of myself; I have taken 150 baths myself.

Q. You were quite an invalid when you came here, were you not?—A. I was on crutches for two years and a half after I came here.

Q. What is your opinion as to the difference in bathing under the pool system and the system previous to the organization of the pool?—A. My opinion would be from

intercourse with the visitors and their opinion more than my own from any individual experience. As I say, I come in contact with a great many, almost as much so as any one except hotel men. I converse with them, and generally know how they get along in every way.

Q. I believe you are in the drug business?—A. Yes, sir, in the drug business; and it has been a universal verdict with all visitors that the present system is the best yet devised here, and gives the best satisfaction to visitors.

Q. Do you know their opinion as to rates, or have you heard any complaints in this respect?—A. I never heard any complaint by any one as to the rates. Those visiting here, and especially those in this country, say that our bath rates are less than in any place they ever visited.

Q. Are you acquainted with the accommodations offered bathers?—A. They say that we have the finest bath-houses here in the world.

Q. Do you know how they are, yourself?—A. I have visited some few watering places.

Q. I mean these?—A. Oh, yes.

Q. Well, are they well-arranged and suited to the purpose for which they are designed?—A. I think so; so much so that I contemplate building one like the Palace bath-house myself. That is my intention, and we have spent considerable time in informing ourselves upon that point—as to any improvements that might be made in the erection of new houses. I regard the rates as reasonable enough, and, except in one or two instances here, I have heard no complaints on the part of persons that there is not bath-tubs enough to keep themselves clean.

Q. Is it a fact that the druggists, doctors, and bath-house keepers are closely allied here?—A. Well, I have to qualify myself.

Q. Standing in together and forming a sort of second pool?—A. So far as my interests are concerned I never had any except in a bath-house lease, and my relations have not in any way been intimate with bath-house owners, directly or indirectly. There are two physicians that send prescriptions to my drug store.

Q. Who are they?—A. Dr. Garnett and Dr. Greenway.

Q. Dr. Garnett owns the bath-house, the Big Iron, does he not?—A. I think so.

Q. Do you not know?—A. No; I do not; I so understand.

Q. Do you know any drug man that is closely connected with or interested in a bath-house, or any bath-house man that has an interest in a drug store?—A. No, sir.

Q. I ask is not Dr. Rockafellow interested in a drug store?—A. No, sir; I have had it from himself and the party running what is known as the Rockafellow drug store, that Dr. Rockafellow has had no interest in it since five years ago.

By the CHAIRMAN:

Q. Is it a fact or not that he sold out five years ago to Mr. Cabell Newman?—A. Yes, sir.

J. L. ROSS, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Are you the manager of any bath-house?—Answer. Yes, sir; I have charge of the Grand Central and the Hot Springs bath-houses.

Q. Are those houses kept open?—A. Yes, sir.

Q. Have they been closed any time recently, and if so, why?—A. No, sir.

Q. Were they closed awhile during the progress of this work on the creek?—A. One was—the Grand Central.

Q. Why?—A. They broke our pipe, and, in fact, broke it twice, and when they put the arch over, the pipe had to be raised higher—that is all.

Q. Has the other house been kept open?—A. Yes, sir; all the time since I have been in charge.

Q. Have you lost any bathers or had trouble with reference to getting hot water?—A. Well, I have had considerable trouble, yes, sir; the Grand Central bath-house, when they were blasting, they broke my pipe, and then we had to close a few days to fix it. Then, when they arched over the creek we lost our bathers at the Grand Central, and since we connected our pipe the water has been very irregular. I could not give any reason particularly why, but the water has been short and very irregular. I suppose though, this is on account of raising our pipes, and the lower pipes had greater suction.

Q. Have you tried to remedy this by filing complaints?—A. I laid complaints a number of times week in and week out, and a number of times I have asked for a separate spring for these two houses, thinking we could get water that way. Colonel Hamblen promised me that he would see about it, and do the best he could.

Q. Have you kept the house open all the time?—A. Yes.

Q. Did you lose much custom on account of the irregularity in getting water?—A. Yes, sir; we lost customers on account of the irregularity of the water.

Q. How long have you been in charge?—A. I have been connected, I might say, with the Grand Central bath-house about three years, with the exception of a few months.

Q. Do you keep attendants there all the time?—A. Yes, sir.

Q. To whom did you complain about the water?—A. I first complained to General Kelley, when he was in charge; since then to Colonel Hamblen.

Q. What is the reason that the matter was not remedied?—A. I could not tell the reason why.

Q. What did they say when you made complaints?—A. I do not suppose there is a bath-house in town but what gets out of water sometimes.

Q. What did the superintendent say?—A. He said that he would try and arrange it so we would have water.

Q. Did he do it?—A. Probably for a few days, and then the same trouble came up again.

Q. How do you make your returns to your employer for the tickets you have sold?—A. I return the money to the auditor every Monday morning.

Q. Does he give you a receipt for it?—A. Yes, sir.

Q. Have you the receipt for this last Monday?—A. I have the receipts for nearly two years for every week at the bath-house.

Q. Have you them with you?—A. No; it makes quite a number of papers.

Q. Could you not get those receipts?—A. Why, certainly I can.

Q. You have a little book, have you not, to keep the account?—A. No; I have the auditor's receipt for the amount of money that I turn in to him.

Q. Now we want those receipts here, if you have them with you.—A. No, sir; I have no papers with me.

Q. Can you not go and get them?—A. Yes, sir; I can have them filed, for one or both houses.

Q. For both houses, that is just what we want to get at. How soon will you be back here with them?—A. It will not take me a great while.

C. W. FRYE, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. What is your business now?—Answer. I have charge of the Independent and Rammelsburg bath-houses.

How long have you had charge of these houses?—A. Since October last.

Q. Well, now, what has been the difficulty with those houses as to the water supply since you have had charge?—A. The water supply has been very irregular and often altogether insufficient, as is the case now with the Rammelsburg.

Q. Well, how has it been with the Independent?—A. We have had it better there, but we have been interrupted there repeatedly on account of not having water.

Q. Has not that been quite frequent?—A. Yes, sir; it occurred here four or five times since I have been there, and with the Rammelsburg it has been more frequent. I have not had any water there of any consequence for several weeks.

Q. Has anybody applied at that house at any time for a bath and been unable to get it, by any question of race, or color, or sect, or previous condition?—A. On account of not having water do you mean?

Q. Oh, no—at any time?—A. Oh, no sir; everybody has bathed there who wanted to bathe, and if we had water to bathe them.

Q. You mean when you had enough?—A. Yes, sir; I say when we had water.

Q. Well, how long has the Rammelsburg been out of water this time?—A. I think it has been—well, we have a little water now, probably enough for 12 or 13 bathers, but there is very little, and we cannot bathe more than that number; that condition has existed for two or three weeks.

Q. Well, do you get your water from the Government reservoir?—A. Yes, sir.

Q. Have you connection with that?—A. Yes, sir.

By Mr. STORM:

Q. The difficulty you complain of is owing to the imperfect system of distributing the water, is it?—A. I do not know whether it is because of insufficiency in the reservoir or inattention in turning it on to our pipe. But I know I have complained frequently.

Q. Is there enough water flowing from the springs to supply the bath-houses with a proper quantity of water?—A. Yes, sir.

Q. And, that being the case, you have enough, but the trouble is owing to the imperfect manner in which it is distributed to the bath-houses?—A. Yes, sir; enough to supply probably double the number of bath-houses.

Q. Then, as I understand you, the difficulty you experience is owing to the imperfect manner of the distribution of the water, or the defective manner, if you choose to call it?—A. Yes, sir.

By the CHAIRMAN:

Q. Do you think that could be remedied?—A. Oh, yes, sir.

Q. Who has charge of that?—A. Colonel Hamblen, superintendent, but I do not know how far his power extends; that is, his means. I do not know anything about that.

Q. But you know that the water is here and you do not get it?—A. Yes, sir.

By Mr. PAYNE:

Q. How long will it take to fill your tank, during the night; how many hours, if you know?—A. It will fill in 8 or 10 hours I suppose.

Q. And after that I suppose it runs to waste until you commence bathing?—A. I think it runs in there all the time.

Q. Do you think it ever runs to waste out of the tank?—A. Yes, sir; I heard it said that the tank leaked on several occasions. I do not think so, because some days we get a supply and others we do not, and if there was a leak that insufficiency would be uniform and alike every day.

Q. I did not know but what the tank was too small to hold all the water that would naturally flow into it during the night?—A. Probably it may be too small.

Q. That is my question. I want to know if a larger tank would remedy the evil?—A. Oh, yes, sir; I think that would be better.

Q. You keep a journal, do you not, or a daily record, of the business of each bath-house?—A. Yes, sir.

Q. That journal shows the number of individual baths taken, does it not?—A. Yes, sir.

Q. When a bather presents his ticket you punch a hole in that ticket, punching out one of the numbers that it bears, and you give to the bather a check which admits him to the bath-house, and he gives that to the bather, and the bather returns it to you; is not that the process?—A. Yes, sir.

Q. And then you make a record on this journal or day-book, showing that ticket and the number, and so on, do you not?—A. No, sir; I do not keep that record. I only keep a record of the tickets sold.

Q. You keep a record of each day's work, though, do you not?—A. No, sir; I do not. I only keep a record of the tickets sold.

Q. And you do not keep a journal?—A. No, sir; but I did for a while at one bath-house.

Q. Which one?—A. At the Rammelsburg bath-house, showing the number of baths taken each day.

Q. When was that?—A. It was along two or three months after I went there.

Q. Have you that?—A. Yes, sir.

Q. How long ago did you go there?—A. In October.

Q. Last October?—A. Yes, sir.

Q. When you deliver the moneys that you collect from each bath-house to the auditor he gives you a receipt, does he not?—A. Yes, sir.

Q. And you hold that receipt, do you not?—A. Yes, sir.

Q. Showing the amount of business you did during the week?—A. Yes, sir.

Q. And you make that return every Monday morning?—A. Yes, sir.

Q. And that is regulated by the association by which you are employed?—A. Yes, sir.

By the CHAIRMAN:

Q. Will you bring these receipts showing the amount of business done each week in the bath-houses of which you serve as superintendent?—A. I will. All right, sir.

Q. Are these bath-houses kept decent, clean, and in good order?—A. I guess so.

Q. You are there and ought to know?—A. Yes, sir; they are.

S. W. FORDYCE, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Please state your connection with the bath-house association and the interest you have in the matter, and all you know in connection with it and when it was organized.—Answer. I have been interested in bath-house matters since 1877—I think 1877. That was in a house where the Palace now stands. There was a house built there that I bought an interest in. That house burned down in the fire of 1878. I think that was the year we had the fire—along about the 1st of March, 1878. There was no law allowing houses to be rebuilt upon the reservation at that time, and in order to retain the water privilege we built another house, now known as the Monarch Saloon. We used that for a bath-house until such time as the law went into effect authorizing the Secretary to lease sites for bath-house purposes upon the reservation. The Palace was built and open for business, I think, in 1880—in the spring of 1880.

It was also interested in the Old Weir and George bath-house, which afterwards fell down and was built up.

Q. What house is located on that site now?—A. The Ozark. That was a right acquired through the Hale estate, prior to the enactment of the law by Congress allowing bath-houses to be built. I joined Mr. Latta in 1880 in rebuilding there as soon as the law went into effect allowing the rebuilding. I joined Mr. Latta and Mr. Howard in the purchase of the Independent bath-house in the fall of 1881—some time, I think, in November or December.

Q. What interest did you have in that house, and at whose solicitation did you buy it?—A. I took the interest in the Independent at Mr. Latta's solicitation, as he told me it was on the market for sale and could be bought on fair terms, and I told Mr. Latta that I did not care about going into it at all; that I did not want any more bath-house interest; but, if I could get Mr. Howard to take a half interest with me, I would join Mr. Latta and buy. Mr. Howard soon got disgusted and sold out his interest.

Q. Was Mr. Howard a non-resident?—A. Yes; he lived in Saint Louis, and said it did not pay him interest enough for the investment and the risk he took, and finally traded it to Colonel Rugg for some other property.

Q. When was that?—A. That was last summer some time, I think—last spring—in the neighborhood of a year ago. Mr. Rugg, after keeping it awhile, became thoroughly disgusted and wanted to sell or trade it to me. I did not want it, and he finally sold it to Mr. Smith and Mr. Gaines, in connection with other property. In response to a question of mine to Mr. Gaines, why he bought that interest, he said that he wanted other property that Mr. Rugg had adjoining it, and he could not get this without taking all, and that, as he was already pretty heavy in the bath-house interest, he wanted to protect what interest he had, and the only way it could be done was by co-operating with other gentlemen who were here, and who could use the water, or have the bath-houses used to the best interest of everybody—themselves and the public too. He was largely interested in other property, and he thought the men here who were the largest property owners should control the bathing interest.

Q. Have you or not tried to dispose of your bath-house interest?—A. I have.

Q. Before the termination of the lease?—A. For the last six months, yes. I offered it to anybody at cost.

Q. Have you or not offered it to Mr. Latta?—A. Yes, sir; and several others.

Q. Please state, from the best of your information, what per cent. you have realized upon that investment?—A. Well, I think, taking the whole investment together, the Palace, and Independent, and Ozark, about ten or twelve per cent. since they were started; sometimes more, sometimes less, but it averages about that amount.

Q. Will you state what are the net proceeds of the Palace, taking from the time it was built for six months, when no pool was in operation?—A. I do not recollect. It was very small. The books will show what it was.

Q. Net \$345, was it not?—A. Something like that. I think the books are here, and I would like to show the committee the books and everything with it.

Q. Have you been among the visitors here to any great extent, and if so, have you heard any complaints upon their part about the management of the bath-houses under the present system, as to rates?—A. None as to rates; sometimes they would say it was a little too cold or a little too hot. One man of a different temperament would say it was too cold; another man of a different temperament would say it was too hot. Sometimes I have heard complaints that visitors could not get a bath as soon as they wanted it. When there is a rush of people at a certain hour, and when the water would give out, and they could not get a bath as soon as they wanted it, they complained. It is all owing to the temperament of the people. The majority is satisfied, but of course some are dissatisfied about everything.

Q. Have you heard any complaints about the condition in which the bath-houses have been kept since the pool has been in operation or fault found with the accommodations?—A. No. On the contrary, I have heard people say who came here that the Palace bath-house was kept in a cleaner and better condition the last six months than before, and satisfaction given in every respect. I have heard no complaints about the rates. On the contrary, I have heard gentlemen, members of Congress and Senators, and other distinguished individuals, say to me time and again that they would be willing to pay \$5 for a bath if they could have a room to themselves, or have different tubs or bathe in a house where they did not come in contact with the blue-nosed element; that they did not care about the rates, but wanted the privilege and use of water in their own way.

Q. I ask you now as to the finish and character of these houses: are they suitable for the purposes for which they are designed, and are they furnished with the necessary bathing outfit?—A. As far as we are able in this country to get any information, our bath-houses are certainly ahead of any other bathing establishments in the United States. Of course there may be attachments and ways of constructing bath-houses

that will be invented by scientists, and in that way improve our methods; but we have not been able to find that out yet. We have the hot water, vapor, and douche bath, and everything that we have been able to get. I did the best I could in the Palace. I went to Scotland for those tubs. I do not believe there were but two in this country when I brought them over. I did that at the suggestion of gentlemen who saw the tubs in Europe. Secretary Windom was one, and some others, and I state I could have derived just as great a dividend from the expenditure of one-half the money as I did in building that bath-house. But living here and being largely interested, I felt a desire to aid in the improvement of the place, and build it up and give it some character. I think I put some \$10,000 into the Palace in fixing it up, and if I had not felt that interest, and had lived in St. Louis or Memphis, and did not care for this place, I need not have put that much money in. I felt that I spent at least that much money to give tone and character to the town.

Q. Are you interested in any other bath-houses except the Independent that you did not build yourself?—A. I am interested in the Palace and Ozark and Independent.

Q. And the only interest that you purchased in bath-houses that you have not built was the Independent?—A. Yes, sir.

Q. And you say you only purchased a fourth interest in the Independent?—A. Yes, sir; and I wish I never had.

Q. Are you interested in any bath-house site lease which has not been built upon?—A. No, sir; I never bought or sold a lease. As far as I am concerned here with my property I would be glad if somebody largely interested here, like Mr. Smith or Mr. Gaines, to have my bath-house interest. They own a great deal of other property here, and I would like them to have this bath-house property of mine, so that I might get rid of the annoyance.

Q. Did you or not endeavor to sell out your interest in this bath-house business to these gentlemen within the last few months?—A. Yes, sir. I would not like to sell my bath-house interest to any parties who had no other interests here except bathing interests. I could not afford to do that unless I was going to leave the town. I want the bath-house interests managed by people interested in something else here. The men largest interested in real estate certainly have the most interest in serving the public in the way of bathing. Without the public we would be somewhere else, and we could not subsist here longer.

Q. You are a property owner here and interested in the town, and have some knowledge of its affairs, and I will ask you if you think this work on Hot Springs Creek is necessary and essential to the interest of the Government as well as the public.—A. Yes, sir; I do.

Q. Do you know enough about that sort of work to give an opinion as to whether it is properly or improperly done?—A. I think it is properly done. The only question I have is as to the bond of the cement. I never tested that, but outside of that I think the work is good.

Q. What alteration in affairs here would you suggest, if any, in respect to the management of the Government property and its control, and the water system, &c.?—A. I think there ought to be a system of collecting the water that is now running to waste in the creek and over the hills. I think that ought to be collected at convenient places and put in tanks and supplied to the bath-houses and hotels and boarding houses, as far as it goes, putting in meters, and measuring to each party the amount of water that he gets, and in this way prevent wastage, and where it is wasted charge the party for it.

Q. Do you think the present management, under the Interior Department and a superintendent, an efficient one?—A. I do not think it has been efficient, and I do not know whether the fault is due to legislation we have had, or the fault of the Department; but it certainly has not been satisfactory. All of us have had this trouble more or less about the lack of water.

Q. About the leasing of this property, what suggestion have you to make in regard to the term of lease?—A. I think the lease ought to be made at least 30 years. I do not think a man would feel safe in making much of an investment unless for that length of time. I certainly would not have made the investment that I have made in bath-houses except that the law was interpreted that the Department could renew the leases every 5 years, and they would amount almost to a perpetuity.

Q. Suppose the term was extended 20 or 25 years, would it pay a capitalist to make suitable investments in constructing proper houses, and could they, under this extended time, afford to pay more rental for the water than they do now?—A. Yes, sir.

Q. And bathe at the same price?—A. Yes, sir.

Q. Do you think the management of this property of the Government could be done in such manner as to keep up the improvements and provide additional means of distributing the water from the revenues derived from rentals without additional cost to the Government?—A. Yes, sir; I think they would get enough revenue from the hot water and leases to do it.

Q. And you think that if the lease ran a proper time the Government would get more rent from the lessee and the lessee could afford to pay a greater rental?—A. Yes, sir; and I think many of the bath-houses here would be rebuilt and remodeled.

Q. Do you think this rebuilding and remodeling is likely to be done in the present uncertain tenure of the length of the lease?—A. No, sir; but I undertake to say that if these leases are extended that these gentlemen connected with this bath-house association would visit the bath-houses in Europe for the purpose of getting information upon this subject, and adopt the best methods possible.

Q. Then you regard it as essential to the public interest that there shall be some additional legislation in this respect?—A. I think so; I think it is necessary. I think the thing is in too unsettled a condition to induce people to put in capital. In fact, no man away from here would do it. The only incentive of parties living here is on account of their other property, and for that reason they have been willing to take the chances they have taken.

Q. What is your opinion, if you have any, in respect to the sewerage of the town?—A. I am not practical enough to say which is the best means of sewerage; whether by creek or by pipes.

Q. Do you think that if the Government completes this work, the citizens or municipality will feel interested enough in the matter to contribute to the building of sewers for that part of the city belonging to private individuals? For instance, on the west side of the creek?—A. I cannot speak for all the citizens. I will say this, for myself, and those I am connected with in property, that we will be glad to co-operate with others in seweraging the front of our property as far as it extends. We would be glad to do that.

Q. Do you think that there is sufficient public opinion to compel the city to take some steps in that direction for the whole town?—A. I think it could be brought about. I guess we are like everybody else, though, a little selfish. If we can get the Government to do it we do not like to do it ourselves.

By Mr. STORM:

Q. You believe in the old flag and an appropriation?—A. Yes, sir.

Q. You are one of the proprietors of the Arlington Hotel, are you not?—A. Yes, sir.

Q. What have you to say about that property?—A. I would like to sell my interest.

Q. In case you cannot sell your interest, you would not like it taken away from you, would you?—A. Not unless it was to be devoted to some charitable purpose. I would not like it donated by the Government to the United States, and I would rather, if it was given away, to give it to somebody else. I would not like to see it given to any one who has not done anything for the town; to these kickers who never did anything for the town.

Q. What has the investment been; what is the profit and what is the cost?—A. I cannot answer that, because we have not yet paid for this new addition. I can get you the whole investment, if you give me time to get it up. In round numbers, the whole investment there is \$120,000.

Q. Do you think the rental of that ground is worth \$200,000 for ten years?—A. No, sir; I do not.

Q. What do you think would be a fair, reasonable rental value for that ground?—A. Well, to outside parties, I should think about \$5,000 a year for the ground itself; but to parties who have an equitable interest there, as I think we have, on account of our being badly treated by the Commission, as I regarded that we had been about the building there, under these circumstances, \$2,000 a year is plenty.

Q. Could you or not have leased ground adjoining the Arlington at a much less price at the time you got that?—A. Oh, yes; we could have got ground around there. This property has enhanced very much in value in the last few years, since the town has been built up and there has been a settlement of titles and all that.

Q. What could you have leased ground for to put a building on?—A. The reasonable rental value, I suppose, was \$7 or \$8 a front foot; improved, \$5. The rent of a small place of about 20 feet front to put a shanty upon was about \$10. But ground to put a good house upon could have been leased for \$5 a foot.

By the CHAIRMAN:

Q. Do you regard the keeping of that hotel there a public necessity?—A. I do.

Q. You have hardly sufficient first-class accommodations here any way, have you?—A. There are seasons when we do not have sufficient accommodations. The more accommodations there are the more people come. The business of the Arlington Hotel has increased with each additional improvement in the town. The first year or two the Arlington Hotel was built it paid very little.

Q. Do you think it would pay you or any other capitalist to build such a hotel there as ought to be built in Hot Springs upon a lease of five or ten years?—A. Oh, no; nobody would think of that.

Q. If the lease was extended twenty or twenty-five years would it pay to build

such a hotel as ought to be built here?—A. I think so, on a lease of thirty years at least.

Q. You think they would not do it on a shorter period of lease?—A. No, sir; they could not afford to do it. The risk is great. The house has outlived the ordinary frame hotel with the ordinary number of stoves and fires we have had; it would have burned up long ago if it had not been for our watchfulness. It is an exception that a house of that sort has not burned up. Frame hotels very rarely last as long as that house has, taking into consideration the number of fires we have had here in this place and the number of stoves and all that. We have been at great expense in employing watchmen all the time, sometimes as many as three, and our expenses have been heavy in guarding against fire.

Q. What is the value of property on Central avenue opposite the Arlington Hotel a front foot?—A. Well, from \$50 to \$200 a foot.

Q. On the west side of the street?—A. Yes, sir; on the west side. I have property there that I am willing to sell at \$100 a front foot. Some of it I have spent a good deal of money on in excavating, and I would sell it for \$150 a foot. The corner opposite the opera house, upon which I have spent money, is worth, say, \$200 a foot. I have all that property on the market, and I have under the circumstances lost money to make it valuable; that is, we built an opera house there, which pays us nothing, for the purpose of enhancing the value of our other property. I regarded it as a public necessity, and I got others in with me to build it.

Q. And you say you have found it a very profitable investment?—A. No, sir; and it is another investment which I should be glad to unload on somebody else.

By Mr. PAYNE:

Q. Has business left that locality?—A. It has gone down town.

Q. So property has not enhanced in value up there so much as below?—A. No, sir.

Q. Do you know any property there that could be bought for \$50 a front foot?—A. Where is that?

Q. Above the Arlington, between there and Whittington avenue?—A. I had a piece offered to me next to Mr. Waters' grocery for \$50 a front foot. That is pretty rocky and has to be excavated.

Q. Is there a good deal of excavating to be done there?—A. Yes, sir; a good deal. I have a piece of property with a \$1,000 house on the other side which I will sell for \$50 a foot. In the summer time the afternoon sun strikes this property on the east side and makes it very hot, and it is hard to stay in this house then. On the west side the mountain keeps the sun off, except early in the morning.

Q. When did you first lease the Arlington Hotel ground?—A. We leased that from Governor Rector in 1874.

Q. That is ten years ago?—A. Yes, sir; the house was open for business the middle of April, 1875.

Q. And you contemplated building there when you leased it, did you not?—A. We did build.

Q. And you leased it for that purpose, did you not?—A. Yes, sir.

Q. And leased it for five years?—A. I forget whether it was three or five years.

Q. And you had the privilege of renewing the lease, did you not?—A. Or reselling the property back to Governor Rector at a certain valuation.

Q. Do you remember how much that was?—A. I forget. Two-thirds or three-fourths of the cost, or something like that; I forget exactly.

Q. Was it so many dollars, or a fractional part of the cost, or how was it expressed in the lease?—A. It was just such a portion, say three-fourths of the valuation of the cost of the house, but he had the right, after three or five years, I forget which, of taking the house back or renewing the lease.

Q. You continued under that lease until the Government took possession, did you not?—A. Yes, sir.

Q. And that was in 1878?—A. The receiver took possession in 1876.

Q. So you were in possession just about three years?—A. Yes, sir.

Q. And the appraisal was made by the Commission in 1878, was it?—A. Yes, sir.

By the CHAIRMAN:

Q. The certificate was not actually issued until 1878, was it?—A. I do not know the date exactly. The Commission got here in 1877.

By Mr. PAYNE:

Q. And then they held for a year, and then after the year had elapsed, they had failed to accomplish their business and got an additional year within which to do so. The appraisal was made by the Commission the last year they were in existence, was it not? Therefore it must have been as late as 1878 or 1879?—A. Yes, sir; I expect so.

Q. Did they take any evidence to ascertain the value?—A. I think they did. I think we gave them some data.

Q. You gave them evidence as to the cost of the building?—A. Yes, sir; and I would like to state right here that there were two separate interests at that time—that is, Governor Rector owned a part of the building there and we added to it, and he was issued a certificate for his part and we were issued a certificate for our part. I think it was \$7,000, or \$8,000, or \$10,000 for his part.

Q. And that certificate was issued to him?—A. Yes, sir.

Q. And paid to him, or did you get it?—A. That was paid to him.

Q. That was for the old part, I suppose?—A. Yes, sir.

Q. Do you recollect what the building that you had put on and improvements altogether cost, up to the time of that appraisement?—A. I think in the neighborhood of \$35,000.

Q. And the appraisement was what?—A. \$22,000.

By the CHAIRMAN:

Q. Did you lease the ground and rent a house from Governor Rector when you first went on the property?—A. Yes, sir.

Q. Governor Rector had a house on it at the time, did he?—A. Yes, sir; his house and furniture. We leased the ground and his house, and the furniture he had there and all.

By Mr. PAYNE:

Q. For what?—A. \$3,000 a year.

Q. Do you recollect what the population of Hot Springs was when you made the lease?—A. 3,000, or may be not over 2,000.

Q. How many bath-houses were there here when you made the lease from Governor Rector?—A. There was the Rector for one, and the Old Hale for two, and another one where the Palace is now for the third. The one where the Ozark is four, and one where the Hot Springs House was is five.

Q. Do you remember about how many tubs they had?—A. I could not say.

Q. Do you know how many tubs were in any one?—A. I think the Huffman had 20, and I think, probably, the Rector had 25 or 30.

Q. And the others were smaller or larger?—A. I think they were smaller.

Q. And since that time you spent \$35,000 and you built 2 wings?—A. Yes, sir.

Q. When was the kitchen wing built and what did that cost?—A. I do not recollect. We built and rebuilt there at that kitchen several times. There was an extension on the main building that cost \$5,000. We made alterations on the kitchen several times.

Q. And that added something to the property did it?—A. Yes, sir.

Q. And since Mr. Rugg has left you have been making more additions have you not?—A. Yes, sir.

Q. How much did this last large addition cost?—A. In the neighborhood of \$20,000. I think the furniture, building, and all stand us \$35,000.

Q. The building itself is what I am speaking of?—A. I think \$20,000. The contract at first was \$14,000, and additions were made bringing it up to \$16,000, and then the extras and other things came in and ran it up to \$20,000.

Q. And you think \$20,000 will cover it, do you?—A. I think so; yes.

Q. And these three sums of \$35,000, and \$5,000 and \$20,000 would cover the substantial part of the building and the rest would be alterations?—A. Yes, sir; it will probably be charged to construction account.

Q. This last addition and the furniture account, would that be larger than the building cost?—A. No; I do not think so. I think the building account is \$20,000.

Q. I thought you said \$55,000.—A. No; that and the other items \$35,000.

Q. You stated to Colonel Young that there were other sites you could have rented near there for a less sum at the time.—A. I think so. The property right above the Arlington rents for less.

Q. Did you not regard the location of the Arlington Hotel the best for a hotel in the city at that time?—A. Certainly I did.

Q. And I expect that is true to-day, is it not?—A. Yes, sir. I think it is one of the best sites in the city; but I would as soon have what we call the Gaines property down here, which is nearly opposite this house (Sumpter).

Q. But that is a little off the main street, is it not?—A. Yes, sir; but it is a good property.

Q. Of course the rental value of the Arlington, that is, of the land upon which it stands, has been greatly enhanced by this creek improvement, has it not?—A. It is perhaps more on account of the conduct of the hotel. My partner has been in the hotel business for 20 years.

Q. Has your partner been in charge of the Arlington Hotel since it opened?—A. Yes, sir; Mr. Stitt has been in charge, and has been in the hotel business in Tennessee since I first knew him 1862, and I think he has been in the hotel business continuously ever since.

Q. What do you think the ground on which the Arlington Hotel stands, without the building, is worth?—A. I think the ground is worth \$300 a foot.

Q. Front foot?—A. Yes, sir.

Q. How many feet are there there?—A. What we call the front, and what we occupy of it, 171 feet.

Q. You say that Fountain street is a good location. Is that location suitable for a hotel?—A. Yes, sir.

Q. What would 200 feet front with a suitable depth, so as to build a hotel of the class of the Arlington, what would that ground be worth on a lease say of 30 years?—A. I should not be willing to lease it for less than thirty years, and I should think \$2,500 a year.

Q. What do you think this real estate on Fountain street would be worth to sell it?—A. I should think it would be worth to sell it about \$100 a foot. It is a side street. I think some land was sold less than that in the last year there, or directly opposite to it.

Q. On Fountain street?—A. Yes, sir; I think so.

Q. Of course that street has not been improved at all?—A. No; it is a gorge which runs up there a ways and stops above.

By the CHAIRMAN:

Q. When did you first get possession of the Arlington Hotel property?—A. We went in possession in the fall of 1874, that is, to commence to build.

Q. It was then occupied by Governor Rector, with a house upon it, was it not?—A. Yes, sir.

Q. Was there at that time, or any time previous to the award of this property, a first-class hotel here? Was the Avenue Hotel then built?—A. No, the Avenue Hotel was not built at that time.

Q. When was that built?—A. They commenced to build it, my impression is, in 1875.

Q. Well, when the Commission made the award was the Avenue Hotel standing on that property?—A. Yes, sir; that is, the rear part of it was. They built the front since.

Q. Was the Waverly Hotel there?—A. Yes, sir.

Q. And the Barnes House?—A. Yes, sir.

Q. And the Gwinn House?—A. Yes, sir.

Q. And Gaines Cottage?—A. Yes, sir.

Q. All of them on the reservation, just like the Arlington Hotel was?—A. Yes, sir.

Q. And all these were awarded to the occupants except the Arlington, were they?—A. Yes, sir; and, as I said, we have always felt that, as we built the first creditable house here, we should have been afforded an opportunity of buying that property like these others who were on the reservation like the Arlington.

By Mr. PAYNE:

Q. Were these houses awarded to the owners or the lessees?—A. If a man lived on the ground and made the improvement they awarded to the owners of the improvement.

Q. And not to the party who held the title?—A. No, not as a rule. The avenue property had been inclosed and occupied by Mr. Whittington. He made the improvements, and when the Commission came here they awarded the amount of ground to Mr. Smith that he got from Mr. Whittington.

Q. In that case it was to the person who was the owner. Now, what other hotels?—A. There was the Hot Springs Hotel.

By Mr. STORM:

Q. I believe you said that all the improvements on that property where the Arlington stands cost you \$120,000?—A. I mean for the furniture, fixtures, and everything.

Q. Can you tell the committee what you added after the appraisal of the property by the Commissioners in 1878 or 1879?—A. I cannot tell you, exactly, because I have never been in the management of the hotel, and never kept up with the details; I rely on Mr. Stitt for that.

Q. In making up the sum of \$120,000, do you estimate the old portion at what the Commission appraised it, or what do you consider it was worth, or cost you?—A. We do not estimate that at all. We estimate what we put there.

Q. In making up this \$120,000, do you make it by taking what you put in after the appraisal by the Commission and then add to that the amount that they allowed you?—A. I do not. I take it from the books, what it has actually cost us.

Q. What proportion of the cost or investment made there was made before the appraisal and what proportion after; what was the amount of investment up to the time of the appraisal and what was the amount after the appraisal?—A. I think it is pretty nearly one-half.

Q. About one-half would you say?—A. Yes; I think so.

Q. You do not say that the appraisers did not allow you the full value for that property do you?—A. In appraising it?

Q. Yes, sir.—A. That is what I think. Our construction account was \$35,000, and they allowed us \$22,000.

Q. The appraisers had no right to do you an injustice, had they?—A. They thought that, on account of the wear and tear, the improvements were not as good as when first put upon the property; and when the railroad came in lumber was cheaper and building was cheaper, and they allowed us what the prices were at the time they were here and not at the prices ruling when we built.

Q. They were guests at your house were they not?—A. Yes, sir. At the time we built the hotel no railroad came in here, and we had to wagon our furniture from Little Rock and Malvern, and had to buy a saw-mill and have a man to put it up and make our brick, and we were at great disadvantage. There were very few appliances here to do anything at that time, and it cost us more on that account than it otherwise would have.

Q. Do you think what you put into the hotel after the appraisalment by the Commission, in the way of extending the building and improving and remodeling it, the sum exceeded \$22,000?—A. Oh, yes.

Q. And this appraisalment of the property was that which was standing on this Arlington Hotel property, and the same property that belonged to Governor Rector?—A. Oh, yes.

Q. How was that connected with this building?—A. This end we built over it. We left part of the frame of the Rector building standing and we built around and over it.

Q. And you say you had a certificate issued to you for \$22,000 and Governor Rector had one of \$6,000? Did that refer to improvements on that property?—A. \$6,000.

Q. Then they really allowed for building on the Arlington property \$28,000, to you and your partner and Governor Rector?—A. Yes, sir.

By the CHAIRMAN:

Q. Was it fixed by taking testimony as to the value of the property at the time they made the appraisalment?—A. I do not recollect. I do not think they did.

Q. Did they appraise any of the property at its full value?—A. No, I think not. I think their rule was not to value anything at its full value.

Q. They expected those who put it there to buy it, did they not?—A. Yes, sir.

By Mr. STORM:

Q. Do you mean to say that after the Government appointed sworn commissions to appraise improvements at their actual value, that they did not appraise it at its actual value? I want to know if they did anything but what they thought was right and represented the actual value of the improvements made.—A. I believe that their idea was to give a fair appraisalment. But in building here we labored under great disadvantages.

Q. If it cost you \$20 to get 1,000 feet of lumber here eight years ago, and afterwards you would get it here for \$5, in valuing timber it had to be valued for what it could be purchased at the time of the appraisalment, and I think the basis taken by the commissioners was a perfectly legal and proper one. Of course the proprietors of that hotel made these improvements after they knew the title was in the United States and when they knew they had a lease but for 10 years, did they not?—A. Yes, sir.

Q. The lease certainly did not contain anything in it that justified the belief of the lessees that the Government was under any obligation to renew it, at its expiration, did it?—A. No, sir.

Q. And there was nothing in the act of Congress to justify the belief that the Government was under any legal or even moral obligation to renew the lease, was there?—A. No, sir.

Q. Did not you make the incomes of that property pay you for all your improvements upon it?—A. That and taking the chance of getting another lease.

Q. Do you think, colonel, that \$1,000 is a fair annual rental value for that property? I mean simply what belongs to the Government; not what you have put there; I mean the site and what the Government has there in the certificate it issued, and which it is under obligation to pay you; I ask whether it is not worth more than \$1,000?—A. Considering the circumstances of the first ten years I think we pay plenty. I say from my standpoint we are entitled to buy that ground, and we have kept a decent hotel, too.

Q. You are largely interested in the welfare of the town I suppose?—A. Yes, sir.

Q. And interested in two or three bath-houses?—A. Yes, sir.

Q. And have a large quantity of property on the east side of Central avenue?—A. Not a large quantity on the east side. I have some on the east and some on the west.

Q. Have you an interest in that property there where the excavating is being done?—A. Yes, sir; I own 55 feet in there. I own a fourth interest in 217 feet there.

Q. You have an interest in property on this side of the street too, have you not?—A. Yes, sir.

Q. And your property has been benefited by all these improvements that the Government has been making here upon this reservation?—A. Yes, sir.

Q. Now, do you not think, in view of the value conferred upon the property here by the action of the Government, that the people of this town ought to be willing and able to pay a portion of this additional improvement and sewerage if any be necessary?—A. As I said before, I think so, and I am willing for my part to do it.

Q. There are other people who, like yourself, have acquired wealth from this enhancement of property owing to the great influx of strangers here, are there not?—A. Yes, sir.

Q. Mr. Smith is one of that character, is he not?—A. Yes, sir.

Q. And Mr. Gaines?—A. Yes, sir.

Q. And Governor Rector?—A. Yes, sir. We think the people here are equally entitled to credit with the Government, and we think we have done even more than the Government.

Q. But we want to get at the fact that the Government ought to have some consideration, in view of the fact that it is spending money here and enhancing your property. Was not the principal street crowded and narrow prior to this filling in?—A. Yes, sir.

Q. And did not this filling in vastly improve property on this side of the street?—A. Oh, yes.

Q. Do you not think the property owners on the west side of Central avenue could afford to put down sewer-pipe, if necessary for the purpose of carrying off sewerage that might come from the west side, for the mere enhancement of their own property?—A. Yes, sir.

Q. You spoke of being treated differently by the Government from all other parties that made improvements here. When this act was passed this reservation was excepted by the terms of that act from sale, was it not?—A. Yes, sir; but the Commission was authorized to lay off land so as to embrace the hot water alone, and they included in this portion laid off the Arlington Hotel property.

Q. How many months in the year, colonel, is your hotel full?—A. About three months.

Q. How many months in the year has it got less than 200 boarders?—A. About eight months.

Q. What do you suppose is the actual number that you have there at your hotel as guests as shown by your hotel register?—A. I haven't an idea, but can easily bring the books here. Sometimes we have had as low as thirty.

Q. You get the very best class of visitors that come here, do you not?—A. Yes, sir; we try to.

Q. You built your hotel for the express purpose of accommodating a class of visitors that you thought desirable to come here, did you not?—A. Yes, sir.

Q. And you think you have succeeded in that?—A. Yes, sir; very few first-class people would come here unless the Arlington Hotel was built. Distinguished people like the governor and myself came here in 1873 by stage from Little Rock.

Q. When was the railroad to this town completed?—A. In 1876.

Q. That was built through one individual and is now owned by him, is it not?—A. Not altogether; but owned principally by one individual.

By Mr. PAYNE:

Q. Did not the property along the line of this improvement of Hot Springs Creek appreciate in value at once when they commenced work there?—A. It did above, but not below.

Q. But above the Arlington it did?—A. Of course, because that street was hardly passable there then.

Q. When you leased the property of Governor Rector it was not in litigation, was it?—A. It was in litigation between Governor Rector and the Government, but I thought, as a great many others thought, that Governor Rector's title was a good one, and I think a member of the Supreme Court thought so.

Q. But it had been in litigation for years?—A. Yes, for years and years. I take this view about the Government: That here are these twenty or thirty thousand people coming here annually from every State in the Union, and every State of the Union and the Government are interested to a certain extent in this hot water, and I think that the people who live here, and who have maintained law and order, as they have done in a God-forsaken country like this, that the Government ought to come to their rescue and make improvements for the benefit of the visitors that come here, and as to the Army and Navy hospital and matters generally. I think that as soon as the fame of these waters is better known, it will finally break up the medical profession and all the people will come here.

Q. I suppose all these visitors bring some money and leave it here?—A. But they have to be taken care of.

Q. I will ask you if Governor Rector's title was not passed upon in 1870 by the Supreme Court?—A. I beg your pardon; it was not passed upon up to 1873. It was passed upon by the Court of Claims in 1875, I think.

Q. What will be the result of the Government work if left as it is now and the sewerage is allowed to empty at Reservation avenue, or Gaines Block?—A. I think it will be very injurious to everybody.

Q. Now, from your belief, and in your opinion, do you think that the effect would be such as to prevent the patients of the hospital from remaining there?—A. In certain months of the year they could not remain. They could not in July, August, and September.

Q. How far should this sewer be carried to make it harmless to the health of the town?—A. I think it should be carried down say half a mile; probably a quarter of a mile outside of the corporate limits.

Q. How much better off would the people be who stopped at the Hayes House or the Avenue Hotel, so far as the sewer is concerned, if it was carried that far down?—A. I do not know.

Q. If it were carried above your residence would not they be better off?—A. I live on the other slope. I tried to get outside of this drainage altogether.

Q. Do you not think it better to construct the sewer, for sewer purposes, all the way, than to try to extend that tunnel down to the river?—A. Well, I think that the tunnel ought to be extended, probably, a mile further; or there should be another half mile of tunnel, at least.

Q. There are people living down there, are there not?—A. Not half a mile below us.

Q. Do you think it would be safe to stop the improvement there in view of the town's increasing size?—A. It will go in other directions. If the Government does it that far and the town builds there, we will be able to carry it the rest of the way.

Q. What improvements have been made in the Arlington Hotel since 1880? I do not mean furniture; I mean improvements in the way of building.—A. I cannot say exactly without looking at the books, but I think it is in the neighborhood of \$35,000.

Q. That includes this new addition, of course?—A. Yes; and probably more than that, but I cannot say positively without looking at the accounts.

Q. You said yesterday you were anxious to sell out. What would you sell for?—A. The entire property?

Q. Yes.—A. Well, I am more interested now than when I set a price.

Q. Is it true that a proposition was made to you in New York between three and four years ago, before you put on this improvement, to pay you \$100,000, and it was refused?—A. No; it is not true.

Q. Did Senator Dorsey telegraph you in this connection?—A. He telegraphed some of us to know what the hotel could be bought for.

Q. What do you mean by "some of us"?—A. To Mr. Rugg or Mr. Stitt. I mean it was not addressed to me.

Q. Did a gentleman go from New York to Saint Louis to pay \$100,000 for the property?—A. Not to my knowledge.

Q. Then no proposition was made through Senator Dorsey to pay \$100,000 for the property?—A. Not that I know of. I know he asked the question what the property could be bought for, and we held a consultation, and I recollect I said I was willing to sell my third interest for \$30,000.

Q. Was not a telegram received here by one of the members of the Arlington Hotel firm in that regard?—A. Yes, I think so; a telegram asking that question.

Q. And without any proposition?—A. No; I think there was no proposition.

Q. I believe there are two bath-houses here which you own individually, are there not?—A. No, sir. I own interest in three bath-houses.

Q. Who were the parties interested with you in building the Palace bath-house?—A. Mr. Maurice, Mr. Latta, and myself.

Q. Was a United States Senator interested in that?—A. No, sir; not in the bath-house. I borrowed money from Senators and everybody else I could borrow from, but they were not interested in the bath-house.

Q. Do you own any of these bath-houses, individually?—A. No, sir.

Q. I understood you to say that since the award of the Commission you have built two substantial additions to the Arlington Hotel building; one a kitchen wing and one a dining-room wing?—A. Yes, sir.

Q. And that the kitchen wing cost about \$5,000?—A. I think that was the cost.

Q. And the other cost not to exceed \$20,000?—A. Yes; this main building we put there recently.

Q. Now, are there any other substantial additions to the house aside from these two, which have been made since the award of the Commission?—A. No, not sub-

stantial additions. There have been improvements upon the walls—yes, there have been a good many substantial improvements. We put walls under one of the wings.

Q. About how much did that cost, taking all these other little improvements you speak of?—A. I think, all told, we spent about four or five thousand dollars.

Q. Aside from these other additions?—A. Yes, sir.

Q. And you think that covers all the expenditures for improvements since the award of the Commission?—A. Yes, sir.

WILLIAM H. GAINES, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Do you know the location of the bath-house formerly controlled or owned by John M. Huffman?—Answer. Yes, sir.

Q. Do you know the location of a bath-house site granted to A. B. Gaines?—A. Just north of the site of the Huffman he had a bath-house site.

Q. Is any portion of the site formerly occupied by the Huffman bath-house now occupied by the site leased to A. B. Gaines?—A. Well, I do not know the number of feet front. I stepped the ground there and I measured a little over a hundred feet, or about a hundred and three feet, to the north end of the improvement on the Huffman lot.

Q. From what point did you measure?—A. From the brick bath-house; the south end. That is what I made it by stepping it off, and I told my son it was a hundred feet clear, in my judgment. I did not measure it exactly, but I stepped it off and found that it was within a few inches of a hundred feet.

Q. Did you ever apply for a lease of that site previous to the time when your son applied?—A. I made an application for a lease covering the whole of the ground there for a bath-house. The bath-house was held by Mr. Huffman under a lease from me, north of the hotel, and included the hotel property down to the street; but General Kelley, for some means or other, never granted it.

Q. When was that?—A. Well, it was some three years ago at least.

Q. Had you any improvements upon the site now granted to A. B. Gaines prior to the decision of the Supreme Court?—A. Yes, sir; I had a building on the ground between the north end of the Huffman bath-house and the Rammelsburg or brick bath-house. I had a house that was burned up in the fire.

Q. When was the fire? In what year?—A. The fire was six years ago the 5th of this month; in the morning, before day.

Q. How did Huffman come to have a bath-house at this place?—A. I leased the ground to Colonel Terry and Mr. Baldwin; but I am not positive.

Q. When was that?—A. I think in 1870. The same year I built the Hot Springs Hotel, and I think that was 1870.

Q. Who built the Hot Springs Hotel, did you say?—A. I built it.

Q. What kind of a house was it? How many rooms?—A. I think there were 105 rooms.

Q. How much did that cost?—A. It cost about \$23,000 when it was built. It was the first large-sized house of any sort built here.

Q. Did you lease the ground adjoining it for a bath-house to Mr. Terry and Mr. Baldwin?—A. Yes, sir.

Q. Now, was this bath-house run in connection with this hotel?—A. Yes, sir. I wanted the bath-house there very much, and the lease was given for the accommodation of visitors to the house.

Q. What became of the lease to Baldwin and Terry? How long did they lease it from you?—A. Well, I do not exactly recollect.

Q. I want to know whether or not the ground which is reserved for a bath-house for the Army and Navy hospital covers the former site occupied by the bath-house of Terry and Baldwin?—A. My understanding is that it covers the whole of it down to the street, and where part of the hotel stood, about 40 feet. The hotel was aimed to be built 140 feet front on the street, and was built with an ell going back across the street, where the City Hall stood, 165 feet, and three stories high.

Q. Then if Mr. Huffman was granted a lease for the property upon which he had a bath-house, he would have taken the property now reserved as a bath-house site for the Army and Navy hospital; is that true?—A. That is my understanding. I have not seen any lease, but I understand that is taken for the use of the hospital there.

Q. Would this bath-house site of Huffman have formed the southwest corner of the permanent reservation?—A. No, sir.

Q. Would it have been near it?—A. It would have lacked forty feet or forty-five feet.

Q. Then it would have come within a hundred feet?—A. Yes, and then it would run up the creek.

Q. What originally covered that forty feet?—A. The Hot Springs Hotel.

Q. The property that you built there?—A. Yes, sir.

Q. And you also had a house above the Huffman site?—A. Entirely above his bath-house, and this hundred feet of ground that they leased of me between them for a

bath-house. I understand he got a lease there. I did not see it to read it, and only know what I hear.

Q. How long have you resided here?—A. Thirty years.

Q. Where was your residence?—A. On the point of the mountain we call Gaines's Cottage.

Q. Was that adjoining this hotel?—A. Right across the creek from it.

Q. How long did you live there?—A. I built it about twenty-six years ago, and I lived there about twenty years, I reckon.

By Mr. PAYNE:

Q. Was there any litigation about that property before the litigation with the Government?—A. Oh, yes.

Q. Who disputed your claim?—A. Yes, sir; old man Hale.

Q. And Rector, too, did he not?—A. Yes, sir.

Q. Had there been any decision up to that time?—A. Yes; in the State court here I got judgment.

Q. Did you take it into the United States court?—A. Yes, sir.

Q. And how then?—A. My judgments the year before the war were confirmed by the Supreme Court of the United States.

By Mr. STORM:

Q. Was this property over on the east side of the creek, which has been left to your son, embraced in the property that was leased to Huffman?—A. No, sir; I think not. They may have had a privilege in the lease to build, but they have never done it. The building proper did not interfere at all with the hundred feet from the south end of the brick bath-house down to the north end of the Huffman bath-house.

Q. According to your understanding of the distance, how much property has the Army and Navy hospital adjoining Hot Springs Creek?—A. About 130 feet.

Q. Have they that much not leased to anybody?—A. I think that is about the quantity of ground.

Q. After the site leased by your son is taken off?—A. After he takes a hundred feet I think there is left in the neighborhood of 130 or 135 feet.

Q. Was the city hall on the corner of that property?—A. The city hall stood right where the dining-room of the Hot Springs Hotel was, which was burned. The street may cut in there; I do not know how the street comes, but there is about that much ground there. Really I do not know the width of that street.

Q. Is that Gaines avenue?—A. No avenue on the south side of the Hot Springs Mountain Reservation.

Q. Was the city hall built during the time the Commission was here?—A. I think it was built just before, during the interval. They had been here a year and made that reservation and did not complete the work, and it was built during that interval.

A. B. GAINES, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Are you a member of the bath-house association?—Answer. Yes, sir.

Q. What position do you occupy in that association?—A. Secretary of the association.

Q. Are you a member of any committee?—A. Yes, sir; a member of the executive committee.

Q. What books have you showing the receipts of the several bath-houses in the pool?—A. I take substantially a copy of the weekly report of the auditor. He gets up his report and puts it in his book, and when we meet every Monday night I take the report of the auditor, and it is signed by him as a true copy, and compared with the book, and it is copied into my book, which is substantially the same as the auditor's book. It is a true copy.

Q. You say it is substantially the same as the auditor's book. Now, is it copied on a different principle—for instance, more condensed, or what?—A. It is a true copy, sir. I will show you the book. (The book referred to was examined by the members of the committee.)

By Mr. STORM:

Q. As the secretary of the association what is your duty?—A. My duty is to attend weekly meetings and get from the auditor a report of the week's work, and copy from the auditor's book the amount of receipts, &c., just as you see them in the book I have shown you.

Q. Where did you enter the amount that you received from the auditor?—A. You will understand that I do not run the bath-houses; I am simply secretary. I do not receive any money.

Q. And that report taken from the auditor contains what?—A. It contains a statement of the bath-house business for a week.

Q. How is it made up?—A. The total amount of money received from all the bath-houses, the amount of redeemed tickets, and the statement showing the amounts disbursed by each house.

Q. That he brings to you?—A. No, sir; I get it from his book.

Q. Well, then, you get it from him?—A. Yes, sir. He reports to the executive committee, of which I am secretary.

Q. And your duty is to make an entry of that in a book. Now, what book?—A. In that book you have.

Q. And are these entries made at the time the report is made by the auditor?—A. I take a statement from him and make a copy of it in my office.

Q. And at your office you copy his report on what?—A. On the book you have.

Q. Did you always do it immediately after the return was made?—A. Yes, sir; about the same time.

Q. These entries appear to be made at one sitting?—A. Yes, sir; I have been away some time and made them when I came back. They are not all made at one sitting, but some of them are; some were not.

Q. Which were made at one time and which were not?—A. I could not tell. I do not think these two were [indicating on book previously referred to].

Q. Do not both of these pages look like the copying was done at one time?—A. I do not know.

Q. Do you not know whether they were or not?—A. I know some were not.

Q. That was all done in one week, was it [indicating]?—A. Yes, sir.

Q. And that was done at the end of another week, soon after you received the report of the auditor [again indicating]?—A. Yes, sir.

Q. Were these two pages made at the same time [indicating]?—A. Probably. I got two or three reports at the same time, and those up to January 6 I made regularly.

Q. And have you on file all the papers the auditor returned to you?—A. Yes, sir.

Q. Have you them all at hand?—A. Yes, sir.

Q. Did the auditor make the entry at the same time you did?—A. Yes, sir.

Q. Did he return all the papers like this [exhibiting papers to witness]?—A. Yes, sir; each week separately.

Q. And the bath-houses were charged with the gross amount of tickets issued?—A. Issued to each house. So many to each bath-house, and charge them with them and take from them their week's receipts, and when they settled they had to account to him for so many tickets.

Q. Does this statement you have made here contain an exact copy of the footings in your book?—A. Yes, sir.

Q. And, so far as you know, that is a correct footing of the amount in your book?—A. Yes, sir.

Q. Who kept the book; did you?—A. Mr. Long.

Q. Is he here?—A. He was in Washington the last I heard of him.

Q. Do you know whether this entry over here [indicating] is in his handwriting or not?—A. I do not know.

Q. Are you not acquainted with his handwriting?—A. No, sir; I do not know whether I could tell Mr. Long's handwriting or not.

Q. You have no other book in which you entered these first items have you?—A. No, sir.

Q. Is that the first entry you made in the book [indicating]?—A. Yes, sir; and the only entry I made. The bath-houses I am interested in I keep separate for myself.

Q. And did you compare your own, the house you are personally interested in, with these and find them to be correct?—A. Yes, sir.

Q. Is this the report upon which the proprietors of the bath-houses draw their dividends?—A. Yes, sir.

Q. And your executive committee meets every Monday afternoon?—A. And see if the auditor's report is correct, and if it is correct they declare the dividend each house is entitled to, and issue a check on the bank for it.

Q. And these pages you show in your own handwriting, and what you presume to be in the handwriting of Mr. Long, are the statements of accounts during the period of time indicated?—A. Yes, sir.

Q. Are you not familiar with the handwriting or signature of Mr. Long?—A. No, sir; I do not know that I ever saw much of his writing; he did as I did. I know that when he was at the meetings as secretary he took the auditor's reports down to his bath-house (he then ran the Rammelsburg bath-house) and copied them there.

Q. Did you ever compare these items with the auditor's report?—A. Yes, sir.

Q. Were you required to do that by an order of the association?—A. No, sir; the auditor was requested to compare his books and get up a statement for the association for its use; I do not think I was requested.

Q. Then you did not compare these items with the auditor?—A. No, sir.

Q. I believe I understood you to say that this is your handwriting on these last two pages [indicating]?—A. Yes, sir.

Q. And the entries were made at different times?—A. To the best of my recollection every one except the last two were made immediately after the pool met.

Q. Is it a fact or not that this book has been prepared within a day or two?—A. No, sir.

Q. I will ask you another question. Whom have you in charge of the Palace bath-house?—A. A gentleman by the name of Mr. Fackler.

Q. Does Mr. Fackler keep a daily account of the number of tickets he sells?—A. I think he does.

Q. You say you think; do you know?—A. I say this, that I do not know about the books he keeps.

Q. Does he not keep a set of books for you gentlemen to look at, from time to time, to see how many baths are given from day to day?—A. I think they do.

Q. Do you not know?—A. I do not know, but I think they do, though.

Q. Now, then, do you not go around to collect the money that these parties receive for baths during the week?—A. Yes, sir.

Q. And every Monday a collection is made? I believe you admit that?—A. Yes, sir.

Q. And the party who collects, who is he?—A. Dr. Rector.

Q. Now, then, when he collects the money from the respective bath-houses, which you gentlemen control, he gives his receipt to the party, does he not?—A. Yes, sir.

Q. And he keeps a stub of that receipt as his record, does he not?—A. I do not know whether he does or not.

Q. The receipts I have just spoken of, which are given to the parties in charge of the bath-houses—for instance, the person whom you employ to take charge of your bath-house—you take that receipt and that is your voucher for the money; is not that the method?—A. Yes, sir; that is the receipt. Dr. Rector goes to the bath-house and collects 75 or 100 tickets, or so much as the week's work represents, and he gives his personal receipt for that, and the manager has that receipt.

Q. What does Dr. Rector keep?—A. He takes the money and gives a receipt for it.

Q. Does he keep no record of it? Have you no regular form of receipt book?—A. No, sir; he keeps it in his book.

Q. Do not you keep a daily book or journal showing the receipts for each house?—

A. Not a journal, but a separate book for each bath-house, and I can produce them, if the committee wants them.

By the CHAIRMAN:

Q. Please furnish the stubs and receipts from each bath-house?—A. We will furnish all the receipts we have.

By Mr. STORM:

Q. These show the account of the tickets issued. Now, how do you get at the person, for instance, who comes in and pays for a single bath?—A. If a gentleman comes in and wants a single bath, he is charged 30 or 25 cents, or whatever it is, and that is put in the earnings and it is turned in.

Q. Take these accounts and show me the entries for individual or single baths [handing book to witness]?—A. They are included in the regular entry of the gross amount.

Q. To illustrate that, turn to the entry of January 6, 1884, the last entry there?—A. Yes, sir.

Q. What is the amount reported there as the receipts from the Rammelsburg bath house by the auditor?—A. Fifty-two dollars and seventy cents.

Q. How long have you been interested in the bath-house business?—A. I think it has been some two years since I first bought an interest. I do not know exactly the date, but I think about two years ago last December.

Q. What leases have been granted to you?—A. Only one, and that one appears in my name and was granted just south of the Rammelsburg bath house. I have the lease here in my pocket and will produce it [handing lease to Mr. Storm]. I also desire upon this point to submit as part of my testimony a statement of the aggregate receipts of all the bath-houses from March 5, 1883, to March 3, 1884. It is as follows:

March 5, 1883.....	\$1,685 45
March 12, 1883.....	1,783 65
March 18, 1883.....	1,634 55
March 25, 1883.....	1,491 40
April 1, 1883.....	1,497 40
April 8, 1883.....	1,750 75
April 15, 1883.....	1,648 15
April 22, 1883.....	1,550 30
April 29, 1883.....	1,587 05
May 6, 1883.....	1,813 15
May 13, 1883.....	1,738 70

May 20, 1883.....	\$1,695 00
May 27, 1883.....	1,445 25
June 3, 1883.....	1,402 10
June 10, 1883.....	1,496 90
June 17, 1883.....	1,274 75
June 24, 1883.....	933 45
July 3, 1883.....	1,124 36
July 9, 1883.....	1,169 80
July 16, 1883.....	1,338 15
July 23, 1883.....	1,219 95
July 30, 1883.....	1,095 05
August 5, 1883.....	889 95
August 12, 1883.....	1,201 75
August 19, 1883.....	1,003 30
August 26, 1883.....	854 80
September 2, 1883.....	856 45
September 7, 1883.....	800 35
September 16, 1883.....	843 85
September 24, 1883.....	760 10
October 1, 1883.....	722 90
October 8, 1883.....	610 35
October 14, 1883.....	727 40
October 21, 1883.....	791 55
October 28, 1883.....	718 35
November 5, 1883.....	957 65
November 12, 1883.....	795 00
November 18, 1883.....	823 25
November 25, 1883.....	637 60
December 2, 1883.....	921 45
December 9, 1883.....	684 90
December 16, 1883.....	821 40
December 23, 1883.....	806 75
December 30, 1883.....	715 70
January 6, 1884.....	746 90
January 13, 1884.....	969 65
January 20, 1884.....	947 35
January 27, 1884.....	1,022 05
February 3, 1884.....	1,222 95
February 10, 1884.....	1,097 95
February 17, 1884.....	795 60
February 24, 1884.....	1,224 75
March 2, 1884.....	1,313 10
Total.....	59,710 41

Q. In this statement of gross receipts, is that after deducting the expenses for water rent, salaries of managers, and for wood and other expenses?—A. No, sir; it has nothing to do with it. This is the gross amount collected, and expenses of every kind must be deducted from that for each individual bath-house. The owners of each bath-house pay the expenses of their respective bath-houses.

Q. Are these expenses heavy?—A. Yes, sir; very heavy. The association has nothing to do with the bath-house expenses. The owner of each bath-house pays his own expenses connected with the running of that house out of their pro rata of the receipts.

Q. Is the lease that you speak of the only one granted to you?—A. Yes, sir; the only lease granted to me, and I will file a copy of the same.

Q. The date is all that we want.—A. It is dated July 24, 1883, between M. L. Joslyn, acting Secretary of the Interior Department, and A. B. Gaines, for 100 feet on Hot Springs Creek.

Q. Do you own any interest in the Rammelsburg bath-house?—A. Yes, sir; and I will state all the bath-houses I am interested in. I own a half interest in the Rammelsburg, a quarter interest in the Independent, a half interest in the Old Hale, a quarter interest in the New Rector, that are on the reservation, and off the reservation a half interest in the New Springs bath-house. All of these I purchased from parties after they built their houses. I paid for the first bath-house interest I ever had, I think, two years ago last December, but the date will show.

Q. I do not suppose it is necessary to go any further into that.—A. I would say in that connection that every bath-house interest I purchased was on the market for some considerable time for any individuals that saw fit to buy, and there has never been any time that I know of that any man who was willing to put up his money and

pay for a bath-house interest that he could not get it; but if he wanted to get it for nothing I do not suppose he could do it.

Q. Does this statement you make comprise all the bath-house sites that you are interested in?—A. I have a half interest in the site granted to Mr. Buckstaff, and a half interest in the lease granted to Mr. Stearns. As regards the site I applied for myself, I will say that I filed an application with General Kelley. I do not know but what it was pending two or three years. I submitted my plans and specifications and went to considerable expense to get them up. I did not get a lease, although I applied to General Kelley several times and tried in every way to get it. He said that the Department had sent him orders that there were plenty of bath-houses here, and none could be leased at that time. I afterwards applied for a site that had already been occupied a great many years by my father, who had had an old building there. That was the last lease I applied for. There may be a few feet, but I do not think any of this ground covered by my lease was ever covered by Huffman's site when he formerly had a bath-house in that location. The Huffman bath-house was formerly located about where the Army and Navy Hospital site is located. When my father built the Hot Springs Hotel he had hot-water privileges in it, and when the court decided against us, in 1876, a receiver was sent out here and he leased the premises to my father, showing that he had a prior right.

Q. Did you get this lease at the time for yourself or somebody else?—A. No, sir.

Q. You sold it to somebody else since, did you not?—A. I did.

Q. To whom?—A. George L. Smith.

Q. For how much?—A. I traded to him one-half interest in my lease for one-half interest in the lease that was granted to Mr. Stearns, situated here south of the Palace bath-house. I bought from a gentleman by the name of Mr. Hogaboom and Mr. Buckstaff a lease that was granted and appeared in the name of Mr. Buckstaff, situated where the Magnesia Spring is. I bought this lease when I was in Colorado last summer. I telegraphed to Mr. Baxter, real estate agent here, who purchased it for me.

Q. What did you pay for it?—A. \$5,000 for the lease, and then I sold it to Mr. Smith.

Q. Were there any improvements on the site when you bought it?—A. I do not think there were any. When I was in Colorado some \$200 or \$300 was spent for excavating, which we paid.

Q. Was this lot that you got in exchange as valuable as the Gaines lot?—A. I considered my lease as valuable as his.

Q. Do you consider this lease down here worth \$5,000?—A. This is not the one I traded. There are two leases; one granted to Mr. Stearns and one granted to Mr. Buckstaff.

Q. I asked you whether you got these leases entirely for yourself, and I understood you to say yes. I asked you whether you parted with your interests and you said yes, that you had traded it; and when I asked you if you considered the Gaines lot as valuable as the lot that you got while in Colorado for \$5,000, you said yes, did you not?—A. Yes, sir.

Q. Did you consider this lease when you got it worth \$5,000?—A. Yes, sir; I consider them all worth about the same.

Q. How did you get your lease?—A. I applied through the superintendent some two or three years ago, and then I went up and put in another application to Mr. Hamblen.

Q. When was that?—A. Shortly after he was put in.

Q. That was in January, 1883?—A. And I got his indorsement on it and I took the application and forwarded it myself to the Secretary of the Interior.

Q. About what time was that?—A. Shortly after I obtained his indorsement.

Q. Was it before March, 1883?—A. I do not remember the date, but shortly after Mr. Hamblen was made superintendent.

Q. Well, he was made superintendent in January, 1882, was he not?—A. Yes, sir.

Q. So you sent it before March, 1883?—A. About that time, or perhaps two months later. I am certain I got his indorsement, and not long after that I sent it on.

Q. And that was a short time after January, 1883, was it not?—A. Yes, sir; a short time after he was put in office, and then a little later I sent the application on to the Secretary of the Interior and got Senator Garland and others to write him in regard to my responsibility to erect a bath-house on the site, &c. I stated in my application how long I had been here, and why I thought I was entitled to the lease; that my father had had hot-water privileges and was one of the oldest settlers here.

Q. Did Senator Garland or anybody else tell you what the difficulty was in getting a lease?—A. No, sir.

Q. Do you recollect when the Army and Navy surgeons were here?—A. Yes, sir.

Q. Do you or not recollect that the property included in this lease was to be included in the site for the Army and Navy Hospital bath-house?—A. I understood so.

Q. Did you know the Secretary of the Interior intended to preserve this lot covered by this lease for the Army and Navy Hospital bath-house site?—A. I was told that he would take clear up to near the Palace bath-house.

Q. Did you learn at the time these surgeons were here where they had located this Government bath-house?—A. I understood they located it.

Q. And did you not find that it covered the property in this lease as well as other property?—A. I thought they were going to locate back.

Q. Did you not know that the site they located came down to the stream?—A. No, sir; I found it out afterwards.

Q. You were informed of this, were you not?—A. Yes, sir.

Q. That stirred you up, did it not?—A. Yes, sir.

Q. Did not Senator Garland write and tell you that the Department was anxious to keep this lot as a frontage for the hospital lot?—A. No, sir.

Q. Did you never learn this through him?—A. No, sir.

Q. From whom did you learn it?—A. Only through Mr. Long. It seems that after they decided on it they were talking about it in Washington. General Kelley stated to me that the Secretary of the Interior had notified him not to grant any more leases.

Q. Did you get any information from the Secretary of the Interior or anybody else that it was the intention of the appraisers of this property to devote it to hospital purposes?—A. No, sir.

Q. When was the removal of soil on that lot done?—A. When I was out in Colorado.

Q. When was that?—A. Last summer.

Q. It was done before you had the lease, was it?—A. No, sir.

Q. How soon after?—A. The latter part of August.

Q. They did not do any more than remove some soil, did they?—A. That is all.

Q. Did you buy with a view of erecting immediately another bath-house?—A. Yes, sir; I intended to erect it by spring. I say right here in regard to the excavating, that Colonel Alexander stated I made a contract with him. I never made a contract with Colonel Alexander in my life that I know of in regard to excavating or anything else, neither did I ever state to Colonel Alexander to put in a blast to blow out the bottom of the Mud Hole.

Q. I did not understand Mr. Alexander to say so.—A. I so understood him. I speak of all three leases. I never spoke to him in my life about putting in a blast of any kind; I never made any contract whatever.

Q. Did you authorize Mr. Smith to make a contract?—A. No, sir.

Q. You did not suppose that Colonel Alexander was working there gratuitously? He was working on your lot, was he not?—A. Yes, sir; he cleared this lower lot off while I was away. I think he was working on the two upper lots.

Q. You saw him working up there, did you not?—A. Yes, sir.

Q. Was not Mr. Smith your partner?—A. Yes, sir.

Q. Your property was not divided and you had an undivided interest, had you not?—A. Yes, sir; Mr. Smith told me he made a contract with Colonel Alexander and I paid the bill.

Q. Didn't you consider that your contract?—A. I mean that I did not make it. What I was getting at was about the blasting. I never made any contract about doing the blasting.

Q. Then what you mean is that you did not make a contract by putting your signature to it, but your partner did?—A. I do not know whether he made any written contract at all.

Q. Then all you say is that although it was a contract binding upon you, you did not make it personally?—A. I do not know whether it was binding upon me or not.

Q. Do you suppose that after seeing Colonel Alexander working there from day to day you could have repudiated it?—A. I do not know. I have got no partnership with Mr. Smith of any kind or character. Each interest is an individual interest and not a firm. There is no firm of Smith, Rector & Gaines, and nobody is authorized to make any bill for such firm.

By Mr. PAYNE:

Q. Have you not agreed to build a bath-house according to the plans you filed with your application?—A. Yes, sir.

Q. When you and Mr. Smith jointly improved property, do you think that, because you have no written agreement, you can escape liability for your share of the cost of such improvement?—A. I suppose not.

Q. What time did you return from Colorado?—A. About the 1st of September.

Q. Did you have any conversation with Colonel Alexander about blasting, or making a deep hole, or putting in a certain amount of powder, &c.?—A. No, sir.

CHARLES A. MAURICE, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. What business are you engaged in?—Answer. I am manager of the Ozark bath-house.

Q. How long have you been manager of that bath-house?—A. Three years and four months.

Q. What house were you in before that?—A. In the house at this side of the valley, called the Palace bath-house.

Q. What has been the condition of your house as to the supply of hot water the last year or two?—A. Very bad.

Q. Well, state all about it.—A. Well, in fact the entire three years we have been short of water, and I could not do the business that I could do if I had the water. At times there is no water at all for several days.

Q. What becomes of your bathers then?—A. Redeem their tickets and leave them to go to other houses.

Q. Well, what is this lack of water attributed to?—A. To the imperfect manner in which the water is collected and distributed.

Q. Have you given any attention to that matter, and know what a good system would be, and if so, please suggest it to the committee.—A. I have given attention to the matter.

Q. Well, what remedy do you suggest?—A. It is to collect the water now running to waste and convey it, say, into a tank below or about the Rammelsburg bath-house, and there force it to a corresponding tank upon the hill, and there deliver it by gravity to the different houses. In my opinion nearly all the water running to waste could be secured in that manner.

Q. Should the waters of all temperatures be put into one tank, or should there be different tanks in reference to that?—A. They should not be put into one tank.

Q. Why not?—A. A certain temperature will make a vapor, while a lower temperature will not make a vapor. The springs will run from 120 to 145 degrees.

Q. And you say that all the hot water should not be put indiscriminately into a tank on account of the varying temperature?—A. No, sir.

Q. If you were to put the water indiscriminately into a tank that way you say that it would not produce a vapor?—A. No, sir.

Q. And it would be necessary to have the different temperatures in different tanks?—A. Yes, sir.

Q. Is that practicable?—A. My idea is that one-half of the water should be put in one tank and the other half in another tank; one high-temperature tank and one low-temperature tank.

Q. If it were all turned into one or two tanks indiscriminately would the effect of that be to destroy the availability of the water for vapors?—A. In my opinion it would.

Q. Do you think the supply of water here is sufficient for bathing purposes if properly utilized?—A. Yes, sir.

Q. Have you been able to have the deficiency of the supply in your bath-house remedied?—A. Not efficiently. I have partially at times.

Q. What is the number of persons bathing at the Ozark daily in the busy season?—A. I presume from 50 to 100, and from that to 300. I have bathed 300 people in the Ozark in a day.

Q. What amount of water do you estimate it requires to bathe a single person?—A. About a barrel; about 40 gallons.

Q. For one bath?—A. Yes, sir.

Q. Does that include hot and cold water together?—A. Hot and cold.

Q. Well, now, in reference to the drainage of these bath-houses; do you think these bath houses are so situated as to work an injury to the health of the city if the sewerage from them was turned into the creek?—A. It would not, in my opinion.

Q. Are not the water-closets in the bath-houses generally resorted to?—A. Yes, sir; by my customers, and generally outside of my patrons. Those in business on the street visit the closets.

Q. Would it be in your opinion hurtful to the health of the city to turn the water from the bath-tubs into that creek?—A. I am not clear on that subject.

Q. Well, what are the facilities here for bathing; are they good?—A. I regard them good.

Q. Are the bath-houses kept in good condition, and are the attendants required to keep them neat?—A. Yes, sir. The Ozark I speak for particularly; it is kept in good order.

Q. How many springs are there here?—A. I think from 57 to 60.

Q. Where are they located—on the side or bottom of the mountain?—A. On the side of the mountain.

Q. Some have an aperture at the bottom of the mountain, have they not?—A. The lowest spring is back of the Rammelsburg bath-house.

Q. Are there not some that come out in the creek?—A. Yes, sir; many of them.

Q. What number of them are on the side of the mountain?—A. Well, say one-half of them; say one-third are high enough to be utilized for bathing purposes.

Q. You would utilize this water that comes out at the bottom of the creek by getting it into a tank and preserving it?—A. Yes, sir.

Q. You think that one-third of the springs are high enough to be used for bathing purposes and two-thirds are below the proper elevation?—A. Yes, sir.

Q. So it would be necessary to convey this water that comes out of the creek to a tank situated at a higher point?—A. Yes, sir.

Q. But it would require pumping facilities for that, would it not? To raise the water to a tank high enough to run into a bath house, it would require a pump, would it not?—A. Yes, sir.

Q. Would the water from one-third of the springs on the side of the mountain be sufficient to bathe all the people here now, with the present bathing facilities?—A. When I say on the side of the mountain—we have a Government reservoir. I do not recollect the capacity, but each bath-house below it has a 2-inch pipe from it.

Q. What I am getting at is, if the stream from these springs would be sufficient for bathing purposes itself without anything else?—A. Yes, sir.

Q. So that would be sufficient without the water that now flows into the creek at the base of the mountain?—A. I am not clear on that subject. I will state this, that I believe there is sufficient water now in the tanks, if properly connected with the houses and properly distributed, to bathe 5,000 people a day.

By Mr. STORM:

Q. Did I understand you to say that in your judgment all the springs could not be taken to one tank?—A. I do not think that it would be right to put the low-temperature water and the high-temperature water together.

Q. Then you would suggest the collection of the water according to temperature?—A. Yes, sir; they run from 145 or 147 to 120, and as low as 113.

Q. And what would be the number of tanks necessary to accommodate all these temperatures?—A. I say about one-half in one and one-half in another.

Q. In your opinion, what medicinal effect would it have if the magnesia and arsenic and alum springs were put into separate tanks?—A. My opinion is that each of these springs only show a trace of alum or a trace of sulphur, or a trace of alum and a trace of potash and a trace of magnesia. There is only a bare trace of these different things in these different springs.

Q. So you think that the waters come virtually from the same source and are virtually the same in their medicinal properties?—A. Yes, sir; I know there is a different opinion, but that is my opinion.

By the CHAIRMAN:

Q. What are the facilities for bathing poor people who haven't the money to pay for a bath?—A. I think very good.

Q. What is your view about the utilization of the Mud Hole? Do you think it is properly conducted?—A. Unquestionably.

Q. Does that furnish a sufficient amount of water to bathe all the poor people who are not able to pay?—A. I think so.

Q. And the present accommodations are sufficient for this purpose, is it?—A. With the last improvement, I think so.

Q. Would you suggest any change in the management of the springs here on the part of the Government?—A. I would suggest that this water be collected and distributed in better shape than it is.

Q. There is some question about what Department it should be under; whether or not it should be changed to a different Department of the Government. What is your opinion about that?—A. I think if it was removed from all political pulling and hauling we would be better off.

Q. Do you think any Department of the Government furnishes a remedy?—A. I do.

Q. What Department?—A. The Army.

Q. The War Department, do you mean?—A. Yes, sir.

Q. Do you think the management heretofore has been efficient and proper?—A. It has been very crude.

Q. Has there been any complaint among your bathers about these bath-houses being in a pool and under one management?—A. Not that I am aware of. The only complaint that I have found is that the physicians send their patients to the bath-houses from 10 to 12 o'clock. They all desire to bathe at that time, and complain about having to wait. Everything depends upon the hot water here, and we are a singular community.

Q. We are aware of that.—A. Our prosperity depends upon the flow of this water and the application of it. Now, when invalids come here in sufficient numbers to go around, everybody is satisfied, and when there is a lack of invalids there is a grand kick, and they commence fighting among themselves. Each one can tell you what to do about your business. I have handled a bath-house since 1876, and have done

as much business as any house in the valley. I find no trouble in satisfying my patrons, but I find trouble in satisfying the individuals outside.

Q. Those who do not bathe, do you mean?—A. Those who bathe about once a month.

By Mr. PAYNE:

Q. How many water-closets are there in that bath-house of yours?—A. There are two.

Q. You say you had a very successful bath-house; how much have the receipts been for any one year?—A. They will run from \$5,000 to \$7,000 a year.

By the CHAIRMAN:

Q. Do you know anything about the depth of the wall of this creek improvement below the bed of the creek?—A. Do you mean all the wall?

Q. Right opposite your house. How far below the bed of the creek does it go there?—A. Immediately above the house, 10 or 15 feet; it is deeper than it is this way.

Q. How far below the bed of the stream is it?—A. Well, my impression is 2 feet; possibly more than that. To make it plain to you, they struck some hot water flowing out there, and had a great deal of difficulty in putting in a coffer-dam, and had to go still deeper than the balance of the wall.

Q. What did they do with the hot water flowing into the creek?—A. They forced a portion of the water back and a portion they let go into the creek.

Q. Do you know whether the part under the wall there is soil or rock, or what?—A. I do not know.

Thereupon (at five o'clock and fifty minutes, p. m.) the committee took a recess until half past seven o'clock, p. m.).

AFTER RECESS.

The committee met pursuant to adjournment.

H. M. RECTOR, jr., being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside?—Answer. I reside in Hot Springs.

Q. What is your profession?—A. Doctor of medicine.

Q. Are you a member of the Bath-House Association of Hot Springs.—A. I am auditor.

Q. That is the official position you hold in that organization, is it?—A. Yes, sir.

Q. What are the duties of that position?—A. My duties are to issue the tickets to the various bath-houses, keep a record, and collect all moneys taken in by the various bath-houses. I make out a report to the executive committee, and make a report of all expenses incurred, and disburse the money.

Q. You keep an account, then, of the receipts and disbursements?—A. Yes, sir.

Q. Do you keep an expense account?—A. Yes, sir.

Q. Do your books show the receipts of the Bath-House Association, embracing all bath-houses that are included in the pool?—A. They do, sir.

Q. Well, now, have you those books with you?—A. Yes, sir; they are here.

Q. Have you prepared any abstract statement from those books, showing what the receipts are for any stated period of time?—A. Yes, sir; I have for the first 16 months of the pool.

Q. When do those 16 months commence?—A. The pool organized, I believe—I am not positive about that—on the 19th of April or May, I forget which.

Q. What year?—A. In 1882.

Q. Now, have you drawn that statement off your books, or is it still on the books?—A. I have drawn the statement off the books. I have no regular detailed statement. Each week's business is made up separately. There is no total or aggregate account kept of the whole receipts of the bath-house, and each week's receipts show for themselves. These weeks are numbered.

Q. Have you drawn off a statement showing the receipts each week?—A. That is still on the books. I had occasion to go over the work for 16 months, and have the net amount taken in by the bath-houses for that period.

Q. Well, what are the aggregate receipts during that period of 16 months?—A. For that period, \$74,139.52.

Q. Is that the amount of the gross receipts?—A. That was the net earnings of the bath-houses; that is, as turned in to the auditor. You understand, colonel, the auditor gets the entire amount of money taken in by the bath-houses, and then he pays over to each bath-house proprietor his portion, and out of that the proprietors pay the expense of running their bath houses.

Q. Are these gross receipts?—A. Yes, sir.

Q. Now, is there any item of expense taken out of that gross amount—your salary, for instance?—A. No, sir; I do not know of any expense taken out of the amount given you.

Q. Is that salary taken out before the distribution is made?—A. Yes, sir.

Q. And this was the amount distributed, that you speak of?—A. Yes, sir.

By Mr. STORM:

Q. I suppose the expenses like advertising and printing, &c., are taken out before you distribute this gross sum that you speak of?—A. Yes, sir.

By the CHAIRMAN:

Q. Have you any statement showing what the receipts have been of a similar character from the period that these accounts run to, up to the present time?—A. I have not made that up.

Q. Well, will the book show?—A. Yes, sir; the books submitted to Mr. Storm will show each week's work.

Q. Have you not added up the aggregate?—A. No, sir.

By Mr. PAYNE;

Q. During what period was this sum of seventy-odd thousand dollars taken in?—A. For the first sixteen months after the formation of the pool dating from April, 1882. I get the data in this way, if you will allow me to explain; when the Rector bath-house went into the pool, the proprietor contended that he should go in on a basis of 45 tubs, and some of the gentlemen objected, saying that was too much, but they succeeded in getting the balance of the bath-houses to agree upon a basis, and the only bath-house left out was the Rector bath-house, and to prevent the breaking up of the pool, some private individuals agreed that they should give the Rector bath-house one tub and a half more, and it went in on a basis of 42 tubs, on the assurance of two or three gentlemen that they would pay them the net earnings of one tub and a half. After that period expired, the sixteen months, it became my duty, as auditor, to determine what a tub had earned during that time. I went over the auditor's books and made up a statement. That was in August. One of the gentlemen who agreed to pay this amount, or one part of it, was absent from the city, and it was necessary that I should draw on him for his proportion. There were three gentlemen having one-half a tub each, making the tub and a half, and I drew on him, and I have that data in my pocket.

By Mr. STORM:

Q. But you are getting away from the question asked you.—A. I am getting at that now. That represented \$178.22 for half a tub for 16 months.

Q. And it is only in that indirect way that you got at it, and it was not based upon the calculation of your book?—A. Yes, sir; the original calculation was taken directly from the books, and the sixteen months ran up to August 19, 1883.

By the CHAIRMAN:

Q. When did these sixteen months commence?—A. The 19th of April, 1882.

Q. And ended the 19th of August, 1883?—A. Yes, sir; I think that was about the date. In inspecting these books, you gentlemen must bear in mind that they were kept for private individuals and they are not Government records, though you are perfectly welcome, as far as I am concerned, to inspect them thoroughly. I am only apologizing for the book-keeping.

By Mr. STORM:

Q. Will these additions in your books for weekly receipts up to August 19, 1883, correspond with what you have there on the paper?—A. I think so, exactly.

Q. Why did you not make up your statement from the books?—A. I have stated that I did take the statement directly from the books, and this calculation is based upon that statement.

Q. What is it for the balance of the time from August 19, 1883, down to to-day?—A. The books show every dollar taken in from that time down to the present time. The last week's work has not been entered up yet.

Q. Had you, as auditor, anything to do with the expenses of the individual bath-houses?—A. Nothing in the world. No, sir; not as auditor.

Q. To get that we must have the accounts of the bath-house itself, must we not?—A. Yes, sir; the accounts of the various bath-houses.

Q. And you have no means, of course, of knowing that from your position as auditor?—A. No, sir.

Q. You have the accounts of one bath-house in which you are interested, have you not?—A. Yes, sir; but my position as to that is entirely different from that I hold in the pool.

Q. What is the expense of that particular bath-house in which you are interested?—A. That I could not tell without consulting my books.

Q. You could furnish that by reference to your books, could you not?—A. I could if you give me enough time.

Q. You keep these books at your office I suppose?—A. Yes, sir.

Q. Does each bath-house have a man in charge of it who keeps the books?—A. Yes, sir.

Q. And could not that man furnish the committee with the books showing the expenses of his bath-house?—A. I suppose that could be furnished.

Q. What are the ordinary expenses of a bath-house?—A. As to amount or what?

Q. What would be the expense of the manager?—A. They vary for different kinds of men.

Q. I mean that each bath-house requires a manager, and that is one of the items of expense?—A. Yes; and repairs are constantly being made, and during winter wood-buying, and pipes burst, and it is necessary to employ a plumber.

Q. But the bath-house only pays out money for one man regularly?—A. Two men are regularly paid for.

Q. These men called bathers, who take charge of guests; of course they do not get paid out of the proceeds of the bath-houses, do they?—A. They get well paid, but not by the proprietors of the bath-house.

Q. The guests pay them, do they not?—A. Yes, sir.

Q. These entries in these books are made by you, are they?—A. No, sir; not all of them. I have a multitude of duties to perform.

Q. Who made these entries in this book?—A. I made a great many of them.

Q. Who made these [indicating]?—A. Those were made by a man by the name of Sudduth. Some I made, of course.

(The witness went on to indicate such entries as he made and such entries as were made by others.)

By the CHAIRMAN:

Q. Do you think the bathing facilities here are sufficient to meet the public demand?—A. Amply so, sir.

Q. Could you suggest any change in the distribution of the hot water which would subserve the public needs better than the present system?—A. I do not know about that, Colonel. The bath-houses could be accommodated with hot water much more equally than they are now, by a different system, but as to whether or not the water would be just as efficacious after being collected and distributed through pipes is another proposition upon which I am not prepared to give an opinion.

Q. Is not the water distributed through pipes now?—A. Some of it is; all of it is. But some bath-houses are located further from the source of the water than others, and the water runs through long lines of pipe.

Q. Could you tell about the reduction of temperature in distance?—A. Very little. It depends upon how the pipe is protected. If the pipe is exposed, there would in winter be a great reduction. If not exposed, but little. The Rockafellow bath-house draws its water from the rear of the Arlington and gets the water direct from the spring, and there is only one degree difference.

By Mr. STORM:

Q. Do you know which bath-houses draw from the same source and what is the difference in temperature in the water as it comes from the pipe in the bath-house?—A. No, sir.

By the CHAIRMAN:

Q. What distance is the Rockafellow bath-house from the source of water supply?—

A. I am not a good guesser.

Q. Is it 600 yards?—A. About 600, I think.

Q. Would a degree of difference in the temperature amount to much, with respect to the medicinal properties of the water?—A. I do not know whether the medicinal qualities of the water here depend upon its heat or not. I have observed this, that some gentlemen who were before the committee the other day testified that the Mud Hole was more efficacious than any other place of bathing, and attributed it to the fact that there was more water there, and that it might be attributable to the fact that the water comes from the ground.

By Mr. STORM:

Q. How many lots are there under lease on which no bath-houses have been built?—A. Well, it is only a matter of hearsay with me. I think there are three.

Q. Does that include Albert Gaines's last lease and the one next to it?—A. Yes, and then between the Ozark bath-house and the Magnesia spring, and there is one just above the Magnesia spring, and that is all I know of.

Q. Are there enough bath-houses here to supply the present demand? How would it pay any one to build one or two more bath-houses?—A. A great many investments made in Hot Springs have been made on a contingency. We hope that this place

will become very celebrated, and that there will be a great influx of visitors, and if that happens the present bath-houses will not accommodate those that will come hereafter, and if a man gets a lease of public land he does not expect to be thrown out at the end of five years.

Q. Then you do not act upon the law or act of Congress, but just simply upon the contingency that you think Mr. Gaines can build three bath-houses in the next year, and there will be enough to keep you all going?—A. How do you mean?

Q. Enough custom to make it profitable.—A. Oh, we might make a little or something. I think the bath-houses would earn a little money.

Q. Mr. Gaines is a shrewd business man, is he not?—A. He has that reputation.

Q. He would not be likely to build a bath-house on a piece of land if he thought he would have no customers, would he?—A. I do not know what Mr. Gaines would be likely to do.

Q. He is not liable to do a foolish thing, is he?—A. He might be liable to be mistaken about anything.

Q. Do you think that the present supply of bath-houses meets the wants of everybody?—A. Amply, sir. Yes, sir; they are able to bathe all who come here at the present rate of visiting population.

By the CHAIRMAN:

Q. Do you think it would be safe to turn the sewerage of the town into Hot Springs Creek, ending the improvement at the terminus proposed?—A. No, sir; I do not.

Q. Do you think it an unsafe system of sewerage?—A. I do, sir.

By Mr. STORM:

Q. When did you first find out it was going to be unsafe?—A. I do not know that I had to find that out. Just from my observation I thought all the time it would be unsafe. The creek has been the sewer of the town, and it has been unsafe ever since it has been used as a sewer.

Q. Is the present arrangement to cover it going to make it more unsafe?—A. I do not know whether it will make it more unsafe.

Q. But still you believe it to be unsafe?—A. Yes, sir.

Q. What, in your opinion, will make it safer?—A. A system of pipes.

Q. Were you here when Judge Joslyn changed the plans of Captain Handbury?—A. Yes, sir.

Q. His speech was published in one of your newspapers here, was it not?—A. I heard it.

Q. Nobody objected to the change of plan by omitting the pipes, did they?—A. I do not know of any.

Q. That was the proper time to have objected to this change, was it not?—A. Mr. Joslyn made this statement. I do not know whether he was authorized or not to make the statement, but he stated that he would change the plan, and believed that it would be better, and that if it did not prove better he would see that the lateral pipes were put in, as provided for in the original contract.

Q. I think somebody ought to have spoken when that came out, and I think it is rather late in the day to discover that that was not a proper improvement.—A. We ought to have. I was in favor of protesting.

Q. Why did you not do it yourself?—A. It was the night before he left, and a great crowd surrounded him, and I did not think it proper to pursue him at that time.

Q. Did not he state in that speech that if any gentleman objected and had anything to say in opposition to this proposed change of plan, to make his objection known?—A. I believe so.

Thereupon (at 8 o'clock and 30 minutes p. m.) the committee adjourned to meet to-morrow morning at 9 o'clock.

FRIDAY, *March 21, 1884*—9 o'clock a. m.

Committee met pursuant to adjournment.

SAMUEL WALTON recalled.

By Mr. PAYNE:

Question. Are there any openings left in the walls of this sewer?—Answer. Yes, sir.

Q. Just describe them, as to how far apart they are on an average?—A. They are from eight to twelve inches in diameter. I judge they will average from seventy-five to eighty feet apart and may run a hundred, but not more than a hundred.

Q. On each side?—A. Yes, sir; on each side.

Q. And those are in the arch above the skewbacks, are they?—A. Yes, sir; above

the skewbacks. Some openings we left for private parties in the walls; six-inch openings.

Q. You do not include those, do you, in those you have spoken of?—A. No, sir.

Q. These openings you speak of are to be used for surface water, I suppose?—A. Yes, sir; or any use they may make of them.

Q. Can these openings be enlarged, if necessary?—A. Yes, sir.

Q. Without detriment to the arch?—A. Yes, sir.

Q. Made how large?—A. Eighteen inches or two feet.

Q. You have been here personally during the progress of the work on your contract, I suppose?—A. Yes, sir; most of the time.

Q. Have you made any observation in reference to the springs, or water on the reservation?—A. Not beyond the springs that I noticed in the bed of the creek now running to waste.

Q. And along the side of the creek, too, I suppose?—A. Yes, sir.

Q. Can you suggest any plan by which that hot water could be utilized?—A. The plan, I presume, has been presented by Colonel Hamblen. The plan I would suggest is to place a 12-inch iron pipe, commencing at the new Rector bath-house, on the outside of the wall, and wherever these springs are found in the bed of the creek to seal the spring and make a connection with a smaller pipe with a large pipe at every spring, and then, with the fall the stream has at the lower end of the improvement, to have a small reservoir with an engine and steam pump, and then one general reservoir on the hill in the rear of the bath-houses, and pump this water from this catch-basin on the creek to this general reservoir, and from there distribute it to the bath-houses. The water in the reservoir could be tapped and supplied to the different bath-houses, in each of which should be placed a meter. As far as the springs on the hill are concerned, I know nothing about the elevation. I have never been up there. I think they should place a reservoir on the hill holding five or six hundred thousand gallons.

Q. What would you construct that reservoir of?—A. It can be done with masonry, of loose stone and hydraulic cement. If you could do it without blasting, it would be better to sink it under ground than to build it over ground.

Q. Could it be sunk without blasting?—A. I do not know. I never examined the hillside. It could be done if the rock was loose enough to be quarried without blasting.

By the CHAIRMAN:

Q. Can you not get through almost any rock without blasting, by boring, &c.?—A. Not if it is perfectly solid rock.

Q. I thought it might be prized out?—A. In a solid bed of rock it is almost impossible to get it out without blasting.

By Mr. PAYNE:

Q. What would the reservoir cost after the foundation was prepared?—A. From \$4,500 to \$5,000 is my estimate, and you would want it to hold about 600,000 gallons. I think it would be best to sink it under the ground.

Q. Does that estimate include excavation, masonry work, and all?—A. Yes, sir.

Q. Would you take the contract at that price and take the chance of damage?—A. I do not think there would be any damage if no blasting was done. A portion of it could be built in this way: one-half under the ground, and one-half above, and use the material that comes out for the top of the reservoir.

Q. Could not it all be built above ground by building up from the foundation?—A. Yes, sir.

Q. How much would that cost?—A. I do not know what it would cost.

Q. Do you think it could be done within \$5,000?—A. Yes, sir; \$5,000 would build a reservoir of sufficient capacity, or of 500,000 or 600,000 gallons.

Q. Could not there be some arrangement by which that reservoir could be emptied at stated times?—A. It could be done with the same engine that they now use here for pumping purposes. They could pump it out with the same engine they use for filling it.

CHARLES N. RIX, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside, and what is your occupation?—Answer. Hot Springs. I am engaged in the banking business, and am cashier of the Arkansas National Bank.

Q. How long have you resided here?—A. Since 1878.

Q. Have you been familiar with the bathing business and the manner in which it has been conducted during that period?—A. Do you mean the process?

Q. Yes; and the general management of the bath-houses?—A. Yes, sir; I am familiar with it.

Q. Were you familiar with the management of the bath-houses previous to the formation of the pool now in existence?—A. Yes, sir.

Q. And you have known the management since?—A. Yes, sir.

Q. How does the present compare with the former management?—A. I think it is an improvement on the former management.

Q. You think it has been improved since. Have the bath-houses improved?—A. I do not say the process has improved, but the surroundings have improved. I do not know that a man takes a bath better or gets any more benefits now than he did formerly.

Q. What were the objections, if any, to the system previous to the formation of the pool?—A. There was a great deal of drumming from one bath-house to another. I do not think as a rule that people got the same attention as they do now.

Q. Did this drumming constitute an annoyance to visitors?—A. Yes, sir.

Q. Since the formation of the pool has any of that annoyance existed?—A. No, sir; not that I am aware of.

Q. Have you heard anybody complain of the present system?—A. I do not think I have.

Q. The present system gives general satisfaction to the public, does it?—A. Yes, sir.

Q. Are the rates charged regarded as reasonable and proper?—A. They are regarded, I think, very reasonable.

Q. Have you heard any complaint on that score?—A. I never have, except perhaps at the time when it was proposed to charge fifty cents all around. I think then there was some complaint.

Q. They thought 50 cents a bath too high, did they?—A. Yes, sir.

Q. Was that under the present organization, or the previous one?—A. The previous one.

Q. The present pool does not charge that much, does it?—A. I think not; not that I am aware of. I think they are about as the old rates, with the exception, perhaps, of one or two houses, where they have finer buildings and finer furniture, and they might charge a little more.

Q. Do you think that objectionable?—A. I think not.

Q. Do you think there is a reasonable public demand for better bathing accommodations, for which people are willing to pay more?—A. I think many people prefer to go to a house finely furnished, and are willing to pay more. I think there are plenty who come here perfectly willing to pay more money for superior accommodations.

Q. Do you know anything about the payment of General Kelley's board by Colonel Fordyce at the Arlington Hotel? How was the bank accounts of these two persons kept?—A. I do not know anything about the payment of board.

Q. How was the bank account kept?—A. Colonel Fordyce kept an account with us.

Q. Do you know whether Colonel Fordyce kept the bank account of General Kelley or not?—A. He remarked to me one time when he brought in a draft of General Kelley's, that it was issued to General Kelley for his pay. I then entered into a conversation with him in regard to it, and he mentioned the reason of it was that he was General Kelley's banker; that they had known each other a good while, and were very friendly, and when the drafts arrived General Kelley simply turned them over to him, and when he wanted any money Colonel Fordyce checked against it.

Q. Did Colonel Fordyce deposit General Kelley's drafts with you?—A. I do not know whether all of them. He did in one or two instances that I remember of, and probably more.

Q. Did General Kelley have a separate account there of his own?—A. No, sir; I think I once talked to General Kelley about his business, and he simply remarked that he turned all his money matters over to Colonel Fordyce.

Q. And you learned that from General Kelley himself, did you?—A. I am inclined to think he told me that when I spoke to him.

By Mr. STORM:

Q. Is Colonel Fordyce a large stockholder in your bank?—A. No, sir.

Q. Is he a director in the bank?—A. No, sir.

Q. Has he no connection with it?—A. None whatever.

W. H. C. BROADDUS, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside and what is your occupation?—Answer. I reside in Hot Springs. I am a grocer.

Q. How long have you resided here?—A. Nine years.

Q. Have you observed and are you acquainted with the method of the administration of baths, and the conduct of the bath-houses during that period?—A. I have only been engaged in the grocery business about a year, and before that I was engaged in the hotel business, and of course I have had more or less to do with bathing-houses.

Q. Previous to the formation of the present bath-house pool, was there any objection to the system then existing?—A. I have heard visitors complain of being harassed

and annoyed when they first came to town by drummers; complained about being pulled and hauled around.

Q. By drummers advocating the different bath-houses?—A. Yes, sir.

Q. How does the present system work?—A. As far as I know, it works very satisfactory.

Q. Have you heard any complaints of the present management?—A. I have not.

Q. Do you think the present management superior to the former one?—A. Decidedly so, I think.

By Mr. STORM:

Q. Have you seen any complaints in the newspapers in regard to the management of the bath-houses here by the pool?—A. I do not remember now.

Q. Has not there been more or less talk or writing in the newspapers about it, in the shape of complaints?—A. I do not recollect seeing it. I may have, but if I did I do not remember now. I think probably I have noticed some little writings about it. I know I heard a good many visitors say they were willing to pay more than they are now paying, if they could get better accommodations.

Q. For better accommodations than are afforded now?—A. Yes, sir.

By the CHAIRMAN:

Q. Was that a general thing, or confined to those who have means?—A. Those who have means.

Q. These persons were willing to pay for exclusive accommodations, or something of that sort, I suppose?—A. Yes, sir.

Q. Well, that means, does it, that while certain classes of people are allowed to bathe everywhere now, that if a bath-house was erected making it more exclusive these persons of means would be willing to pay more? For instance, if they could bathe where people affected with infectious diseases could not bathe, they would pay more?—A. Yes, sir.

Q. And they are willing to pay more where they are assured against any liability to contracting disease?—A. Yes, sir.

C. W. FRY recalled.

By the CHAIRMAN:

Question. Will you explain what the book is that you hold in your hand?—Answer. This is a book kept by the secretary of the bath-house association, embodying the report of the auditor—the weekly reports of the auditor, showing the amounts received from the several bath-houses and the amounts disbursed, or rather distributed, to the several proprietors.

Q. Is that book intended to be a copy, and is it a counterpart of the auditor's book?—A. It is not intended as a copy of the book, but to give in substance the auditor's report, and it is rather more concise and abridged, but shows the result—the gross receipts and the amount distributed.

Q. Well, where did you get it if you ever had it, and under what circumstances?—A. In October last, Mr. Long, the former secretary of the bath-house association, and also manager of the Rammelsburg bath-house, in which latter position I succeeded him, gave me this book to deliver to Mr. Gaines, whom he said would succeed him as secretary of the association. He gave it to me, at the same time turning over other papers that belonged to the association, showed me the combination of the safe—this book being in the safe—and showed me how he made these entries from the auditor's report, and asked me to explain it to Mr. Gaines, which I did. When I gave it to Mr. Gaines he was about to leave for several weeks, and as Mr. Gaines was secretary, he turned the book over to me and asked me to keep it and write up the reports of the auditor until he had returned, which I did. These first entries are in my handwriting.

By Mr. STORM:

Q. They commence at what week?—A. The 78th week.

Q. What is the date and the month?—A. October 14, 1883. For the first seven or eight pages here it is in my handwriting. These entries were made at the time that the dates indicate.

Q. Were those made by you?—A. Yes, sir.

By the CHAIRMAN:

Q. Who made the previous entries?—A. They were made by Mr. Long, so he told me, and I believe it is his handwriting.

Q. You believe that to be his handwriting do you?—A. Yes, sir.

Q. And the other entries you say were made by Mr. Gaines, while those entries following were made by you?—A. Yes, sir.

Q. Is any expense connected with any bath-house in these statements?—A. No, sir; none except the expenses of the pool, the auditor's salary, &c.

By Mr. STORM:

Q. You do not know whether these entries made by Mr. Long are correct or not; you have not compared them to ascertain that fact, have you?—A. No, sir.

By the CHAIRMAN:

Q. Do you keep an expense account of the bath-houses?—A. No, sir; I do not.

Q. Who keeps this?—A. Mr. Gaines, for the Independent, and the Rammelsburg also.

WILLIAM J. LITTLE, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside, and what is your business?—Answer. Hot Springs. I am a merchant.

Q. How long have you been here?—A. I have been here about twelve years.

Q. Have you been acquainted with the management of the bath-houses here during that time, as to the bathing facilities, &c.?—A. Not intimately. I never had any connection with any of them. I have seen them all in operation since I have been here.

Q. Well previous to the formation of what is known as the bath-house pool association, what complaint, if any, have you heard made against the management of the bath-houses, as to the method of bathing, &c.?—A. I do not remember that I have heard any complaint either before or since the formation of the pool.

Q. Do you think the formation of the pool is conducive to the public interest or not?—A. I have heard some complaint about the pool since it has been formed, as being to the disadvantage of the public.

Q. What was the cause of these complaints?—A. Principally because it was controlled by a few parties.

Q. Was it complained that the public and invalids were not accommodated by reason of the bathing-houses being in the hands of the pool?—A. No, sir.

Q. Then the complaint simply was that the bathing establishments were in the hands of a few parties?—A. Yes, sir.

Q. Did you hear any complaint that anybody else was prevented from engaging in the bathing business, if they wanted to?—A. I heard some persons speak who seemed to have been prevented from getting a lease by parties who had more influence, perhaps, than they with the Interior Department or superintendent. I think that is about where all the complaint came from, that I ever heard made in reference to it.

Q. Have you heard any complaint on account of the insufficiency of the accommodations for the public and invalids, by reason of the pool?—A. No, sir; I never heard any complaints of that kind.

Q. Under the old system was there not a great deal of drumming and pulling and hauling of visitors by drummers of the different bath-houses?—A. There was always drumming before the pool was formed.

Q. Has there been any since?—A. I have not heard of any; no, sir.

By Mr. STORM:

Q. You never heard that competition and drumming led to high prices, have you?—A. No, sir; those lead to lower prices.

Q. And the result of such competition is to reduce rates?—A. Yes, sir.

Q. You never heard of a monopoly cheapening rates did you?—A. No, sir.

Q. Monopolies are usually formed for the purpose of controlling prices for their own benefit, are they not?—A. Yes, sir.

Q. This pool is composed of your wealthiest and most influential citizens, is it not?—A. Yes, sir.

Q. And they exert a great influence upon all the material interests of this place, do they not?—A. Yes, sir; the citizens interested in the pool do.

Q. And they do not only control directly and indirectly the bathing, but have more or less influence in other interests of the town, do they not?—A. Yes, sir; I believe nearly all of them are large property holders, outside of their bath-house interests.

Q. It has been complained here that this pool had power enough, or the influence to get a lease, when others could not get it?—A. It has been a common saying here that the bath-house pool controlled the superintendent, and seemed to carry matters of that kind any way they wanted to, but whether that is true or not I do not know anything about it.

Q. Well, influence is a difficult thing to trace, and you have to get at the circumstances surrounding the affair, to find out where the influence comes from, do you not?—A. Yes, sir.

Q. Do you know any other body that exerts as great an influence in the matter of bathing privileges as this pool?—A. No, sir; I do not.

By the CHAIRMAN:

Q. Do you think the present rates too high?—A. No, sir; I do not. I believe the baths given are worth more money than is charged for them.

By Mr. STORM:

Q. The question is not what a monopoly may charge at a given time, but their power to charge more, and that is what is objectionable, is it not?—A. Yes, sir.

By the CHAIRMAN:

Q. Has the price for a bath been changed since the formation of this pool?—A. I have not heard of that. If there has been any change I have not heard it.

H. M. RECTOR, jr., recalled.

By the CHAIRMAN:

Question. In your examination last night you stated that a Mr. Southard made up these books of yours?—Answer. In part.

Q. What did he make them up from?—A. He made them up from memoranda and books furnished him by me.

Q. Did you ever compare these entries made by him with your books and memoranda?—A. No; not very thoroughly. I looked them over casually.

Q. Is this the book by which you have declared the dividends to the owners of the bath-houses and paid money to them?—A. That is part of them.

Q. Is there any other book?—A. There is a book preceding this one.

Q. Is it the same character of book?—A. The same character of book exactly.

Q. And upon that you have paid to the proprietors of the bath-houses money due them as dividends from the association?—A. Yes, sir.

Q. Are you the superintendent of a bath-house?—A. Yes, sir.

Q. Which?—A. The new Rector.

Q. As well as the auditor of the association?—A. Yes, sir.

Q. I will ask you what pro rata of the receipts of a bath-house is necessary to pay the employes of the bath-house, such as manager and superintendent, &c., and the amount paid for water rent, &c.?—A. Well, I never made an estimate of that character.

Q. Are the expenses of the bath-houses kept by anybody in the bath-house, by the superintendent, or anybody else?—A. Yes, sir; there is a regular set of books kept for the Rector bath-house.

Q. And those books show exactly what those expenses are, do they?—A. Yes, sir; to a cent.

Q. Now, what are the items that enter into the expense of a bath-house?—A. In the first place there is the water rent, and then there is the repairs to the house. Then, of course, the pay of the men who are employed to run it, the superintendent, and then the expense of wood and gas. These are the items that usually enter into the expense account.

Q. Well, the books of each bath-house would show the amount of expenditure for these items, would they not?—A. The books of my bath-house do.

Q. That is the new Rector?—A. Yes, sir; the new Rector.

Q. Now, does each bath-house have a superintendent, or a man there in charge?—A. Each has.

Q. How many do they have; more than one?—A. The new Rector has more than one.

Q. Are there any other employes in the bath-house that are paid for their services by the proprietor, except the superintendent?—A. No, sir.

Q. The servants and attendants are paid by the guests, are they not?—A. Yes, sir.

Q. That is what I was trying to arrive at.—A. Yes, sir.

By Mr. STORM:

Q. You do not pretend to say that you have made a comparison yourself of the statements and items in this book to see that they were correct, do you?—A. The ticket account do you refer to?

Q. This book you put in referring to the sale of tickets?—A. I pretend to say this, and not only pretend to say it, but will prove that the statement I submitted here yesterday is the account of money received.

Q. We did not ask you that.—A. I was going to say that I compared that part in reference to the amount that was taken in for 16 months.

Q. And you were examined yesterday in reference to this book, were you not?—A. Yes, sir.

Q. And you could not explain the ticket account, could you?—A. No, sir; I am not particularly familiar with the ticket account.

Q. That was my impression.—A. You are correct in that impression, and if the committee will permit me I will state why I am not familiar with it.

By Mr. PAYNE:

Q. You stated last night that somebody else kept it, &c.?—A. Yes, sir; and I have a receipt for every ticket issued to the bath-houses, and I keep the receipts and my assistant takes his book and makes up the account from that book [pointing to a book before him].

Q. These reports are made Mondays, are they not?—A. Ordinarily they are.

Q. Are they accompanied by the money actually, or now?—A. The auditor has the money in his possession at the time he makes the report.

Q. Is it passed over to you or does he hold the money?—A. I hold the money as the auditor of the association.

Q. Then the money is passed over to you by the managers of the different bath-houses?—A. Yes, sir.

Q. And then these reports are made?—A. Yes, sir.

Q. When do you pay that money back to the proprietors of the bath-houses; how often?—A. Once a week.

Q. And how, by check or what?—A. By check on the bank.

By Mr. STORM:

Q. What bank?—A. The Hot Springs National Bank.

By Mr. PAYNE:

Q. You deposit the money there and give a check on it, do you?—A. Yes, sir.

Q. Coming back to the bath-houses, you are manager for one of these bath-houses, are you not?—A. I am.

Q. And you keep, of course, an account of the expenses?—A. Yes, sir.

Q. And that is a general ledger account, is it?—A. I have for the Rector bath-house. I keep the book on a double-entry system.

Q. So you have a ledger account?—A. I keep both a ledger and a journal.

Q. And the account for receipts and expenditures of the bath-house is balanced, how often?—A. Once a month.

Q. So that the ledger will show a statement of that account?—A. Yes, sir.

Q. And do you make a summary once a year?—A. No, sir.

Q. How often do the proprietors of that bath-house draw out their dividend?—A. Every dividend; I represent my father there; he owns one-half interest in the bath-house, and very often we do not need the account, and it is kept running.

Q. So that the account with each individual proprietor would show how much money he receives?—A. Yes, sir.

Q. Can you produce that book?—A. I can.

Q. And that book shows the accounts for how long?—A. Since last July.

Q. Did you keep a ledger previous to that?—A. Yes, sir; there was a ledger kept before that; I have been in charge of the Rector bath-house since it has been built.

By the CHAIRMAN:

Q. What does the book show as the cost of the Rector bath-house?—A. It cost between \$27,000 and \$30,000.

Q. Are there vouchers for that sum?—A. I am not positive whether I have vouchers or not. I think vouchers were filed when Mr. Gaines bought his interest.

Q. How do you collect this money from the managers of the bath-houses? Do you have a stub book?—A. No, sir.

Q. How do you get it?—A. I did for my own convenience, when I first became auditor, have blanks printed with stubs. I ripped out the receipt and took a memorandum on the stub. After I used up these books I found it was just as convenient to write out a statement. Two bath-houses have receipts written up in their books, and I write those receipts; three of them do. The other bath-houses I give written receipts to; I simply go in and they make out a statement of their receipts, or usually have it prepared, and I simply look over it, count their money, and indorse on the back "all right," and sign my name to it as auditor. I thought I had one of these statements here to show you gentlemen, and I believe I have it. I did have stubs for some time, and gave that up. No, sir; I find that I have not any of these statements.

By Mr. PAYNE:

Q. Did you see the book introduced in evidence yesterday by Captain Fry, manager of the Rammelsburg bath-house?—A. Yes, sir.

Q. Is the receipt attached to that book the kind of receipt that you give?—A. Yes, sir; I will say this in explanation of that matter, if this committee is going into that fully. I will say the actual amount of money received and the amount receipted for will not be the same. For this reason, that the auditor receipts to the managers of the various bath-houses for redeemed tickets as cash. For instance, if a bath-house redeems during the week \$5 or \$6 or \$20 worth of tickets, these redeemed tickets are turned over to the auditor and counted as so much cash and receipted for as cash.

Q. They are charged in the first place with the tickets as cash, are they?—A. Yes, sir.

Q. Is that an account between you and the manager, or between you and the bath-house association?—A. Let me get through and I will explain. When I make out my report to the executive committee on Monday afternoon, I state so many redeemed tickets in each bath-house, showing the amount redeemed by each bath-house for tickets, and that is deducted from the gross receipts of the bath-house, which leaves the net remainder, which is distributed.

Q. Is that matter an account between you and the manager, or between you and the bath-house association?—A. It is a matter between the bath-house association and myself. I was instructed to do the thing that way by the bath-house association.

Q. Is that an account between you and the manager in order to have him account for his receipts to you as auditor?—A. Yes. It simply gets rid of the redeemed tickets and takes them out of the hands of the proprietor of the bath-house, and the auditor destroys them.

By Mr. STORM:

Q. A redeemed ticket is a ticket that they do not sell, is it not?—A. That they did sell and part of it is bathed out and they redeem the remaining baths. For instance, a person buys 21 bath tickets, and he only baths 10 or 12 times, and if for any reason he does not want to take the full 21 baths, or has to leave town before doing so, or wishes to change his bath-house, the person can have the remaining unused tickets redeemed.

By Mr. PAYNE:

Q. This book with receipts, which was presented here yesterday, do these receipts correspond exactly with the amount of money paid to you, aside from the redeemed tickets? There was a book brought here by the secretary that had receipts written in it; now were not those receipts for the precise sum of money paid over to you, according to the account, and the same paid, not including the tickets redeemed?—A. No, sir; not if you refer to the receipts written up in one of these books of the manager of a bath-house by me. It is the gross amount taken in by a bath-house during the week.

By the CHAIRMAN:

Q. Here is a bundle of papers; look at those and see if those are some of the receipts you gave to the managers of bath-houses—they are from the Grand Central bath-house [handing witness papers referred to.]?—A. (After examining papers.) Yes, sir; they seem to be signed by me. I think those are all correct, sir, without a doubt.

By Mr. STORM:

Q. The Grand Central did not bathe any for some time—for several weeks, did it?—A. It was quite a while; I do not remember how long.

Q. It did not bathe any for the week ending January 26, 1884, did it?—A. Not according to my book.

Q. Nor the week ending December 30, 1883, and only 20 cents were taken in the week prior to that, and these are the receipts for the Grand Central, are they?—A. Yes, sir; they seem to be.

Q. That bath-house bathed fewer persons than any other in the pool, did it not?—A. It sold very few tickets.

Q. And sometimes it was not open for a week at a time, was it?—A. I always found it open when I called on Monday.

Q. Do you think a bath house kept open two or three weeks would have nobody to bathe in it?—A. I know different. I have known it to be open a year and nobody bathe in it.

Q. Was the superintendent of the Grand Central bath-house paid a salary during the weeks that nobody bathed there?—A. You will have to inquire of the owner, sir.

Q. You do not know anything about that?—A. No, sir.

Q. It is not likely that he was paid a very big salary, is it? Who was the manager of the Grand Central?—A. Mr. Ross, I believe. He was the man that furnished the account to me.

Q. Did you know why it happened that the Grand Central did not bathe any more than what it did during these times?—A. I only have my ideas. I do not know positively.

By Mr. PAYNE:

Q. What is your opinion?—A. It is an inferior house to begin with, and it is badly supplied with water, so the manager tells me, and they have not water very frequently, and for that reason it does no work; no business.

By the CHAIRMAN:

Q. Perhaps it would be clearer to the committee if you stated whether or not it is off the reservation.—A. Oh, yes; off the reservation.

Q. And an attachment of the old Grand Central Hotel that was moved away, was it not?—A. Yes, sir.

Q. And it is a regular old shanty, is it not?—A. Yes, sir.

By Mr. STORM:

Q. What are those receipts for [referring to Grand Central receipts]?—A. Amounts turned over to the auditor for a week.

A. P. ALDRICH, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside?—Answer. Hot Springs, Ark.

Q. How long have you resided here?—A. About nine years; between eight and nine years.

Q. Are you acquainted with the bathing facilities and the manner in which the Government property has been administered during the time that you have lived in Hot Springs?—A. To some extent I am. I have been connected with the building of nearly all the bath-houses.

Q. Do you consider the bathing facilities sufficient now to meet the public demands and accommodate all invalids that come here?—A. I judge they are, from the present number coming here.

Q. Do you think the bath-houses are properly managed?—A. I should think they were, as far as anything I have ever seen. I cannot see any difference now than a year ago before this pool organized. I say that they are all kept in good shape.

Q. Do you know anything about the mud hole upon the side of the mountain?—A. Yes, sir; I constructed a portion of it—the bath part of it.

Q. When?—A. At the time Mr. Barnes built the shanty.

Q. When was that?—A. That was about four years ago.

Q. Was it not already constructed; was there not a pool there naturally?—A. When I first came here there was a little bit of a hole scooped out of the tufa rock, and then a shanty constructed around it.

Q. Was it not enlarged before the shanty was built around it?—A. No, sir; it was not. That house got so bad that it was impossible to use it.

Q. What shanty was that?—A. That was the first shanty built over it. That was built by contribution.

Q. When was that?—A. That was about eight years ago. That was the first shanty that was built over it.

Q. That rotted down and decayed, did it?—A. Yes, sir.

Q. When was the second shanty built?—A. I cannot be positive in regard to date, but I think about four years ago, when Mr. Barnes built the present house over it.

Q. What was the size of that pool and the supply of water at that time?—A. Usually the pool was about 10 or 11 feet, probably, an oblong place in the rock, by 6 or 8 feet in width. I do not think it exceeded that in the first place, whilst it was under cover of the first house.

Q. Well, what quantity of water was there?—A. I can describe it. When the water was turned off from a waste-pipe at the southwest corner, and it was drained out and cleaned out, they would stop it up, and it would take about four hours to fill it so as to bathe again.

Q. Fill it from where?—A. From the seep below. Two small seeps come in from the bottom, but it is not strong. I have bathed in there many times myself, and you could go and lay over them naked. They could not have been very strong or you couldn't stand it.

Q. Were not there two springs in the bottom of the pool, and did not the water boil up from these springs?—A. Yes, sir.

Q. Was that not the source of supply of water for a number of years before they put any pipe in?—A. Yes, sir.

Q. And these two springs kept the pool full, did they not?—A. Not full, but they would rise enough to cover the bed.

Q. Was it not about 4 feet deep?—A. No, I do not think it ever got over 18 inches to 2 feet at the most.

Q. When was the pipe put in to conduct the water?—A. The pipe was put in at the time I constructed the house or pool.

Q. Do you mean the shanty or the other one?—A. The Barnes shanty.

Q. Up to that time no supply of water went in there, except that which came up from the bottom of the springs, did it?—A. That was all.

Q. What number of people bathed in there then?—A. It is pretty hard for me to judge. I have seen eight and ten and twelve in there at the time, and they were just as thick as they could be, and they were all bathing in the same water.

Q. And they had an idea that that water cured everything, didn't they?—A. Well, a good many of them did. It has acquired a wide reputation, I tell you, for its healing qualities.

Q. Is there any water in the Mud Hole now?—A. I could not say. I have not been in there for a number of years.

Q. Did you do any work on it for General Kelley?—A. I did some work on it for Mr. Barnes.

Q. But under General Kelley's administration was it not improved?—A. Yes, sir.

Q. What was Barnes doing there?—A. I dug it out and walled it up with a brick wall. The wall is about 17 or 18 inches in height that I put in there, and that water usually raises pretty near the height of the wall, including the water coming in by pipe.

Q. How did Barnes come to be there; did he lease it, or what?—A. I am not familiar with that.

Q. What did he do when there?—A. There are certain hours during the day and evening that bathers come there who are not able to pay and bathe free, and then these other people are charged so much a course of seven baths; I believe \$1 for seven baths.

Q. And this house over it was under the control of Mr. Barnes, was it?—A. Yes, sir.

By Mr. STORM:

Q. The doctors have pronounced that one of the best springs here to get the direct effect of the curative powers of these waters, have they not?—A. I suppose they have to an extent. Where they get their ideas for doing that was probably through the reports coming from the bathers there. It has gained a wide reputation, as everybody that bathed there seemed to improve faster than those bathing in the bath-houses. Whether that is actually a fact or not I could not state.

Q. If the power of the water depends upon the maximum heat, then the nearer bathers get to the source of the hot water the better, is it not?—A. I attribute it to getting it right from the mother soil.

By Mr. PAYNE:

Q. Where does this water come in and escape; doesn't the pool fill up?—A. When it fills so high they stop running; they do not rise any more. The pressure forces the water through at other outlets. The outlets are various.

Q. Is there any chance for this pool to cleanse itself?—A. Only at the outlet when they drain it. They had a pipe afterwards for that purpose.

By the CHAIRMAN:

Q. You are a builder and contractor, Mr. Aldrich, I believe?—A. Yes, sir; I have been in the business for the last twenty or twenty-five years.

Q. Have you examined this work being done upon the Hot Springs Creek?—A. I have, a great deal of it.

Q. Can you tell us if it has been done in a skillful and workmanlike manner?—A. I should first want to understand the quality of work that was being done.

Q. That is what we want to understand.—A. Masonry is classed in three classes: first, second, and third class, and this I should call third-class rubble work.

Q. And not first class?—A. Not first class.

Q. Nor second class?—A. No, sir; but I call it a good job of third-class rubble masonry.

Q. Have you noticed the mortar or cement with which the masonry is put up?—A. I have from time to time in different localities.

Q. And the sand used in that mortar?—A. I have.

Q. Do you consider it proper sand to use in work of that character?—A. I will answer that question in this way: I have been working in doing masonry in this place nine years, and there is a good deal of my work standing here to-day that I put up some years ago, and I used the surface sand that falls from the foot of these mountains.

Q. We ask as to the sand used in this work; we do not know whether that is surface sand or not?—A. I have been at the point where they dig it out of the mountain, and I have used a great deal similar, probably just like it, and I found it to give good satisfaction, and it gives a good strong bond in rubble masonry, used with cement or lime, either one. If you give it time it will set and become very strong.

Q. Did you notice the making of this mortar; its composition?—A. I did.

Q. Were the portions of cement and sand proper?—A. I would not want to testify to that, because I have not watched the proportions to any great extent.

Q. Have you noticed it since it has been put in the work?—A. I noticed in a number of places where it had set and I found it very hard.

Q. But your opinion is that this is third-class rubble work?—A. I judge it is a good third-class rubble masonry, and better than I would do if I had such a contract. If I had a contract for third-class work I would never dress the rocks any more than I would dress them with a hammer, and I notice that these contractors have had men on the bank dressing the rocks with gads, and in work like this I would not have done so.

Q. Well, suppose you had a contract to do first-class rubble masonry?—A. I do not consider it such class work. It is good rubble.

Q. Well, if it is good rubble work, how do you come to designate it as third-class rubble work?—A. There is first, second, and third class masonry. This is not first-class masonry, but it is good rubble masonry.

Q. Are there no distinctive kinds of rubble work? Could not one be good and one bad?—A. You could do a very poor job of either kind, but I should call this a good job of third-class rubble masonry.

Q. Then, you think there is no class about rubble masonry, do you?—A. Yes, sir; it is good work. First-class masonry is dimension rock dressed on all sides and on the beds and faces and vertical joints.

By Mr. PAYNE:

Q. What is second-class masonry?—A. That is where both beds are dressed, and the face or the vertical joints dressed back to a certain distance, as specified in the specifications.

Q. Does not rubble masonry belong to that class?—A. No, sir; it does not.

Q. What would you mean by range rubble masonry?—A. You call it range work and call it rubble work; but if you did range work you would have to dress the rock to make it range, and then I should not call it rubble work.

Q. What is the work in the arches themselves that they are now doing here, which appears to be in courses; would that be range rubble work?—A. Well, to an extent it would, and then again it would not, because each one of these courses is of uniform size clear through. Then in range work you set in large rock and then take two more to get to the surface; then I would not call it range, but each course, whether two or four or ten inches, or two feet thick, should be all one size to come under the head of range masonry.

Q. Does this sand they use make as good bond as the sand from the river down here?—A. I do not know; I have used all, and I cannot see any difference. I have mixed the two, and have made half and half—one-half river and one-half this kind—and mixed with cement or with lime, and after it becomes bonded you could not tell the difference. I believe I would prefer, if I was doing cement work, to get pure, clean sand, without any dirt in it of any description.

Q. Do you know whether any of this cement washed out during the late freshet and had to be replaced?—A. Yes, sir; I believe it did, but it was just put in. This is a slow-setting cement.

Q. How long does it take to set?—A. Mr. O'Brien said to me—

Q. Never mind what Mr. O'Brien said; we want your experience.—A. About four weeks.

Q. How long does it take this ordinary Ouachita River sand to set when used with this cement?—A. I do not think it will set any quicker with that sand than the other.

Q. What is the best sand you have down here?—A. I think the best sand we have comes right out of the creek here; I have used some of it. We get the deposit a mile or two below the town, and of course it is not in any great quantity, but where we can get it we use it.

Q. Well, where is the best sand you can get here in quantities?—A. Well, the most I have used in the greatest quantities has been from the creek. When I want to make strong cement work I have been in the habit of using it, and unless the party requires some particular sand, I always go and get it. If I have my choice I get the creek sand.

Q. What would be a fair price per cubic yard for the masonry work on this creek improvement?—A. That work just as it is now?

Q. Yes.—A. I should judge those walls below the skewbacks to be worth \$8 a yard, and I should, if I was going to bid on the work—I would estimate from the skewbacks up to the top of the arch to be worth \$12.

Q. That would make about how much for the entire arch, side walls and all? What would it make it worth for the entire masonry work taking it altogether?—A. Take it altogether I should think it ought to be worth from \$9 to \$11, or somewhere in that neighborhood.

Q. Can you not figure closer than that?—A. I might figure closer if I figured on the job and was one of the bidders.

Q. Did you not bid on this kind of work when it was to let?—A. I did not bid on this kind of work; I bid on the granite work.

Q. You say you bid on the granite work; why did you not bid on this work?—A. I had no opportunity to rebid.

Q. Have you made any effort to obtain a subcontract?—A. I did. I offered to put that work in for \$9.

By Mr. STORM:

Q. Did that include the arch?—A. No, sir; that did not include the arches.

By Mr. PAYNE:

Q. That was for the side-walls, was it?—A. Yes, sir; and he would not entertain that, and I was idle at the time and made him still another proposition. I proposed to do it, I think, for \$7.50, and he said he would let me know, and he gave me an answer afterwards, some week or two afterwards, and he concluded that they would do it themselves, I believe.

Q. That was the work on the side-walls?—A. Yes, sir; the side-walls up there at the intersection of the two creeks.

Q. Were you to take this stone out of that wall?—A. Yes, sir; he told me that afterwards, and I fell in the price. He told me I would have two courses of the granite of that wall to put in for facing, and when he told me that I made the proposition of \$7.50.

Q. You did not offer to do it for \$6, did you?—A. No, sir; I did not.

Q. Now, was there enough granite to face the entire job you proposed to do?—A. He thought there was.

Q. What did you figure on, the basis of \$7.50?—A. I figured on the basis that it was there.

Q. Was that granite dressed or undressed?—A. Yes, sir; dressed.

By Mr. STORM:

Q. Did you do any work there yourself?—A. No, sir; not up there. I put in a little piece. This small piece running up Arlington Hollow.

Q. Was that any part of this improvement?—A. I contracted for that by the lineal foot.

Q. What did he give you for that?—A. Five dollars and a half.

Q. Where did the material come from?—A. Off the top of the mountain, right north-east of there.

Q. Was it similar in character to this other work?—A. Similar, but not dressed work.

Q. Did you use the same sand?—A. Yes, sir; the same sand.

Q. And the same cement?—A. He furnished me the cement.

Q. Well, he furnished you the cement, and you did the work for five dollars and a half?—A. Yes, sir; and I allowed him for it.

Q. In other words, you bought the cement for him?—A. Yes, sir.

Q. By rubble work you understand, of course, that the stone is not to be dressed on the face?—A. Yes, sir.

Q. The difference between first-class masonry and range-rubble work consists in one being dressed and the other not being dressed, does it?—A. In first-class masonry the stone is cut to dimensions.

Q. And that constitutes range masonry?—A. Yes, sir.

Q. And do you mean that every course is of the same size?—A. The same size clear through on each course.

Q. So the difference between range-rubble work and first-class masonry consists of the fact that in one the face is dressed and in the other it is not dressed?—A. No, sir.

Q. This is not range-rubble work that is done on this improvement, is it?—A. I say a great deal of it is ranged, to a certain extent.

Q. But the courses do not run evenly all the way through, do they?—A. No, sir.

Q. And that is true of the arch, is it not?—A. I guess it comes nearer to that in the arch than in the wall.

Q. They lay them in layers, but is each stone of the same size?—A. I have seen a great many, probably. They lay a course clear through of the same size, and then back it with concrete.

Q. That would not be range-rubble masonry, would it?—A. No, sir.

Q. Would you call this third-class because first-class consists of the edges and sides and faces being dressed?—A. Yes, sir.

Q. First-class rubble masonry consists of rubble work laid in courses, does it not?—A. I do not know that it consists of being laid in courses.

Q. But you only refer to the manner in which the work is done to make it first-class rubble work, do you not?—A. Yes, sir.

Q. So you would not classify masonry in reference to rubble work as to courses at all?—A. No, sir.

Q. If the materials were the same you would call that first-class rubble which was laid in ranges as well as that which was not?—A. Yes, sir.

By Mr. PAYNE:

Q. I want you to explain why you did that work for \$5 which was worth \$9.—A. Because I was idle, and, furthermore, I could do it much cheaper; almost one-third cheaper than Mr. Walton could do the arch work over the main creek.

Q. Was there any arch over the work that you did?—A. Yes, sir.

Q. How wide was that?—A. Only 6 feet.

Q. How high?—A. Eighteen inches. The walls were 2½ or 3 feet, I believe, high, and the spring of the arch was 18 inches. I had to make no skewbacks at all and had to dress no rocks. It was not necessary, because it was so light that the ordinary stone that we used to build the wall would make the skewbacks.

Q. Do you remember how many yards of masonry there was in this job?—A. I know what I estimated for it.

Q. How much?—A. Fifty-four yards.

By Mr. STORM:

Q. Now, would not a contractor rather lay a wall 2 feet thick than one 18 inches thick?—A. That would be owing to how he got out the rock. If it was thrown in promiscuously, perhaps it would be better.

Q. And would not a contractor rather lay an arch 5 feet wide than one 2 feet wide?—A. I expect so.

Q. You have to build a frame for the arch, whether it is 6 feet thick or 1 foot thick, do you not?—A. Yes, sir; we have to build centers.

Q. Now, if you have a contract that is at all paying, would you not just as readily spring an arch 17 feet as 6 feet?—A. No, sir; because it is more expensive for the timber, and because there is more to take out and reset, and the damage is more than a little, light center would be.

Q. But the difference in cost would simply be in the lumber and the scaffolding?—A. Yes, sir; and you would have to use more care in building that arch with that width than you would a little one. The center would have to be stronger to stand the pressure.

Q. But the only difference between the two would be the difference in the size of the timbers and the cost of it, would it not?—A. There are other expenses attending it. It takes more labor to get out the material for the work.

Q. But you are supposed to be paid for all your labor and additional material?—A. Yes, sir; of course that is very true.

Q. You cannot then put that in, because you are laying it by the yard?—A. No, sir.

By the CHAIRMAN:

Q. How deep does the wall go below the bed of the creek?—A. I know that it is a good ways to rock bottom, and I had to dig in the creek a good deal. In many places, especially in the vicinity of the Big Iron bath-house, I found no bottom. I think there are places in which the wall is from 4 to 6 feet below the surface of the creek.

Q. How is it above the Big Iron bath-house, up towards Whittington avenue?—A. I do not think there are many places above the Arlington that the walls are under the creek bed much, because the rock crops out pretty plainly.

Q. There is a rock bed to the creek from the Arlington hotel to Whittington avenue, is there not?—A. Most of the way.

Q. From that point down, what is your opinion of the average depth below the bed of the creek, taking it down as far as Malvern crossing?—A. Take it right through it will perhaps average 3 feet below the surface.

By Mr. PAYNE:

Q. Do you speak from observation?—A. Yes, sir; I have noticed the work from time to time as I was passing along there.

E. H. SUDDUTH recalled.

By the CHAIRMAN:

Question. Where do you reside?—Answer. I live in Virginia.

Q. How long have you been in Hot Springs?—A. About eight months.

Q. What is your business?—A. Superintendent of S. Walton & Co.

Q. In the construction of the improvement of Hot Springs Creek?—A. Yes, sir.

By Mr. STORM:

Q. Are you a mason by profession?—A. No, sir.

Q. Are you a contractor?—A. I have been, sir.

Q. In building walls?—A. No, sir.

Q. Is this the first wall contract you ever had?—A. No, sir. I have no contract here. I have been superintendent.

Q. Have you had charge of the erection of masonry walls previous to your superintendence on this work?—A. Yes, sir.

Q. How long?—A. About two years and three months.

Q. Well, sir, as to the manner in which this wall is constructed, is it properly constructed?—A. In my opinion, sir.

Q. You were the superintendent of it?—A. Yes, sir.

- Q. What kind of masonry would you call it?—A. It is rubble work, sir.
- Q. Range rubble work?—A. Well, some of it is range rubble work. You cannot call it rubble work; it is not ranged throughout the wall.
- Q. What about the sand that has been used?—A. Well, I think it is good sand, sir; that is, it gives a good bond.
- Q. How much of this cement was washed out during the last freshet?—A. Some of it was washed out where it froze after it was put in. The mortar put in last summer, which had time to set before the frost, is there and firm.
- Q. Was the sand in this work examined at any time by Mr. Joslyn, Assistant Secretary of the Interior?—A. I do not know that I saw him examine it. He was there and I noticed him around the sand, but do not remember what he said about it.
- Q. Did he say anything in reference to the use of it?—A. No, sir.
- Q. Did he say anything about the character of work being done?—A. Yes, sir.
- Q. What did he say?—A. He said he was satisfied with it.
- Q. Was that work better or inferior to the work done since?—A. The work we have done since Mr. Joslyn was here is better than the work done before that time.
- Q. Why have you done better work since?—A. As we got into the quarry we got better stone. The stone came out in larger and better pieces.

By Mr. PAYNE:

- Q. Do you know the thickness of the side wall?—A. The thickness of the wall runs from 3 to 5 feet.
- Q. What do you mean by that?—A. Three feet at the top and 5 feet at the base.
- Q. Do you mean to say that it is all that size?—A. It may vary a few inches. I do not say exactly 5 feet at the bottom and 3 feet at the top. At places it runs over, and at some places it may run under.
- Q. How much under?—A. Well, I would not say, sir; but a few inches.
- Q. How much of it runs under?—A. Very little, sir.
- Q. Can you state whether any of it goes below the base line?—A. Some places as much as 3 feet, and probably over.
- Q. How much is there of that, have you any idea?—A. Opposite the Ozark Bath-House—
- Q. How much is there of it; I do not care to go into details?—A. I do not exactly know.
- Q. How much of it is there that extends below the base line?—A. About an average of a foot is my estimate of it.
- Q. Both walls?—A. Yes, both walls throughout the 2,800 feet from one end to the other.
- Q. Did you ever measure up the work?—A. I made rough calculations. I never measured. I have measured the walls in different places.
- Q. Do you know how much was constructed up to the 1st of January—how much stone masonry?—A. Every month I make a rough estimate of how much work we get out, but keep no notes or account of it in any way.
- Q. Do you know now about how much there was?—A. I have never seen the books or estimates turned in or anything of the kind.
- Q. What did you do with the estimates you made?—A. I made them on a blank book and wrote upon one side and put something else on the other side, and tore it up.
- Q. What did you do with it?—A. I do not know.
- Q. Did you give it to anybody?—A. I just did it for my own satisfaction.

By Mr. STORM:

- Q. Did Mr. Walton keep a statement?—A. Of what I made?
- Q. Yes.—A. No, sir.
- Q. Mr. Walton was here most of the time, was he?—A. Yes, sir.
- Q. Did he leave the memorandum of the quantity of work done to you?—A. No, sir; not quantity.
- Q. I thought you said you kept a sort of memorandum?—A. Just for myself.
- Q. Were you working by the day for him?—A. I am working by the month.
- Q. And you had no personal interest in knowing how much work you did when you were working by the month?—A. Just as much interest as him.
- Q. And you kept the run of the work for the protection of your employer, is that the idea?—A. Yes, sir; and to give myself an idea of how much was done during the month.
- Q. For what did you do that?—A. So I could say to Mr. Walton about how much we had done, to explain to him.
- Q. You wanted to know whether the Government engineer was measuring your work correctly or not, I suppose?—A. I wanted to see how near my measurement came to his.
- Q. You did not want it for yourself, you say, and you did not give it to Mr. Walton, but you kept it yourself?—A. I said to Mr. Walton about how much masonry we had in.

- Q. But you never furnished him an account, did you?—A. No, sir.
 Q. How did your estimate compare with Mr. Hamblen's estimate afterwards?—A. There were the two last estimates that I thought he was short in.
 Q. How was the average?—A. Well, the others were about what I expected.
 Q. Did you see him making the measurements?—A. Yes, sir.

OLARA LORENZO, being duly sworn, was examined as follows :

By Mr. STORM :

- Question. Where were you born?—Answer. In Italy.
 Q. How long have you lived in this country?—A. Eleven years. I have been in this country since the 20th of March, 1872.
 Q. What is your business occupation?—A. Stone mason.
 Q. You have been at work here on this masonry work along the Hot Springs Creek, have you not?—A. Yes, sir.
 Q. What have you been doing?—A. Laying stone.
 Q. Well, what do you think about that work?—A. Well, I think that work is very solid work for rubble work, what you call it.
 Q. How about the stone used; is it good?—A. Yes, sir; very good stone.
 Q. How is the sand?—A. Sand I have nothing to do with; I lay the stone.
 Q. Do you know if the stone walls at the lower end of the creek here are below the bed of the creek or not?—A. Yes, sir; some of it below the creek bed.
 Q. About how much is it below?—A. Some places not far and some places far. Some places about 5 feet, and some places 8 and 9, and a good deal of difference. There is a good deal of difference on account of the slope, and some places it will run down 5 feet and some places 8 and 9 feet.
 Q. What is the average throughout the whole wall as to the depth below the bed of the creek?—A. I do not know; may be some places 2 feet; may be 2½ and some places 18 inches below the wall. Some places may be 3 feet. There is a good deal of difference.
 Q. Is the rock sometimes raised up by concrete to put the stone on?—A. Some places it is not right to put concrete down and lay solid rock on top.
 Q. How high is the wall on an average throughout the entire work?—A. I got the level and I never measured it.
 Q. And you do not know how much it would average?—A. No, sir.

By Mr. PAYNE :

- Q. Do you know what the thickness of the wall is?—A. About 3 feet 4 on top and 5 feet on the bottom. Five feet at the bottom and 3 feet on top.
 Q. How do you know that?—A. I know because I built it myself.
 Q. Did you measure it?—A. Yes, I measured. I used my line on the front.
 Q. What made you build the wall 3 feet 4 on top?—A. Because it was the measure given to me.

By Mr. STORM :

- Q. How wide did you put your line below?—A. I stretched my line on this side and then on the other side.
 Q. How wide did you place it?—A. I measured across.
 Q. Five feet across?—A. Yes, sir.
 Q. All the time?—A. Yes, sir; all the time.
 Q. I believe you say that you know nothing about the quality of the sand or mortar?—A. I never see them make the mortar.
 Q. But you can tell whether it makes a good bond or not?—A. Yes, sir; the cement is very good.
 Q. So you think the cement makes a good bond whether the sand is good or not?—A. I say it makes a good cement.

ROBERT MECKON, being duly sworn, was examined as follows :

By Mr. PAYNE :

- Question. Are you a laborer on this job out here on the creek?—Answer. Yes, sir.
 Q. And have been so since the work commenced?—A. Yes, sir.
 Q. What part do you do?—A. Derricking on the first commencement.
 Q. Do you know how deep that wall goes below the bed of the creek?—A. There are parts down 5 feet, 4 feet, and 3 feet, and so on.
 Q. Below what?—A. The level of the creek.
 Q. What are the extreme heights of the side walls to the top, at the deepest places?—A. I judge the deepest places it is near about 9 feet.
 Q. At what points?—A. Here at the Ozark Bath-House.

Q. At the lower end of the work how is it?—A. Near the lower end and another place I think it is fully as deep; where there was a bad hole.

Q. Did you ever measure it?—A. I never did measure it.

Q. Except with your eye?—A. Yes, sir.

Q. When you say that you did the derrick work, you mean the hoisting of the stone into the side walls?—A. Yes, sir.

Q. And that is all you know about it?—A. I work every day.

Q. Is there any other place where the wall goes below the bed of the creek?—A. Yes, sir.

Q. How many places?—A. Opposite the office, on the other side from the opera-house. The foundation is high there.

Q. There are places where the wall does not go down to the bed of the creek, are there not?—A. No, sir; no places. There might be at the Arlington, I reckon.

Q. Are there any places where the wall is not 5 feet to the top?—A. I do not know any place that it is not 5 feet.

Q. But you have never measured it, not even with your eye, have you?—A. I looked at it daily.

Q. Is not there quite a stretch near the Arlington which is not 5 feet above the rock?—A. I judge there is not less than 5 feet there.

A. A. Fleming recalled.

By Mr. STORM:

Question. Have you made any measurement of this masonry on Hot Springs Creek?—Answer. I did yesterday.

Q. Who was with you?—A. Mr. Lowe, Mr. Johnson, and Mr. Hamblen and Mr. Sudduth.

Q. And you made a measurement there?—A. We made a measurement of what we could see.

Q. Have you the result of your measurement?—A. I have, sir. Colonel Lowe took the notes, and Mr. Lowe and myself computed the figures together.

Q. What part of the work did you do in the measurement?—A. I took the end of the tape and saw the notes put down myself, and I helped to compute them, or rather I computed them and Colonel Lowe computed at the same time, and I presume Mr. Johnson did the same.

Q. You all had then, of course, the same data?—A. Yes, sir; we all had the same data to go by. There was one portion we measured before Mr. Johnson came up, and that was the portion above the junction of the two creeks, at Whittington, Park, and Central avenues.

Q. That was above the Arlington at what was called the Wye, was it not?—A. Yes, sir; that is the place. We did not include that, and Mr. Johnson did not include it before, but that is a little sewer.

Q. You did not treat that as part of this improvement, did you?—A. I forgot entirely about its being done and did not include it.

Q. Into how many sections did you divide your work?—A. We have it divided. Colonel Lowe has all that in there, but I made a summary of the gross amount.

Q. What is the gross amount?—A. The gross amount I made is 5,927 yards.

Q. Is that for the whole masonry of the improvement?—A. Yes, sir. We could not go down to the depth of the wall. There was no possibility of getting that.

Q. Have you got a calculation of the arch separate from the side wall?—A. I have not in here. You can get that from Colonel Lowe.

Q. In your calculation what did you take for the width of the base of the wall?—Five feet.

Q. And what on top?—A. Three feet.

Q. And the arch?—A. I took it at 18 inches at the crown, and not quite 2 feet 10 inches, although I made it more than that, at the outside at the spring.

Q. And the skewbacks you calculated separately, I suppose?—A. Yes, sir; the skewbacks are calculated separately.

Q. Have you got the sectional area of the arch separate on your paper?—A. Yes, sir.

Q. Can you tell me what you made the sectional area of the arch?—A. There are two kinds of arches, you are aware, the 17-foot base and the 14-foot base.

Q. What is the sectional area of the arch above the arch?—A. Colonel Lowe has that. I think 48 feet 8 inches is the area.

Q. Of a 14-foot arch?—A. Seventeen-foot arch.

Q. And a base of 2 feet 10 inches for the spring and 18 inches for the crown?—A. Yes, sir.

Q. What is the radius of the curvature?—A. I think it was 9. We measured from the center; 9 feet or something, I believe; but he has that.

Q. What is the length of the segment of the arch below the spring?—A. We got the segment of the middle 22 or 23 feet; 22 feet, I think.

Q. What did you make the reverse side?—A. Five feet.

Q. Was that measured from the top of the wall?—A. Yes, sir; 5 feet.

Q. The arch is a true circle on the inside, is it not?—A. Yes, sir; it is supposed to be.

Q. Did you estimate the wall on an average or by the sections?—A. Well, as we went down we divided them. In the first place, there were some with skewbacks and some without; and we had six or seven different places where we stopped on account of the break in the walls. Some places were higher and some lower.

Q. Did you in any case get down to what you considered the foundation of the wall?—A. In some cases; in many cases.

Q. In all cases?—A. No, sir.

Q. Was it possible to do so?—A. I was glad I went, because it called to mind what I saw when they used the steam-pump. They went down farther than we could get; and in another place there was some concrete that we could not get at. There was a place opposite the opera-house where I myself had pipes put in.

Q. Were there sections at which you could get at the depth throughout, in which you were satisfied yourself you reached the entire depth?—A. Yes, sir.

Q. How did you find the width of the wall on the last work done; I think at the Alum Spring? I suppose you know where I mean?—A. There is a place there where the lower part of the wall is a little short, but very little of it, and some others I made a deduction of 40 yards for shortage all the way through.

Q. And whatever measurements you have helped to make you have done the work as accurately as you could, under the circumstances, I suppose?—A. Yes, sir; as accurately as I possibly could. Mr. Johnson was with us, and we took his advice.

By Mr. PAYNE:

Q. And you and Colonel Lowe figured together?—A. Yes, sir.

Q. Did your figures agree?—A. Yes, sir. And if we did not agree we went over them to see who made the mistake.

Q. And you compared your computations all the way through, did you?—A. Yes, sir.

Q. And the result was the same, was it?—A. Yes, sir.

By Mr. STORM:

Q. Can you give us the formula on which you made your calculation of this arch?—A. Of course, I can get that. Of course, we found out, in the first place, what it would be with a true circle. My remembrance is now that it was 61° instead of 90° .

Q. I want to know the formula by which you calculated this arch, on account of it being different in its thickness?—A. I did in this matter take it as being less. We called the radius just 9 inches more than the outside. In other words, it was 18 inches at the top, and we continued that circle all the way around.

Q. You added then another foot in thickness when you got around?—A. Unfortunately, I did not add that. I ought to have done it, but I did not.

Q. Give us the mathematical formula upon which you made your calculations for the arch?—A. I have not my notes with me.

Q. What did you call the average thickness of the arch all the way through?—A. Two and fifteen one-hundredths. Colonel Lowe has all the notes.

Q. How did you get the length of this arch from skewback to skewback, from the inner or outer circle?—A. I took it 9 inches up from the inner periphery.

Q. How long was that line where the walls were 17 feet apart?—A. To the best of my remembrance, 22 feet and some odd inches.

Q. The whole segment?—A. The whole length of it, to the best of my remembrance, I think, was 22 feet and 2 or 3 inches, or something like that.

AUGUSTUS GILARDI being duly sworn, was examined as follows:

By Mr. PAYNE:

Question. Are you a mason?—Answer. I have been superintendent in many places in stone masonry business.

Q. On this job over here?—A. On this job and others.

Q. Do you know anything about the thickness of these side walls?—A. Yes, sir.

Q. How thick are they at the top?—A. Three feet four.

Q. How thick are they at the bottom?—A. Five feet.

Q. All the way through?—A. Yes, sir.

Q. Do not they run under that anywhere?—A. No, sir; that is my order.

Q. Is not this wall at this end of the improvement less than 5 feet thick at the bottom?—A. The wall I have been on myself has been no less.

Q. Were you at that point?—A. I started work up there at the other end and worked down to here.

Q. Then you have worked on the whole job?—A. I went to different points. I worked on the derrick as we moved.

Q. Do you know whether that is good work?—A. Yes, sir.

Q. What kind of work is it?—A. Second-class masonry.

Q. Is there any other name for it that you can give?—A. I do not know myself.

Q. Do you know what rubble work is?—A. Yes, sir; I worked in 1872 on rubble work.

Q. Is this rubble work?—A. There is a difference. Some they call it rubble and some they do not.

Q. Those that do not call this rubble, what do they call it?—A. I do not know what they call it; you are the man to guess.

Q. Do you know whether this is good mortar or cement?—A. From what I find out myself the cement is good.

Q. Do you know much about sand?—A. I am not a good guesser on that.

Q. Is there any of the wall that extends below the bed of the creek?—A. Yes, sir; I can prove that.

Q. All we want is your testimony.—A. Yes, sir; the testimony I give to that. You know I am not an Englishman.

Q. Is any part of the wall below the creek?—A. Along the south end down here in some places.

Q. How long is the portion of the wall at this lower end below the bed of the creek?—A. All I built myself. All this is under the bed.

Q. What is the length of the wall that is below the bed of the creek at this lower end of the improvement?—A. I cannot tell you how many feet. I never took the measurement.

Q. Give your judgment.—A. All where it is rough rock. Some places 1 and 2 feet, and some places 6 inches, because it is rough and is not level.

Q. Is it to any extent 2 feet below?—A. Some places.

Q. How much is the deepest?—A. The deepest I found myself, I think, 6 feet.

Q. How high did that make the side wall?—A. Well, I mean 6 feet from the bottom to the top of the wall; 6 feet and 6 inches, I think. I had no order to take any measurement for that.

Q. And there is some of the wall that is not so high, is there not?—A. No; because there is a difference in the rough rock.

Q. Is that where the water is so low, or where is it?—A. I cannot guess. Sometimes I might be mistaken if I guessed, though.

By Mr. STORM:

Q. Where were you born?—A. In Italy.

Q. When did you come to this country?—A. In 1872.

ROBERT CRAWFORD, being duly sworn, was examined as follows:

By Mr. STORM:

Question. What is your occupation?—Answer. I am a mason.

Q. Did you work on this job here on the Hot Springs Creek?—A. I did, sir.

Q. Did you work on these walls at the lower end of the improvement?—A. Yes, sir; on the lower end.

Q. Is the wall built down to the bed-rock?—A. Yes, sir.

Q. How deep does it go below the grade-line on the stream?—A. Well, in some places it must be 3 feet below. At some places it is not so much.

Q. How high is the wall at the places where it goes down the least, do you know?—A. I suppose where I worked it was 5 or 6 feet. I could not say exactly what it was in the deepest places.

Q. What kind of masonry do you call that?—A. I call that third-class masonry.

Q. It is of the style denominated rubble work, is it not?—A. Yes, sir.

Q. Do you know anything about the sand that has been used on this work?—A. Yes, sir; it is very good sand.

Q. Where are you from?—A. Virginia.

Q. Have you never seen better sand than this?—A. Yes, sir; but on different work.

Q. Is this sand what a mason calls clean, sharp sand, so that when the trowel is put over it you may feel the grit in it?—A. Yes; good grit.

Q. Has it pebbles or sand in it that makes the grit?—A. There are some pebbles in it.

Q. Do you consider that this work is done well?—A. No work has been slighted to my knowledge.

Q. You never made any measurement of the thickness of the walls, did you?—A. The thickness of the wall is 5 feet at the bottom and 3 feet 4 inches at the top.

Q. Is it really 3 feet 4 inches at the top?—A. Yes, sir; every foot I built.

Q. Do you think that wall is uniformly 3 feet 4 inches wide at the top?—A. Yes, sir; it is all 3 feet 4 inches that I worked on.

Q. Do you mean that where one stone projected further than the other, and you did not want to break it off, you measured that?—A. No, sir; I measured only the actual width of the wall.

JOHN HART, being duly sworn, was examined as follows:

By Mr. PAYNE:

Question. What is your business?—Answer. Stone-cutter.

Q. Have you ever done any stone masonry work?—A. Yes, sir; I have done some.

Q. Where?—A. On this creek.

Q. Anywhere else?—A. On the Hot Springs Railroad.

Q. But you worked on this creek, didn't you?—A. Yes, sir.

Q. Did you ever lay up any wall?—A. I was dimension man.

Q. What did you do as dimension man?—A. I picked out stone and sent them down to the masons.

Q. Do you know what the height of the wall was from the top down?—A. The part I know of, some places there were big holes that we had to put concrete in.

Q. How far was it from the top of the wall, where the skewbacks go on, down to the bottom of the wall in the deepest places?—A. Some places will run 6 feet and 7 feet.

Q. Will any places run 7 feet?—A. Yes, sir.

Q. Where?—A. Right down there by the Ozark Bath-House.

Q. How much in length was that which ran 7 feet?—A. I do not think more than 15 or 20 feet.

Q. How much of it ran 6 feet?—A. I could not tell exactly.

Q. You know nothing about the width?—A. Yes, sir.

Q. Did you ever measure it?—A. No, sir.

Q. Did you ever see any one else measure it?—A. Yes, sir; I saw the masons often measure it.

Q. What did you see them do in the way of measuring?—A. Put the rule on and see that it had the right dimension.

Q. Were any lines stretched in front?—A. Yes, sir.

Q. Were any in the rear?—A. Sometimes they would not and sometimes they would.

Q. Where you saw the wall measured, how thick was it at the bottom?—A. Sometimes 5 feet, and ran over it. If it ran over we did not cut it off.

Q. Did any run less than 5 feet?—A. I do not think any.

Q. How thick was it at the top?—A. Three feet 3 inches.

Q. What was their reason for measuring?—A. It is customary for them to do it.

Q. Did you ever see them measure the top?—A. Yes, sir; I noticed often that they measured it up.

Q. How much did you see them measure there?—A. From 3 feet to 3 feet 3 inches.

Q. What were they measuring for when you saw them measuring the top; to set the line or measure the top of the wall?—A. Measure from the front of the wall to see if it had the right thickness.

Q. And they only had one line up, did they?—A. Of course they had a back line sometimes.

Q. And sometimes they did not?—A. Of course, a man running a rubble wall can do it with his eye and run the wall without a line.

By Mr. STORM:

Q. If he had a line he would not need to measure, would he?—A. No, sir; sometimes a man wants to measure to get his line from one end to the other.

Q. Do you know Mr. Conger, superintendent of the Hot Springs Railroad?—A. Yes, sir.

Q. What is that stone used by Mr. Walton in improving the Hot Springs Creek?—A. I could not say what the nature of the stone is.

Q. Is it proper stone for that kind of work?—A. Yes, sir; I think so. I am pretty certain they are good stone, and they are placed on a natural bed, and I think the work is good.

Q. Are they harder than granite?—A. It is harder to cut.

Q. You do not cut them, do you?—A. Oh, yes.

Q. You find a smooth face for the front, do you?—A. Yes, sir.

Q. They do not spawl good, do they?—A. Some do and some don't.

Q. Did you tell Mr. Conger that in lifting those stones out you found that in hitching the hooks to them they dropped to pieces?—A. Sometimes they would.

Q. Did you tell Mr. Conger that?—A. Not that I recollect.

Q. Do you remember telling Mr. Conger, before this investigation, that when you grappled the stones with these hooks the stones dropped to pieces?—A. Yes, sir; if I am not mistaken, I did.

Q. If you said so it was the truth, was it not?—A. Yes, sir. He was asking me about the frost, and I told him that it had the same effect on this stone that it had on any stone with seams.

By Mr. PAYNE:

Q. How much of this stone dropped to pieces?—A. The stone with seams. It may have been from the blasting.

Q. Did the stone appear sound until you grappled it with the hooks?—A. Of course, they looked sound.

Q. You would not grapple them if they did not look sound, would you?—A. No, sir.

Q. And then when you grappled them they fell to pieces?—A. Yes, sir. There were several stones broke there during that frosty weather.

Q. About how many?—A. I do not know, as I know of only one that I had hitched that fell apart.

GEORGE NEWMAN, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Do you live here, Mr. Newman?—Answer. No, sir.

Q. Where do you reside?—A. My home is in Virginia.

Q. What is your occupation?—A. Stone mason.

Q. Did you work upon this improvement on Hot Springs Creek?—A. Yes, sir; I did.

Q. What did you do?—A. I helped to build the walls.

Q. As a mason?—A. Yes, sir.

Q. Did you work on the lower end of the wall?—A. Yes, sir.

Q. What was the distance down from the top of the wall to the bottom, where it rested on the bed rock?—A. Some places 2 feet; some not quite so deep.

Q. Measuring from the top of the wall, where the skewback comes in, down to the solid rock, what was the distance?—A. Some 6 and some 5—well, hardly any quite 6, but from 5 to 4.

Q. Sometimes the rock came above the grade, and the wall would not be quite 5 feet at such places, would it?—A. No, sir.

Q. What was the thickness of the wall where it rested on the ground or the bottom?—A. It was about 5 feet.

Q. And ran up to what thickness?—A. About 3.

Q. Do you know what the size of the arch was?—A. No, sir.

Q. Did you work on the arch, too?—A. Yes, sir.

Q. What have you to say about the sand?—A. It is good sand.

Q. Do you think it is the best kind of sand?—A. It is not the very best kind of sand, but it is good mortar sand. It takes longer to set than this other sand, but it makes as good cement.

By Mr. PAYNE:

Q. You have seen better sand, I suppose?—A. Yes, sir.

Q. Did you ever see poorer sand?—A. I used poorer sand in Roanoke City.

Q. Anywhere else?—A. Yes, sir; I saw worse sand used on the Richmond and Allegheny Railroad.

Q. Where else?—A. I do not remember.

Q. Could they not get any better sand in this place than this?—A. I do not know.

Q. Have you ever seen any better sand in this country than this?—A. I do not know that I have.

PETER ROZAZARA, being duly sworn, was examined as follows:

By Mr. PAYNE:

Question. What is your business?—Answer. Stone mason.

Q. How long have you been engaged in that business?—A. About thirty years.

Q. So you understand the business?—A. I do.

Q. Did you lay any of this wall over here?—A. Yes, sir.

Q. What kind of a wall is it?—A. It is a rubble wall.

Q. What is the thickness of the wall on top?—A. Three feet four inches.

Q. And about what at the bottom?—A. Five feet.

Q. How came you to make it 3 feet 4 inches on top?—A. The place I worked myself all on top was 3 feet 4 inches.

Q. And you think it will not run below that where you worked?—A. No, sir; it is not all along.

Q. How high is the wall from where the skewbacks go on to the bottom?—A. It depends upon the foundation.

Q. How high is the wall where the foundation is on solid rock?—A. Some of it is not less than 5 feet; some places 7 feet, and some places 7½ feet.

- Q. Did you ever measure it in any place where it was $7\frac{1}{2}$ feet?—A. Yes, sir.
- Q. What did you measure it with?—A. Some places it has gone down below that.
- Q. But did you ever put a measure on, for instance a rule, and measure it?—A. Yes, sir; I took a rule.
- Q. You really took a rule and measured it, did you?—A. Oh, yes.
- Q. What I was trying to get at was whether you guessed at it or actually measured it with a rule, to ascertain if it was $7\frac{1}{2}$ feet?—A. Oh, I see myself how high it is.
- Q. Did you ever take your rule and commence at the bottom of the wall and measure it at the top, at any time?—A. Not at any time.
- Q. Did you ever do it actually?—A. Yes, sir; so many times I do it; my partner say how much you got there, and sometimes he measure.
- Q. And when he said that, did you measure?—A. He measured.
- Q. Then you have seen somebody measure it?—A. Yes; we have been working together.
- Q. And you saw him measure in order to ascertain the height of the wall?—A. Yes, sir.
- Q. From what country are you?—A. Italy.
- Q. How long have you been in this country?—A. Since 1872.
- Q. And you did masonry work in Italy?—A. Oh, yes.
- Q. Is this good or poor sand that you have been using upon this work?—A. No, sir; good sand. I call it good.
- Q. You call it good, sharp, clean sand, with no dirt in it?—A. No dirt.
- Q. What do you call that in the sand that has no grit?—A. I call that all sand.
- Q. Does the cement set quick?—A. Yes, sir. You see to-day one arch is closed up two or three days. Then you see how it sets.
- Q. Suppose you finish up an arch to-night, how long will it be before you can take the center out?—A. When it is good enough.
- Q. Would you take the center out to-morrow if you had finished the arch to-night?—A. Yes, sir; it catch very quick. That arch we built Monday we take it out last night.

JOSEPH MOSCOW, being duly sworn, was examined as follows:

By Mr. STORM:

Question. Did you work on any part of the wall 9 feet high?—Answer. Some places 8 and some places 9 feet.

Q. How high or how deep down is that wall at the place where you went deepest?—A. Some places 7 feet and some places 9 feet and some 8 and some $6\frac{1}{2}$.

Q. How much of the wall is 9 feet deep; how long is it?—A. About 25 or 26 feet deep.

Q. Where is the place located that is 9 feet deep?—A. The last place I worked.

Q. Where is that place?—A. The last I worked.

Q. Can you show it to us?—A. Yes, sir.

Q. Where were you born?—A. In Italy.

Q. How old are you?—A. Twenty years.

Q. How long have you been in this country?—A. About sixteen months.

Q. You are working on this improvement of Hot Springs Creek now, are you?—A. I worked here, in Virginia, and in Kentucky.

Q. But are you employed here on this work now?—A. Yes, sir.

Thereupon, at 12 o'clock m., the committee took a recess to meet again at 1.30 o'clock p. m.

AFTER RECESS.

Committee met pursuant to adjournment.

JOHN P. FLANDERS, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you live?—Answer. I live in Iowa.

Q. How long have you been in Hot Springs?—A. Two months.

Q. What is your business here?—A. I am engaged here in investigating the question of enlarging the supply of water.

Q. I mean what is your profession?—A. I am an engineer.

Q. What sort of one, a civil engineer?—A. I have been engaged for several years in constructing water-works, as building engineer and in constructing and erecting plans for water-works.

Q. Are you acquainted with stone-work and masonry?—A. We have done a great deal of it in the course of our work.

Q. Do you think you are competent to judge of stone-work or masonry work?—A. I have had occasion to do considerable of it.

Q. But do you think you are competent to form an opinion as to whether or not this work done upon the Hot Springs Creek is good work?—A. I have formed my judgment in relation to it.

Q. Do you think you formed an opinion that would be a benefit to us in determining the character of that work?—A. I might.

Q. We do not know unless you tell us whether you think yourself competent or not?—A. I have had some experience in putting in foundations and work of that kind.

Q. Do you think you are competent to judge or not?—A. I should think I was.

Q. Well, have you noticed this creek work here?—A. I have noticed it from time to time.

Q. What sort of work would you pronounce that to be?—A. I think it very good work indeed.

Q. What would you call it?—A. I should call it mortar rubble work.

Q. What is mortar rubble work?—A. Where we use the stone miscellaneous, where the work is done with them as they come from the quarry, being interlocked and put in in the various sizes in which it comes out of the quarry.

Q. Undressed stone, is it?—A. Yes, sir.

Q. What is range rubble work?—A. That is what we call selected stone, not uniform.

Q. What sort of work would you call this?—A. This wall work I should call select rubble work.

Q. Would you call that work range rubble work?—A. I should the wall.

Q. Well, take the whole work?—A. Yes, sir; I think so.

Q. The whole of it?—A. I should think it would come under that head.

Q. Well, what is the thickness of these walls?—A. I have not measured them.

Q. What is the height?—A. I do not know, sir.

Q. Have you seen them?—A. I looked at them; yes, sir.

Q. Is the work arched?—A. Yes, sir.

Q. To what extent?—A. I do not know how much; but I know a portion of it is arched.

Q. What part of the work have you observed?—A. I have observed it where it is arched.

Q. At what particular locality?—A. Opposite the Arlington Hotel.

Q. Is it arched there?—A. They have been doing arching there since I came here, and further up, too.

Q. Have you noticed that work closely enough to say to the committee whether it is good work, and whether it is put up in a workmanlike and durable manner?—A. I should think it was.

Q. Did you notice the mortar that has been used?—A. Yes, sir.

Q. What sort would you call it?—A. It looks to me good for that class of work.

Q. Do you know what it is made of?—A. Made of cement and the material they have there, which is gravel and clay loam, I should think.

Q. Do they make mortar out of gravel and loam?—A. You can with a percentage of loam with it.

Q. Make it out of gravel?—A. Fine gravel and sand.

Q. What percentage of loam?—A. Use it perhaps about 20 per cent., I should judge.

Q. And how much sand?—A. The balance should be sand.

Q. The balance being sand and gravel and loam, is that the way they make cement?—A. Yes; that with the cement will make good mortar.

Q. Are those the ingredients with which they usually make mortar?—A. Yes, sir.

Q. Did you ever do any stone work?—A. I have had it done in my plans, in putting in foundations.

Q. Did you have your attention called to this improvement here by any one. Were you told to go and look at it?—A. No, sir.

Q. Do you testify from what you saw as you casually passed along?—A. Yes, sir.

Q. You would not like to give an opinion from such a casual observation, would you?—A. No, sir.

Q. Would you understand, if you had a contract for range rubble work, that each course had to be uniform throughout in thickness?—A. Well, not all of the same thickness.

Q. You would not understand that all the stone of a given range should be of the same thickness or height, would you, because that would be range rubble work, would it not?—A. I expect so.

Q. Could you put in one row of 6 inches in one course, and then twice that size in another, in range rubble work; it must all range, must it not, and range work means that the stones must be of the same size, does it not?—A. Yes, sir.

Q. Is this stone used all of the same size in each range?—A. No, sir.

Q. Then it is not range rubble work, as you understand it, is it?—A. No, sir.

By Mr. PAYNE:

Q. Have you not got that percentage pretty low for loam in sand to make the best mortar?—A. I have used it with loam in it.

Q. The question is, whether you think loam in 20 per cent. improves it, or makes a better bond, if you have any opinion upon that point?—A. I never considered it objectionable. Where we have used it with loam in it, we always considered it good.

Q. Take a bushel of sand, for instance, how much cement would you put with it?—A. About three parts of sand to one of cement.

Q. That would make it one-fourth cement?—A. Yes, sir.

SAMUEL WALTON recalled.

By Mr. PAYNE:

Question. Have you made any estimate of the measurement in regard to stone work done since the 1st of January last?—Answer. Nothing more than approximating up to the point where we have been working, and just stepping the distance; we have done I suppose—although I have made no accurate measurement, any more than I might guess at, to come within 100 or 200 yards, we have only been working a small force and part of the time did not do anything.

Q. What is it, an estimate, a guess, or what?—A. I would put the amount, which I can come within a 100 yards of, at between a 1,000 and 1,200 yards.

Q. How much was laid in January and how much in February, if you made any estimate of this?—A. I have made no estimate since the 1st of January up to the present time. I say between 1,000 and 1,200 yards since the 1st of January.

Q. Has anybody kept a record or made a measurement of what you have done since January?—A. I can come closer than that by going out and measuring it now.

Q. If you cannot make an accurate measurement now, how is the superintendent to do it?—A. That work done since the 1st of January has been arch work, with the exception of perhaps 50 feet, although I do not know the exact distance.

Q. Has anybody taken any measurement of work done since the 1st of January?—A. Not that I know of.

Q. If the measurement could not be made now, could you expect anybody to take a measurement when the time comes to pay you for this work?—A. I suppose Mr. Hamblen did. It was his business to have made notes. It is principally arch work that has been done since the 1st of January, and all he has to do principally is to get the width and length of the arch.

Q. Can you tell up to what point the work was completed the 1st of January?—A. I think so. Yes, I can point out what was completed up to the 1st of January, except what I stated, whatever might be in the side wall, some 40 or 50 feet, I cannot do.

Q. How long would it take you to measure the arch work and side walls and present it to us? I mean so much as has been done since the 1st of January.—A. It will take, I suppose, half a day. I do not know that it will take that long. I can give it to you to-morrow.

Q. It seems to me as it is principally arch work you could do it in half an hour?—A. Well, if I was right there, I could do it in a very short time.

GEORGE G. LATTA recalled.

By the CHAIRMAN:

Question. What are these papers here?—Answer. These signed by me contain the expense accounts of the different bath-houses—the items of expense and receipts.

Q. That is the Ozark Bath-House, Palace Bath-House and Independent Bath-House?—A. Yes, sir; for what time I had charge of it. You see we just take a year, for instance, so as to average it.

Q. In the case of the Ozark, it runs from May, 1882, to May, 1883.—A. Yes, sir.

Q. And the gross receipts seem to be \$5,804.02; insurance, \$160.50, and expense account \$552.66. Now of what does that expense account consist?—A. That expense account includes repairs, plumbing, soap, rugs, matting, mops, buckets, thermometers, looking-glasses, and matters of that kind. I will read the accounts of these three bath-houses.

Expense account of the Ozark Bath-House for one year, from 1st May, 1882, to 1st May, 1883.

Receipts for one year.....	\$5,804 02
Insurance.....	\$160 50
Expense.....	552 66
Superintendent's salary.....	900 00
Wood account.....	183 25
Water rent.....	302 50
	<hr/>
	2,098 91
	<hr/>
	3,705 11

Cost of bath-house	\$16,000 00
For wear and tear and destruction of bath-house by water, 10 per cent	1,600 00
Income for one year	2,105 11
	<hr/> 3,705 11

Expense account of the Palace Bath-House from May 1, 1882, to May 1, 1883.

Receipts for one year	\$6,733 51
Insurance and taxes	\$242 00
Water rent	345 00
Superintendent's salary	900 00
Wood	246 07
General expense	442 38
	<hr/> 2,175 45
Receipts in excess of disbursements	4,558 45
Cost of bath-house	26,000 00
For wear and tear, destruction of bath-house by water, 10 per cent	2,600 00
Income for one year	1,958 06
	<hr/> 4,558 06

Expense account of the Independent Bath-House from 1st January, 1882, to 1st January, 1883.

Receipts	\$4,095 10
General expense	2,235 49
Receipts in excess of disbursements	1,859 61
Cost of bath-house	17,000 00
For wear and tear and destruction of bath-house by water, 10 per cent ..	1,700 00
Income for year 1882	159 61
	<hr/> 1,859 61

This is the expense account of the Independent Bath-House while I was in charge of same.

Q. Are these statements taken from your books, and are they a sort of summing up?—A. Yes, sir; they are taken from our books. We have a regular set of books, kept by a regular book-keeper.

Q. I would ask you in reference to this item for wear and tear and destruction of bath-house by water, for which you allow 10 per cent; what does that mean?—A. I base that on this, that the testimony here showed that ten years was the life of a bath-house. Now, I do not consider the life of a bath-house ten years. I do not think they will last that long. The Rockafellow did not last quite four years; not the bathing part.

By Mr. PAYNE:

Q. What do you mean by the bathing part?—A. That part with which the hot water comes in contact.

Q. Do you mean the hot water in the tubs?—A. Wherever the hot water can come in contact with the timbers of the roof.

Q. Does this vapor touch or come in contact with the roof?—A. Yes, sir; when the bath-room doors are open it comes in contact with the ceiling.

Q. That does not amount to much with a hot fire in the bath-house all the time, does it?—A. You go over and see it dripping from the roof of some of those bath-houses, and you would think it amounted to a good deal. It depends a good deal on how the bath-house is constructed.

Q. To construct that part is a very small portion of the other expense of the whole house, is it not?—A. Oh, yes.

Q. I guess you could reconstruct that part for 10 or 12 per cent., could you not?—A. It depends on how long it has stood, and how the foundation underneath has been preserved. It all depends upon the condition of it.

Q. So that 10 per cent. on the whole structure is a pretty big allowance, is it not?—A. I do not think so. All the rear of the Rockafellow bath-house fell down.

By the CHAIRMAN :

Q. Have you the same general explanation to make in regard to all these items in the accounts you have read?—A. The wood, and insurance, and salary, and all these items are in the books. I can produce the books with all these things itemized. The books are preserved and you can see them.

By Mr. PAYNE :

Q. Do you furnish your bathers with soap?—A. No, sir; we do not. We furnish the soap to help cleanse the tubs.

Q. Do you furnish towels?—A. No, sir.

Q. You furnish nothing but hot water and tubs, then?—A. Not to bathers. We furnish everything else to our employes. We furnish mops and sponges and sand-glasses and thermometers, &c.

Q. Is it, or not, a fact that the bathers themselves have been compelled—I mean the servants—to paint the house and keep it up to some extent, as in the case of a pane of glass being broken, they would have to pay for putting it in, as well as be compelled to pay for the sawing of wood, at one house at least—in the New Rector Bath-House?—A. If so, I do not know. You will understand that the pool does not control anything as to the repairs of the house. I can answer as to my house, that we never exact anything from the help. They have never paid a nickle, not a cent. I do not know what you refer to, and I never heard it before. I can present all the books now, and am prepared to do it if the committee wants to go into that in detail.

Q. Do you pay any tax on this property?—A. No, sir; I did not pay any tax on the bath-house property. They assessed it and I defeated it in the courts.

Q. That belongs to the Government, I suppose?—A. Yes, sir; and I contended in the county court that it was not subject to assessment. We pay taxes on personalty, but not on the bath-house.

Q. I suppose the question is whether the bath-house is personalty or not, being a fixture put on real property, whether it is personal property?—A. We claim it is Government property and it is chattel real and not subject to taxation. I think the constitution is plain on that point. I have defeated that in the courts.

Q. What court?—A. The county court.

Q. Has it been appealed?—A. Not that I am aware of. If it has been appealed I have not been notified.

Q. Is it a recent decision?—A. It was decided in the January term of the county court.

Q. I suppose if the courts decide you have to pay you will do it?—A. I will do it when it is decided by the highest court in the State and not before.

Q. Well, you do not care about it yourself, and it is a matter for the citizens here?—A. Yes; that is all right.

Q. But you objected to the assessment and asked for it to be reduced?—A. Before the board of equalization, I did. That was personal property. They did not interfere with the bath-house property. My recollection of it now is that they did not pass upon the bath-house property.

A. B. GAINES recalled.

By the CHAIRMAN :

Question. Have you brought with you the papers required by the committee?—Answer. I hold in my hand papers which are asked for by the committee, I have signed these papers and they are all correct. They are as follows :

Expense account of the Rammelsburg Bath-House from 12th October, 1883, to 12th March, 1884.

Water rent.....	\$112 50
Salary account.....	250 00
Wood.....	148 60
Plumbing, thermometers, sand-glasses, gas bills, soap, &c.....	142 98
	<hr/> 654 08
Cost of bath-house.....	22,000 00
For wear and tear and destruction of bath-house by water, 10 per cent...	916 67
	<hr/> 1,941 13
Receipts.....	1,570 75
	<hr/> 370 38
Income.....	

I am unable to give any item of expense previous to the date above mentioned, as I was not interested in said bath-house previous to said dates, and the owners of said bath-house left me no books from which I could ascertain the same.

Expense account of the Old Hale Bath-House from December 30, 1882, to March 1, 1884.

Water rent.....	\$367 50
Salaries.....	735 00
Wood account	257 30
Insurance	75 00
Gas bills, plumbing, water-closet paper, thermometers, sand-glasses, soap, &c	416 96
	<hr/> 1,851 76
Cost of bath-house	15,500 00
For wear and tear and destruction of bath-house by water, 10 per cent. . .	1,550 00
	<hr/> Receipts
	6,641 08
	3,401 76
	<hr/> Income
	3,239 32

The above cost of bath-house is the amount paid by me to William Nelson (the owner of said bath-house) for the same. He left with me no books showing the cost of constructing the same, and I have no information in reference thereto.

Expense account of the Hot Springs Bath-House from 5th February, 1883, to March, 1884.

Water rent.....	\$195 00
Salary	260 00
Wood	95 20
Plumbing, thermometers, sand-glasses, soap, &c.....	189 83
	<hr/> 740 03
Cost of bath-house	5,000 00
For wear and tear and destruction of bath-house by water, 10 per cent ...	500 00
	<hr/> Receipts
	3,700 66
	1,240 03
	<hr/> Income
	2,460 63

The above amounts of \$5,000 is the actual cost of constructing building; this bath-house being off of reservation, and on deeded land, with the bath-houses and land, which is used for no other purpose, cost \$17,200.

Expense account of the Independent Bath-House from 22d August, 1883, to 1st March, 1884.

Receipts.....	\$2,425 75
General expense.....	994 30
	<hr/> Receipts in excess of disbursement
	1,431 45
Cost of bath-house	17,000 00
	<hr/> For wear and tear, destruction of bath-house by water, 10 per cent.....
	992 00
	439 45
	<hr/> 1,431 45

This is the expense account of the Independent Bath-House while I was in charge of the same.

Expense account of the Grand Central Bath-House for one year ending March 21, 1884.

Wood.....	\$55 00
Clerk's salary.....	240 00
Plumbing, &c.....	232 00
Closet.....	24 00
Repairs on house.....	160 00
Improvements.....	196 00
Water rent.....	165 00
	<hr/>
	1,072 00
	<hr/>
Cost of bath-house.....	1,500 00
	<hr/>
For wear and tear, destruction of bath-house by water, 10 per cent.....	150 00
	<hr/>
Receipts.....	1,585 82
	1,222 00
	<hr/>
	363 82

Income.—The above amount of \$1,500 is about the actual cost of constructing the building. This house is off the reservation, and on deeded land. The bath-house and land upon which it is located are probably worth \$6,000.

Q. Now, are these accounts correct? Are they approved copies of the accounts as they appear upon your books?—A. Yes, sir; all these I have signed are correct; I have signed three of them, namely: The Rammelsburg Bath-House, Old Hale Bath-House, the New Hot Springs Bath-House, and the Independent Bath-House, in part.

Q. This which you have signed in the case of the Independent Bath-House was for the five months you were in charge of it, is that true?—A. I have had charge of the Independent since last August.

Q. And that is the time covered by this account, is it?—A. I think it is more than five months; I think it is seven months.

Q. From August 22, 1883, to March 1, 1884, you had it in your possession, did you?—

A. Yes, sir.

Q. And you kept the books?—A. I kept the accounts.

Q. And from those books this statement is made, is it?—A. Yes, sir.

Q. And this is exact and correct, as taken from those books, is it?—A. Yes, sir.

By Mr. PAYNE:

Q. And these are also correct statements of the receipts are they?—A. Yes, sir.

Q. The upper part of the New Rector Bath-House is used as a dwelling, is it not?—

A. Yes, sir; I live there myself and eat at the Arlington—there are three of us rooming there.

Q. And Mr. Smith rooms there, too, does he not?—A. Yes, sir, and eats at the Arlington. I would say in regard to these bath-houses that I pay all the bills and look after them myself individually and have charged nothing for my services.

Q. Is there not a man who runs the bath-houses?—A. Yes, sir, a manager denominated as a clerk.

Q. What do you call him, superintendent or clerk?—A. For instance, Captain Fry stays at the Rammelsburg.

Q. And you call him manager, do you not?—A. Yes, sir; they are called managers.

DE SOTO SAMUEL, being duly sworn, was examined as follows:

By Mr. PAYNE:

Question. You are assessor of this town, are you not?—Answer. Yes, of the city and county both.

Q. How long have you been assessor?—A. I was elected last year for two years, January, 1883.

Q. You made the assessment for the last year, did you?—A. Yes, sir.

Q. How did you assess this property on the west side of the main street opposite the Government reservation?—A. I went around and got the list of the property of the bath-houses.

Q. No, not that; I mean the property opposite the bath-houses.—A. So much a front foot, and included the improvements afterwards.

Q. For how much did you assess it a front foot?—A. Different prices, owing to the locality and the difference in value. Some parts higher than others and some parts are more valuable than others.

Q. Well, commencing opposite the Arlington Hotel.—A. A little above that?

Q. No, directly opposite.—A. That I think was assessed at \$150 or \$125 a front foot
Q. Well, coming down south from that, how did that run?—A. It increased until it got down to the Arlington billiard hall, that was assessed at \$200 a front foot.

Q. Take opposite the center of the reservation, at what did you assess that?—A. That was assessed at \$300 a front foot.

Q. Then coming down to the southwest corner of the Government reservation?—A. That about \$300 a front foot.

Q. Then it ran from \$125 to \$300 a front foot, as you come south on the west side of the street opposite the Government reservation?—A. Yes, sir.

Q. Was that for the land without the improvements?—A. Yes, sir; the improvements were added to it.

By Mr. STORM:

Q. How much on an average do you think you added for improvements?—A. It was owing to what kind of a building was on the ground.

Q. What amount do you think it added on an average to the land?—A. In some cases three or four hundred dollars for the building, and in some cases six, eight, and ten hundred dollars for the improvements, and I added that to the assessment per front foot; \$10,000 I believe I added for the brick building.

By Mr. PAYNE:

Q. Then there is an iron front there, is there not?—A. Yes, sir.

Q. Do you remember what that building was assessed at?—A. Ten thousand dollars.

Q. What did you assess that property at on the same street north of the Arlington, on the west side of the street, or did you make any difference between the west and the east side?—A. On the west side are the mountains, and there is not so much land coming down to the sidewalk.

Q. Then you assessed it on the east side higher than on the west, did you?—A. Yes, because it is not so hilly.

Q. Suppose there were two pieces of property situated about the same, that is the grade of the lots would be about the same, which would you assess highest, the land on the east or the west side of the street?—A. I would not make any difference at all on account of the street.

Q. When you were assessing up there by Whittington avenue, at what did you assess the land per foot?—A. About \$50 a front foot, and up there where the corner turns \$100 on the west side of the creek.

Q. Was not this land selling for more than you were assessing it?—A. Yes, sir; some was. Some lots sold for more than I assessed them.

Q. Some lots down here on Central avenue opposite the reservation were selling for four or five hundred dollars a front foot, were they not?—A. On one occasion—I know of one, but a good many wanted it, and I think that it sold at a fancy price, but I do not think that a fair cash valuation of it.

By Mr. STORM:

Q. Where is the record of your assessments?—A. At the court-house.

Q. Where is the court-house?—A. Here in the town.

Q. What is the aggregate valuation of the real estate in this town?—A. I declare I cannot tell you. I do not remember. It is something like—I do not believe I could give it to you without referring to the books.

Q. Could you tell by referring to the books?—A. Yes, sir.

By Mr. PAYNE:

Q. Is it two millions and a half?—A. Yes, sir.

By Mr. STORM:

Q. What is personalty here?—A. Everything is taxable, everything subject to ownership and value.

Q. Furniture and money at interest?—A. Yes, sir.

Q. Stocks and bonds?—A. Yes, sir.

Q. Professions and occupations?—A. Every tangible thing other than money.

Q. Do you assess the lawyers anything?—A. No, sir.

Q. Or the doctors?—A. No, sir.

By Mr. PAYNE:

Q. How much is the personalty assessment?—A. I think the whole personalty and realty about three millions and a half. On realty a reduction of 20 per cent. is made.

Q. Why?—A. I know the board of equalization took off 20 per cent. on all my assessments. They thought all over the county that the assessment was excessive, and got 20 per cent. off all over the town.

Q. You never could understand that, could you?—A. No, sir.

Q. Neither can I. I suppose that had something to do with the State tax the county had to pay.—A. I do not know.

By Mr. STORM:

Q. Do you not think the assessment below what this property would sell for at its cash sale?—A. I think my valuation of the property low enough. I do not think there was any property but what could have been sold at the money I assessed it. In some few instances I may have overlooked it, but it was not intentionally done.

By the CHAIRMAN:

Q. Did you assess the property here last year?—A. Yes, sir.

Q. Then, did you increase the assessment any this year by reason of the creek improvement?—A. No, sir; I have nothing to do with the reassessment of realty which is assessed every two years, unless the improvement exceeds \$100, which would be assessed and added to it.

Q. Is the present assessment higher than the last one on personalty?—A. No, sir; it is about as it was.

Q. How about realty?—A. I am not assessing that this year.

Q. How did the assessment of 1883 compare with that of 1881?—A. It was higher in 1883 than in 1881. The assessment I made was about a million and a half higher.

Q. Did you assess the bath-houses?—A. Yes, sir.

Q. At how much did you assess them?—A. I do not know. I can tell you in a minute. (Looking over memoranda book.) The personal property given to me, such as furniture, office fixtures, &c., I assessed at their own valuation. The bath-houses, as assessed and equalized, are as follows:

	Assessed.	Equalized.
Rammelsburg & Long.....	\$7,000	\$3,650
New Rector Bath-House.....	12,000	7,150
Big Iron Bath-House.....	7,000	1,700
Old Hale.....	7,000	2,600
Independent.....	7,000	3,575
Palace.....	10,000	4,350
Ozark.....	7,500	3,900

I included in these assessments the bath-tubs. The assessment of the tangible property of bath-houses, such as furniture and office fixtures, as assessed by the owners or agents of such, is as follows:

Palace Bath-House.....	\$300
Big Iron.....	1,000
Old Hale, A. B. Gaines.....	550
Rector.....	1,500
Independent, G. G. Latta, agent.....	300
Ozark.....	400

Q. Who appeared before that board and asked that this reduction be made?—A. Mr. Latta, and Mr. Gaines, and Mr. Sumpter; but I do not know whether he spoke of the bath-houses.

Q. Which Mr. Gaines?—A. Mr. Albert Gaines.

By Mr. STORM:

Q. Did this personal property in the New Rector include all the furniture upstairs?—A. I presume so; I asked them for a list of tangible property of any value, and that was the statement they gave me.

Q. Do you think your first assessment there was a correct one, as to valuation?—A. As to the construction of the law, I advised with the prosecuting attorney and the other attorney, and they told me that the bath-houses and the tubs were taxable, and were considered as chattel goods.

Q. I mean as to the amount you assessed each bath-house?—A. I do not know, because I could not see it all.

Q. I mean the business itself.—A. Oh, it was not near what it cost to build them, and what they sell for.

Q. Do you recollect if at the meeting of the board of equalization, Mr. Latta appeared with a written petition protesting against your having any right to tax the bath-houses?—A. He said it was illegal and he wanted it erased altogether, and then they said they could not do that, and Mr. Latta asked for them to reduce it. He said that this bath-house was assessed for more than it cost.

By the CHAIRMAN:

Q. What bath-house did that have reference to?—A. I think that Mr. Latta's remark was that he looked over the list and said that some of them were assessed for more than they cost, and he might have mentioned the Old Hale, but I do not remember. I recollect that he stated the assessment was higher on some of them, than what they cost.

Q. And did he not mention which ones?—A. I do not remember, but he might have done so.

Q. For what purpose did you understand Mr. Latta was there?—A. To represent them all, from the fact that they would not pay any tax, and he cleared them all for a small sum; I believe \$50 or some small amount; that is, the assessment on the bath-house and tubs.

Q. Was it upon his individual petition or application, or in the interest of others, or the Ozark Bath-House alone?—A. It might have been for his own interest alone; I do not know. I do not think anybody else was there before the board when the reduction was asked to be made by the board.

Q. Was Mr. Gaines there?—A. Mr. Albert Gaines was there, and there on other business, too; not especially for that, but probably more for that than for anything else. Mr. Latta, though, generally did more in regard to that matter than anybody else. He did the management of the business, I believe.

Q. Do you know what bath-houses Mr. Gaines owned at that time?—A. I think he had just bought one not long before that, and I think it was the Ozark. No, it was not the Ozark, and I do not remember now what bath-house it was. I know I put it on the tax-list. The Old Hale, for one, I think Mr. Gaines had. I think that was it.

SAMUEL HAMBLÉN recalled.

By the CHAIRMAN:

Question. Have you brought in the book of measurement the committee asked for other evening?—Answer. Yes, sir. [Presenting book to the chairman.]

Q. These are not your original estimates, are they?—A. My original estimates are at the office.

Q. Well, send for them; that is what we want. Have you your books of receipts and expenditures?—A. Yes, sir; and you may look at it. [Handing book to chairman.]

Q. Did you bring your correspondence with the Department in reference to leases?—A. No, sir.

Q. Well, we want that also.—A. Well, I will get that. Is there anything else you wish?

Q. Well, we want everything connected with this work and your office; bring them all here.—A. All right, sir.

(At this point the committee took a recess, in order to allow Mr. Hamblén sufficient time within which to get the books and papers he was requested to furnish, for the purpose of proceeding with his examination. Mr. Hamblén failing to return within a reasonable time, the committee concluded to proceed with the examination of other witnesses.)

WALTER MCFARLAND, being duly sworn, was examined as follows:

By Mr. PAYNE:

Question. Where do you reside, Colonel?—A. I am in the Army now, stationed at New Haven, Conn., and here for my health.

Q. How long have you been at the Hot Springs?—A. A week to-morrow.

Q. What is your rank in the Army?—A. Lieutenant-Colonel of Engineers.

Q. And your profession is that of a civil engineer, I suppose?—A. Yes, sir; civil and military.

Q. Where were you educated?—A. At West Point.

Q. And have you had practical experience since you graduated from West Point?—A. A good deal.

Q. Please state generally what it has been.—A. Construction of fortifications, that is, so far as construction is concerned, and canal locks.

Q. And the fortifications that were constructed, were they of masonry?—A. Yes, sir; stone, brick, and concrete, at Florida Reef, and New Haven, and in the State of Michigan.

Q. Have you examined this improvement here on the Hot Springs Creek, so far as it has progressed?—A. I have made no special examination of it.

Q. Have you examined the general plan?—A. The general plan, I have. I went over the report of the Secretary of the Interior, which gives the present plan.

Q. Now, what is your judgment as to whether that is a good plan or not, for the proposed improvement?—A. I think it a perfectly good plan; I see no objection to it.

Q. Is there sufficient strength to the arch, if built according to the plan?—A. I think it quite strong.

Q. And you may state what your opinion is, as to whether this culvert would answer the double purpose of a sewer, as well as creek.—A. I do not believe that it is proper to use such a thing as that for a sewer at all, or any creek.

Q. What is your objection to that?—A. The very small amount of water that usually passes through cannot be sufficient to carry away the filth.

Q. And you think the result would be the generation of foul gasses that would prove injurious to health, do you?—A. I do.

Q. Have you examined the stone used upon this work?—A. Yes, sir; I have noticed them as I walked over the street.

Q. Would you be able to class this stone geologically?—A. Yes, sir; I could come pretty near it.

Q. What would you say?—A. It is a stone very closely approaching quartz, and I think there is lime in it by the way it is fractured.

Q. What would you say as to its being proper material with which to construct this work?—A. It is not such material as I would use in heavy work, but I think it abundantly good enough for work of this character.

Q. Do you apprehend that the stone used in that arch will crumble?—A. It cannot possibly.

Q. Have you examined the sand being used here on this improvement?—A. No, sir.

Q. Have you examined the cement?—A. No; all I know is from what I have seen in walking along and looking at the stone. The cement I do not know anything about.

Q. Have you noticed generally the character of the work being done there?—A. Only as seen from the street, walking up and down.

Q. Have you noticed sufficiently to express an opinion as to whether the work is well done or not?—A. It appears to be very fair rubble work; not a high class of masonry, but I can see no objection to it for the purposes it is used.

Q. Would you call it range rubble work?—A. No, sir.

Q. What have you to say as to whether range rubble work would be stronger than the work now being put in?—A. I cannot see why range rubble work should be used in a construction of this kind. Range rubble work would be the proper work where there was a good deal of pressure, but there is very little pressure against this. This is only a 5 or 6 foot wall, and it does not make much difference. If it was 20, 25, or 50 feet high, with a strong pressure against, you would want much heavier work.

Q. What is the relative strength or bond of mortar in work of this description?—A. I would not think of using the best cement in a work of this character on account of its expense or cost. There is a very great difference in the cost of these things. A common mortar would be good enough for the connection of any of the stone in this work, I think. You see both side walls are braced thoroughly and rest against the earth, and would never give, so far as strength is concerned. A dry wall would be as good as a cement wall under these circumstances. When walls are sunken and the earth is behind them they never thrust out of place. Of course, I have only seen the face of the wall.

Q. You never examined the back part of the wall resting against the bank, have you?—A. No, sir.

Q. You have seen the arch, of course?—A. As they show their ends. I have seen the exposed ends along the line of improvement in several places.

Q. What do you say as to whether the arch is properly built or not?—A. I should say, as the ends appear, they are good enough. There is not great weight coming on them and there never can be.

Q. Of course there would be the weight of traffic in addition to the 18 inches of filling that is to be put over the arch?—A. Well, the estimate given in the calculation, which I took the trouble to go over, because all engineering matters interest me, show that 4 feet were to go over it. That was the calculation made by Mr. Smithmeyer, the architect of the Interior Department. It will vary in different places, and in order to make the calculation, I suppose he took the extreme.

Q. You see no difficulty in this arch supporting 4 feet of filling, over the arch, do you?—A. Oh, unquestionably it is strong enough to support anything.

Q. If you were to undertake such an improvement as that, would you advise the use of granite or the use of this material now being put in the work, bearing in the mind the difference in expense, supposing the difference was about \$8 a cubic yard?—A. I should use this material now being used, because it is sufficiently good for the purpose.

Q. Even if the difference in expense was similar?—A. Yes, sir; if it would save anything in the cost. Of course, how the work is laid up I do not know; that I have not seen.

Q. I will ask you whether a competent engineer could go over this work now, cov-

ered as it is, and estimate the quantities?—A. No; you cannot do anything more than possibly to approximate it. There must be some guessing about it.

Q. But you could estimate the thickness of the side walls, of course?—A. Yes, sir; but not the depth of the walls where they run over an irregular surface.

Q. So you do not think it possible for an engineer to estimate the quantities in this work?—A. I do not.

Q. I suppose the proper thing for the engineer in charge to have done was to take the cross-sections wherever there was a variation. Should he not have done so?—A. Of course, if he had done that, it would have shown exactly the quantities, but it is unusual.

Q. What would be the proper course for an engineer in charge?—A. My own course has been to measure as the work progressed, without making any special cross-sections.

Q. And take notes of the variations as you go along?—A. I have never done that for record, because I did not know that it was necessary, but it is necessary if there is going to be an investigation.

Q. You did not always anticipate an investigation, then?—A. I remember that some difficulty occurred in the measurement of pavements in Washington some years ago. You cannot measure what you cannot see.

Q. Was there any difficulty in getting at the quantity of iron used in the Brooklyn bridge?—A. Yes, sir; there was such a thing. There was a dispute about the amount of iron delivered there on that bridge. I do not remember who it was, but probably the Secretary of War directed General Newton and Colonel Casey to measure after the bridge was completed, and they were compelled to report that it could not be done. The cables were wound with wire and they could not tell what the quantity was. I believe the question was about the wire, and it being covered up they could not tell.

Q. Is it usual for engineers to make measurements and estimates, and after the work has been completed, and they are called upon for measurements, it is unusual for them not to be able to produce the figures, is it not?—A. That unquestionably does happen at times.

Q. Do they not have to furnish them, for instance, to the disbursing officer, or the man who pays for the work, and are the figures in detail for the work given, or the gross amount? What is customary? For instance, you are the engineer in charge of this work, and every month you send your estimates to the Secretary; now, would you send the figures in full as to the number of yards of excavation, &c.?—A. I never myself sent anything more than the amounts.

Q. How do you make your next month's estimate in work of this kind?—A. The work is always plotted. Take a canal lock, for instance, the amount done in one month is computed and marked.

By Mr. STORM:

Q. Is the distance put on to it?—A. Yes, but that does not show the depth.

Q. And then you measure from the points at which you left off before, for the next estimate?—A. Well, the work itself is not measured on the plans.

By the CHAIRMAN:

Q. If you were to estimate that 9,600 square yards of stone had to be taken from the bottom of a creek, could a competent engineer, by measuring the length of the work and the width of the creek, determine on an average how far the wall had gone below the surface of the creek?—A. On the average, yes. That would give an approximate, unless it was very irregular below the surface. The more irregular the original surface, the further from the truth would be the approximate.

Q. Assuming that the average is about the same, and having that basis to calculate from, you could determine pretty accurately what the average depth would be, could you not?—A. Pretty fairly, yes.

By Mr. STORM:

Q. Do you know Captain Handbury, of the United States Army?—A. I met him once or twice in my life.

Q. For this work he estimated granite; now, do you think that was an erroneous idea of his?—A. Well, engineers will differ in their notions about these things. Of course, the granite is the best material anything can be built of. The question here is, whether the best material is required.

Q. I do not suppose an engineer sent by the Government to make an estimate and furnish specifications which are to be the basis of a contract, would unnecessarily put in material that was not suitable for work, either because it was too costly or too cheap.—A. Well, engineers, like doctors, will disagree.

Q. Captain Handbury recommended cement equal in quality to the Rosendale cement. Is that the best cement?—A. Not American cement; foreign cement is better,

Q. Well, he recommended that, and do you think it a mistake?—A. No, I should not say that.

Q. I believe you stated that, in your opinion, this improvement ought not to be used as a sewer.—A. No, sir.

Q. Because it would be deleterious to the health of the community?—A. That is my opinion.

Q. Then everything should be kept out of the stream that would foul it?—A. That is the conclusion that modern engineers have come to.

Q. And to keep the sewerage from percolating through the soil, it should be very tight, should it not?—A. Yes, sir.

Q. Well, it would not be so well to lay it up dry, would it?—A. If anything is likely to be damaged by such percolation, then it is better to lay it up solid.

Q. The original plan of Captain Handbury was to use this for a water-passage way, and lay down sewer pipes on the sides?—A. I see it so stated in the letter of the Secretary of the Interior.

Q. In the arch of the wall the very best kind of cement should be used, should it not?—A. Well, I do not think that it would make any very material difference in an arch of that depth. If the arch was subject to heavy shocks, or weight, or heavy pressure, then the very best cement should be used, or if it was so situated that the side walls could by any possibility ever give even a little, then it should be used.

Q. Have you examined this stone closely as to its character?—A. Only in the quarry.

Q. Did you observe that the stone was filled with iron seams?—A. I did.

Q. And did you notice a tendency or danger of the stone separating into cuboids, and subdividing into smaller pieces of the same form?—A. I saw that it was subject to cleavage.

Q. Did you or not observe whether this rock was subject to cleavage running lengthwise and crosswise?—A. I did not notice that particularly.

Q. I can conceive how a stone with a cleavage running perpendicular to the center of the curve would not fall to pieces because the tendency of the arch would be to wedge it tighter, but suppose it was the other way?—A. As I saw those stones the cleavage seemed to run about parallel to the quarry-bed, or the bed upon which the stone rested.

Q. You did not examine the stone they used in this masonry, did you?—A. No. In regard to that stone, as I saw it broken out and carted off, if they put it in the arch so that the pressure would come upon the quarry-beds there would be no possibility of their breaking off.

Q. These stones are so highly charged with flint that they do not yield to the hammer, and will not dress easily, will they?—A. No, sir.

Q. Have you noticed them at work in dressing the stone, that when they would strike it, it would frequently drop to pieces, or have you noticed the workmen working on it?—A. I have not seen that. I watched them crack up the pieces at the quarry, and there I judged of the quality of the stone. In getting them out they took advantage of the seams to get out a good block.

Q. Are the spawls more irregular than regular?—A. I picked up a number of them and they vary very much.

Q. This is a stone that was chipped off, and here is one dressed, but there is more quartz in this than that, is there not? [Exhibiting two specimens.]—A. (After examining specimens.) Yes, sir, I should say that was a concordal fracture. That I saw them breaking up was quite rough. There is every variety of stone in that quarry.

Q. In the case of an engineer who was to have charge of an excavation of a water-way, for which contracts were to be let, based upon the estimates of hard rock in place, the ground, and the gravel, would not it be the duty of that engineer in the proper discharge of his duties as engineer to take measurements of the work, its levels, and cross-sections in advance of any work being done there?—A. I should say so.

Q. He could not do otherwise, could he?—A. No, sir.

Q. Then, when he comes to estimate for the contractor he must base it upon his preliminary survey, must he not?—A. Yes, sir; he must do that.

Q. And that is because he has nothing more to go by, is it not?—A. There must be a preliminary and subsequent measurement.

Q. And he would naturally keep a record of that, would he not?—A. I should think so.

Q. He would want to keep a record of his preliminary survey to know how much the contractor took out and built up, would he not?—A. The preliminary survey should be plotted.

Q. But in addition to that he should have his measurements, should he not?—A. He should have his notes and figures showing his depths and widths, &c.

Q. And he ought to keep it, ought he not?—A. Yes, sir.

Q. Now, in this case the contractor was to remove rock, stone, and dirt, and pre-

pare for the sewer work on a given grade, and then a wall was to be built up from the bed rock. Now, if the engineer had preserved all his original surveys, would it be difficult at this time to tell just what amount of masonry was placed in there?—A. No; not if those were made.

Q. Assuming that the walls are of the length and thickness that they ought to be, and having his original survey and estimates, he could get at it very readily, could he not?—A. Yes, sir; he ought to be able to get at it.

Q. The expression "rock in place" occurs in the specification for the excavation. What is the meaning of the phrase "rock in place"?—A. Just as nature left it.

Q. And not mixed with ground or separated, or not loose stone or bowlders, but rock bedded in the ground?—A. That depends upon the rock.

Q. Suppose a contract says dirt and stone so much and rock in place so much?—A. That would be a fair distinction, but very often you come across bowlders too big to be removed. But if you use the word stone, that would be regarded as stone readily removed by machinery.

Q. But as you understand the term rock in place, it would be the rock as nature left it in one bed, and not separated in small quantities by ground or anything else?—A. Oh, yes; if you mean scattered stone.

Q. But if it was mixed with dirt you would not call it rock in place, would you?—A. It ought not to be called rock in place, if it is that way.

Q. Well, suppose in case of a contract that provided one price for dirt and stone, and another price for rock in place, what have you to say about that?—A. Well, I should suppose that meant, or my understanding would be, that it meant rock in its own natural bed, but if there were big detached bowlders as big as that table, I would regard it as rock in place, because it would require machinery to handle it.

Q. If an engineer, having made his preliminary survey with the levels and cross-sections, and the excavations are made down to a certain grade line, he has no difficulty, with the aid of this data, after the contractors have removed the dirt and rock, to tell how much it is by measuring the length of the place excavated, would he?—A. He would have no difficulty in telling the whole amount of excavation.

Q. So that there would be no trouble when the contractor came to him and requested him to measure and estimate for the work as far as it had progressed?—A. No, sir.

Q. Then he would estimate up to a given point that would have to be marked on the ground or indicated as that number of feet completed?—A. Yes, sir.

Q. A careful engineer would have noted on his plot all the distances of a work of this kind, would he not?—A. He could not tell in any other way; he could not tell where the work overlapped.

LUCY DANDRIDGE (colored), being duly sworn, was examined as follows:

By Mr. STORM:

Question. Were you or not employed in the Rector Bath-House?—Answer. Yes, sir from last March to the middle of October.

Q. What were your duties there?—A. Well, I bathed the ladies.

Q. What was required of servants attending to the ladies bathing there?—A. Well, they furnished everything that the house needed, soap, thermometers, sand-glasses, brooms, and mops.

Q. If you furnished them how were you to get paid? Out of what you received from the guests?—A. Yes, sir.

Q. What else besides the soap, sand-glasses, mops, and brooms, &c., did you have to pay for?—A. Well, we kept the house clean, and they had the house repainted and said we had to pay for it; \$6 a piece.

Q. Were you obliged to pay that?—A. Yes; pay or quit.

Q. Did you pay or did you quit?—A. No, sir; I quit.

Q. Do you know that any of the servants paid it?—A. Yes, sir; some of them paid.

Q. And remained in the employment of the bath-house?—A. Yes, sir.

Q. Had the bath-house been painted generally all over?—A. Just inside in the halls and rooms and tubs.

Q. How many like yourself were employed there who were assessed in this manner?—A. There were two other women, three with myself; I do not remember how many men there were.

Q. Did the men have to contribute to the expenses for painting?—A. Yes, sir.

Q. Do you know if all those who were assessed paid the assessment?—A. One of the other women quit. All three quit, but one went back, and I do not know whether she paid or not.

Q. You did not see her pay, did you?—A. No, sir.

Q. Who were the other women working there?—A. Roas Collier; then there was Josephine Brown and Josephine Matthews.

Q. Who at the Rockafellow Bath-House levied that assessment? Who required you

to pay it?—A. Dr. Lindy was clerk, and we had to do what he said, and he said that it was Mr. Rector's orders; that it was the proprietor's orders for us to pay this.

Q. And upon that order he requested you to pay this assessment, did he?—A. Yes, sir.

Q. And was he the manager in charge at that bath-house?—A. Yes, sir.

WILSON POLK (colored), being duly sworn, was examined as follows:

By Mr. PAYNE:

Question. Are you employed in a bath-house?—Answer. Yes, sir.

Q. What bath-house?—A. The New Rector.

Q. Do you remember their painting this bath-house some time ago?—A. Yes, sir.

Q. How long ago?—A. I do not know to a day exactly, but it has been some time since Christmas.

Q. Were you required to contribute anything towards the expense of this painting?—A. Yes, sir.

Q. How much?—A. Six dollars.

Q. Did you pay it?—A. I paid \$5 of it.

Q. To whom?—A. Dr. Lindy.

Q. Who required you to pay it?—A. He told me to pay it.

Q. Did you talk to anybody else about it beside him?—A. No, sir; yes, I talked about it. We went to Dr. Rector three or four of us, and we asked him about it, and he said he did not know anything about it, and we just went on and paid it.

Q. Did you pay any other expenses connected with the bath-house?—A. Yes, sir; for moving wood and so on, around.

Q. Moving wood, where?—A. The wood that was hauled there and sawed up and carried over to that other place when it was sawed up.

Q. You did not have to pay for the wood, did you?—A. We paid for having it stored away.

Q. Did you do it yourself, or pay for doing it?—A. Paid for doing it.

Q. How much did you pay?—A. I suppose \$2.50 or \$3.

Q. Did you pay that yourself individually, or was that the sum paid by all of you in aggregate?—A. Yes, sir; altogether.

Q. Who required that to be done?—A. The manager.

Q. And you paid it to him did you?—A. Paid it to him.

Q. Did the servants have to defray any other expenses besides towels and soap, brooms, mops, thermometers, &c.?—A. We had to furnish our own sand-glass, and mops, and thermometers, and brooms, and everything.

Q. Who furnished the rugs?—A. The house furnished the rugs.

Q. And the carpets, too?—A. Yes, sir.

Q. How much painting was done; simply the bathing department, or the whole building, or what?—A. We only had the rooms to paint.

Q. How many of you were required to pay \$6 apiece?—A. I think all of us.

Q. How many?—A. Ten or twelve, I do not know exactly. I know there were nine men,

Q. How many of you paid for moving the wood?—A. Well, I do not know how many.

Q. You know what you did?—A. Yes; I know what I did.

Q. What was the painting?—A. Well, just the inside rooms and the halls and so on.

Q. The rooms that you had charge of?—A. No; the whole inside of the bath-house.

Q. Was the office painted?—A. No, sir; not the whole bath-house; the bathing department and the bathing-rooms and over head and everywhere.

Q. Did they make you pay for cutting wood and removing it?—A. Yes, sir; we had to pay for the carrying of the wood.

Q. Is or is not that the work of the attendants in the bath-houses to take their own wood in?—A. I always carried mine in ever since I have been in a bath-house.

Q. How many people do you bathe a day?—A. Every day? Oh, I bathe ten or eleven every day.

Q. How many tubs do you use?—A. Two tubs.

Q. Does any other bather use those tubs?—No, sir; not unless I feel disposed to loan them out.

A. D. BINFORD (colored), being duly sworn, was examined as follows:

By Mr. PAYNE:

Question. Are you one of the attendants at the Rector Bath-House?—Answer. Yes, sir.

Q. Do you remember that house being painted?—A. I do.

Q. Did any one ask you to help pay for it?—A. Yes, sir.

- Q. Whom?—A. Doctor Lindy.
 Q. How much?—A. Six dollars.
 Q. Did you pay anything?—A. Yes, sir.
 Q. How much?—A. All of it.
 Q. Did you pay anything for moving wood?—A. Yes, sir.
 Q. How much?—A. I paid 35 cents. It was different at times; I paid sometimes 25 cents. Now, this wood was hauled and laid in the streets, and they needed the street there because they were throwing the dirt from the excavation, and the wood had to be moved. The wood was moved and we defrayed the expense. A man was hired to move the wood and the expense was levied on us.
 Q. How much did you pay altogether?—A. Well, there were different amounts. I repaired the bath-tub several times.
 Q. For what did you do that?—A. I had to do it.
 Q. Why did you do it?—A. I was not obliged to do it, but I had to do it or quit.
 Q. What was the matter with it?—A. I got a tinner to fix it.
 Q. What did you pay him?—A. I paid him \$2, and then I paid him 75 cents for another time.
 Q. How many times did you have the bath-tubs repaired?—A. Twice.
 Q. Was the leakage due to any fault of yours, or did it come from the natural wear and tear?—A. The natural wear and tear.
 Q. Did you have to pay any other expenses?—A. They levied the expense for taking up the parlor carpet and having it cleaned and relaid again.
 Q. How much of that expense did you pay?—A. Twenty-five cents apiece.
 Q. When was that?—A. That has been since Christmas.
 Q. Anything else?—A. Well, yes; different little plumbing, and one thing and another we had to pay for. Some of the plumbing we have to pay for.
 Q. What plumbing?—A. Fixing the jet of our tub, and anything that happens we have to pay for. I told Dr. Lindy about it, and he said that you work here and it is to your interest that this should be done, and he said that he had interviewed the proprietors and they refused to pay for it, and that if I did not pay for it he would get somebody that would.
 Q. Did you furnish the articles that were generally used in the bath-room?—A. I furnished my mop and soap, sand-glass, and thermometers, and everything.
 Q. You furnished all those at your own expense, did you?—A. Yes, sir.
 Q. How many do you bathe a day?—A. Twenty, and sometimes twenty-five.
 Q. How many a day do you average now in the busy season?—A. We average about fifteen or eighteen; somewhere along there.
 Q. And each attendant has two tubs, I suppose?—A. No, sir; I have three. We generally have three all the while, but they put some more baths in there and divided them up. The rooms I have are divided with a partition, and there is a hallway running between, and in this way we give a man a single tub.
 Q. Do you know whether the proprietors of the bath-house had wind of this matter or not, of the attendants paying these expenses?—A. I know very well they had knowledge of it.
 Q. Why?—A. Because Dr. Rockafellow was interviewed.
 Q. What is your income there a month, altogether?—A. Sometimes I make \$15 and sometimes \$20 a week in good busy season, but I am not able to make it some seasons.

HENRY BOTTLE (colored), being duly sworn, was examined as follows:

By the CHAIRMAN:

- Question. What is your name?—Answer. Henry Bottle.
 Q. What do you do?—A. I stay at the Rector Bath-House.
 Q. Do you contribute to the comfort of guests there by paying for the necessary articles of the bath-room?—A. Yes, sir; just like the rest of them.
 Q. How much?—A. The same as the others. I was taxed for the painting \$6.50.
 Q. Were you taxed on the carpet account?—A. I believe 30 or 35 cents.
 Q. What implements of the bath-room do you furnish, everything but the men?—A. Everything, sir.
 Q. Who required you to pay this contribution?—A. Dr. Lindy.
 Q. Did the proprietor of the bath-house know anything about that?—A. I spoke to Dr. Rector about it and he said that he did not know anything about it.
 Q. Do you know whether the bath-house association knew anything about it?—A. No, sir.
 Q. Do you know Dr. Latta?—A. Yes, sir.
 Q. Did he have anything to do with it?—A. No, sir.
 Q. You never told him anything about it, did you?—A. No, sir.

ROSE COLLIER (colored), being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. You have heard what the other witnesses have testified to, I suppose?—Answer. Yes, sir.

Q. Has your experience been similar to theirs?—A. Yes, sir; that has been mine.

Q. And you paid what the other witnesses were required to pay, did you?—A. Yes, sir.

Q. Were you required to furnish these articles before Dr. Lindy became manager of the bath-house?—A. Yes, sir; before he came we furnished thermometers and soap and mops, and sand-glasses and had to do a good deal of side work.

Q. What do you mean by side work?—A. To keep the house clean.

Q. You were not required to contribute anything towards the expense of painting the bath-house before Dr. Lindy came there, were you?—A. No, sir; not until Dr. Lindy was put in charge.

Q. Now, when you went and entered into the employment of that bath-house, was it or not with the understanding that you were to furnish these articles?—A. Not until I got there, and I had quit the Hot Springs Bath-House.

Q. How long had you been there before you found that you had to furnish these articles?—A. I went to Mr. Miller, manager, and in charge there, and he told me that I would have to furnish everything; I told him that I had come from a second-class house, and they did not make me furnish everything, and I did not think a first-class house should make me furnish everything.

Q. Was Mr. Miller superintendent before Dr. Lindy was put in charge?—A. Yes, sir; he was the manager in charge, and I suppose that is the same thing.

T. O. TOWNSEND, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. What is your profession?—Answer. I am a lawyer.

By Mr. STORM:

Q. Have you visited the bath-houses here?—A. I have been in some of the bath-houses here but do not know about the condition of any, except one.

Q. Which is that?—A. The Independent Bath-House.

Q. What have you to say about that?—A. I do not think that it is in good condition, and I do not think it is well kept.

Q. What is the reason for your thinking so?—A. The water-closets are kept in a filthy condition and smell badly.

Q. How is the rest of the house?—A. It looks dingy and dirty and rough.

Q. Who is the manager of that house?—A. Captain Fry, I believe, sir.

Q. Is the house in as good condition now as it ever was before?—A. I have been here about a year; I do not think the condition is as good now as six months ago, and it is certainly a little disagreeable at times; the smell is very bad.

Q. Is the management now the same as it was previously?—A. The management has changed since I came here; Mr. Maurice came, and I think Mr. Vaughn.

Q. Is there any improvement in it recently?—A. I do not think it is as well kept now as it was six months ago.

Q. To what do you refer; the bathing department, or the closets, or what?—A. The water-closets particularly, and the bathing part too.

Q. Have you heard any complaint from anybody about the management of the bath-houses here, and of the bathing facilities?—A. I have heard some complaint.

Q. Was that confined to a few individuals?—A. I never discussed the matter much; I think that General Early, perhaps, complained when he was here.

Q. What was the burden of his complaint?—A. The accommodations afforded, he said, were not as well as before. I will not state that he told me. He was in my office at the time this remark was made, and I do not know whether it came directly from him or from other gentlemen in conversation at the time. I have heard physicians complain of their patients not being as well treated as before the pool was organized.

Q. What physicians have you heard complain?—A. Dr. Vaughn and perhaps Dr. Blades.

Q. Did you ever hear Dr. Garnett make any complaint?—A. I never talked with Dr. Garnett. I do not know him personally. I have heard some of these boys in the bath-houses speak of the condition of the houses. One of them told me that he left the house because they would not keep it in repair, and he could not make a living there. I do not know personally or of my own knowledge concerning the condition of these bath-houses except the one I spoke of.

A. S. GARNETT recalled.

By the CHAIRMAN:

Question. What is this paper you hold in your hand?—Answer. That is a paper rendered to me by the manager of the Big Iron Bath-House of the expenses of that bath-house.

Q. You did not take it off the books yourself, did you?—A. I did not.

Q. You do not know whether it is correct, do you?—A. I will send for the vouchers if you want me. I got my clerk to make an abstract from the books.

Q. Do you know this to be correct?—A. Yes, I believe it is correct, because I know this money has been paid out. It includes the repair of the bath-house by Mr. Aldridge, whose account I will send down also. There is the account for plumbing and painting, and the other items are the daily expenses of the bath-house, and then the wood and those large accounts.

Q. Did you pay all these bills?—A. Yes, sir.

Q. And they are rendered to you in this expense account?—A. Yes, sir, and I submit the statement herewith. It is as follows;

Statements of expenditures from March 1, 1883, to November 1, 1883.

For the week ending—

March 6.....	\$22 74
March 15.....	23 94
March 22.....	42 44
March 29.....	38 29
April 4.....	35 99
April 11.....	62 79
April 17.....	66 69
April 24.....	66 39
May 1.....	49 89
May 8.....	68 44
May 15.....	60 04
May 22.....	57 59
May 29.....	48 39
June 5.....	50 84
June 12.....	51 24
June 19.....	50 29
June 26.....	28 49
July 2.....	24 14
July 9.....	30 49
July 17.....	33 04
July 23.....	34 79
August 1.....	30 29
August 9.....	15 64
August 15.....	44 14
August 22.....	42 34
August 29.....	28 94
September 5.....	16 69
September 12.....	21 44
September 19.....	17 32
September 26.....	4 47
October 2.....	2 47
October 11.....	25 22
October 18.....	13 12
October 23.....	11 12
Water rent eight months.....	50 00
Wood, 34, cords at \$5.....	170 00
Paid Ledwidge for repairs.....	500 00
Electrician.....	27 50
Expenses.....	25 00
Painting tubs.....	25 00
A. S. Nickerson (plumber), seven months.....	256 50
A. J. Walsh.....	23 00
P. J. Ledwidge.....	900 00
Painting entire house.....	325 00
Furniture.....	250 00

From November to date	4,396 43
	786 05

Total	5,182 48
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A great many little items, running up to considerable, are not noted here.

ABT MANUS (colored), being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. What do you do?—Answer. I am a rubber at the Rector Bath-House.

Q. Have you been a rubber in any other bath-house?—A. Yes, sir; the Old Hale.

Q. How long since?—A. About three years ago.

Q. Do you know what the custom has been in these two bath-houses, in respect to the attendants having to pay for and furnish articles, according to your own knowledge?—A. When I first went into the bath-house business as a rubber, I went there to work, and I did not have to buy thermometers and sand-glasses and mops. I knew that such things were needed and I bought them.

Q. Were you required to buy them, or did you supply them of your own will?—A. Yes, sir; of my own will.

Q. Were you required to purchase those things at any bath-house with which you have been connected?—A. I cannot say required.

Q. Were you required to contribute to the expense of painting or for repairs of any bath-house you have been employed in?—A. I do not know about required; I know I have paid some money in the Rector Bath-House.

Q. Why did you do it, and under what circumstances?—A. It was a kind of agreement between Doctor Lindy and myself, and another man by the name of Miller, and it was by virtue of our agreement.

Q. What was your agreement?—A. I was going away last fall and the rooms needed fixing up, and he said the house needed painting, and I said I would not mind paying \$1.50 to have my room put in repair. Then I went away, and when I came back he had done it, and it was \$6.50, and he demanded that out of me.

Q. And that is the way the thing came about, was it, you suggesting to him that the room ought to be painted?—A. Yes, sir.

Q. And you and he entered into a scheme of that sort, did you?—A. Yes, sir; and he carried it up higher than I thought he ought and he created dissatisfaction by it.

Q. Do you know as to the other bathers with reference to the disagreement?—A. They did not want that painting so high.

Q. Well, the painting just went a little higher than they thought it ought to have done, and the general understanding was that it was to be done to the extent of \$1.50 outlay to each bather, is that the idea?—A. Yes, sir.

By Mr. PAYNE:

Q. Do you know whether any other of the bathers knew of this agreement?—A. Yes; Bedford and Martin, and J. W. Smith, who stands out there, knows it.

Q. Did the women know anything about it?—A. Well, they have been changed off.

Q. But did they know before the painting was done that they would have to pay \$1.50 each towards defraying the expense?—A. I cannot say; but it was generally known among the men, because we talked it up.

Q. But this was a sort of scheme that you got up yourself, was it?—A. I do not say that it was so much a scheme of mine. Doctor Lindy suggested it, and we thought we would not mind having our rooms painted, as they needed it badly.

SAMUEL DIXON (colored), being duly sworn, was examined as follows:

By Mr. PAYNE:

Question. How long have you been in the bath-house business here?—Answer. About seven years, I guess.

Q. Which of these bath-houses have you been employed in?—A. I worked in the Little Grand Central at the time the hotel was up there and until the hotel was torn down.

Q. What were you required to do in the bath-house?—A. I was only required to wait on gentlemen.

Q. What were you required to furnish?—A. I was not required to furnish anything.

Q. What did you furnish?—A. The proprietor furnished all those things himself.

Q. Furnished what?—A. The brooms, mops, &c.

Q. And did not you furnish anything of that sort?—A. No, sir.

Q. Did you ever furnish any of these articles in any other bath-house?—A. Yes, sir; at the New Rector.

Q. Who required you to do so?—A. That was the rule of the house.

Q. Who told you to do so?—A. When I first went there Mr. Huffman was the proprietor there—he was superintendent there, rather—and we did not find anything to use and had to get them ourselves. When I went to the Rammelsburg Bath-House in 1881, the house furnished those things.

Q. You have not been required to contribute towards the expense of these articles in any other house but the Rector, have you?—A. No, sir. We figured up this way,

that it was only going to cost \$2.50 a piece to do this painting, and some did not propose to do that, and they did not feel like doing it. We consulted, and when Mr. Mann came up, Dr. Lindy and some and there were plenty on the outside that wanted to give the money to get in there.

By the CHAIRMAN:

Q. These are very good places, and I suppose there are plenty who would be glad to get them?—A. Yes, sir.

Q. How much did it turn out to be in the end that you had each to pay?—A. Six dollars and a half.

ROSE COLLIER recalled.

By the CHAIRMAN:

Question. Just make a general statement in regard to these matters, concerning the furnishing of the different articles in the bath-house by the help?—Answer. I was discharged the 13th of last October on account of refusing to pay for this painting, and Dr. Lindy said that I would have to pay or leave the house, and he gave us two days to see if we would consent. Josephine Brown, Lucy Polk, and myself were the female attendants in the house at that time. I told him I would not pay it, as I felt that we had to keep the house clean, and all we got was from the guests, and we had to keep ourselves, and had to leave our houses in the morning at 6 o'clock, and leave the bath-house in the evening at 6 o'clock, and so on the 13th of October we had to leave if we would not take up the carpet in the parlor and clean it, and I refused to take it up. I told him I would help to remove the furniture and help to cover it if he would let the men pay for the cleaning. He said that we would have to move the stuff, and shake it, and pay the men \$1.50 to clean it, as we made enough money to pay these men for taking up and cleaning the carpet. I wouldn't agree to do it, and so I took my towels, and put the names of the ladies on them, and left. So a great many ladies wanted to be bathed by experienced hands, and they asked him to take me back, and he allowed me to stay from the 13th of October until the 10th of December, and then on the morning of the 15th of December he requested me that I should pay the \$6 for this painting or I could not stay in the house any longer, and I told him I thought that was settled. I think the bill was over \$40, and I thought it was settled. He said that every one of us were to pay \$6, and he said that if I staid there I would have to pay the \$6, and so, rather than leave the house, I paid the \$6.

Q. Do you know of the servants in any other bath-house in town that are required to pay such expenses?—A. I do not know. I worked at the Palace three months and I paid nothing, because every tub had a thermometer and a sand-glass, and they supplied mops and brooms and everything, and it was the same way at the New Hot Spring Bath-House. I worked there nineteen months, and from there I came to the New Rector Bath-House, and when I found these new laws forced there I thought it was rather hard.

S. W. VAUGHN, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside?—Answer. Hot Springs.

Q. What is your profession?—A. I am a practitioner of medicine.

Q. How long have you been here?—A. Ten years.

Q. Are you acquainted with the methods of conducting the bath-houses here?—A. I used to own an interest in a bath-house.

Q. Were the bath-houses conducted properly then?—A. We thought they were.

Q. How have they been conducted since you have gone out of the bath-house business?—A. We endeavored to conduct them in such manner as to give the best possible baths to our bathers in order to get as many bathers as possible, and in that way things worked well for both parties; but I finally sold my bath-house interest here, as I found I could not hold it with any degree of certainty and to utilize it to any advantage, and the first good offer I had I pulled out.

Q. What were your reasons for so doing?—A. To illustrate my position: I found that on one occasion, by reason of excavating below us, we only having one point from which we got our water supply, it was suddenly cut off. When Dr. Rockafellow was excavating at the Rockafellow Bath-House right below us they cut our water supply off. At that time we had a large number of bathers and gave good satisfaction to all. We paid then monthly in advance \$5 a tub to the Government. When our water supply was cut off we felt it keenly, and applied for a redress of our grievances. We paid for the water and we thought we were entitled to it. General Kelley put us off from day to day while these parties continued to excavate, and simply answered our application by telling us that if our water supply had been interfered with by reason of the excavating below his theory as to the source of supply was

a fallacy. We told him it was a bread-and-meat question with us, and we insisted on having water, as our bathers were quitting us and our business was suffering. We asked him to allow us to excavate a little deeper. As I told General Kelley at that time, I represented the facts fairly and squarely—tens of thousands of gallons of water were going to waste, and they then had more water in the Big Iron Bath-House than they could possibly utilize, and yet they increased their supply by turning what was known as the Ral Hole into the Big Iron. The reason I sold out was that I thought I had been made the victim of unjust discrimination.

By Mr. PAYNE:

Q. Were you not losing money?—A. After that time we lost money. We were making money up to the time the water gave out.

Q. How much did you make a month?—A. I do not know, but our profits were very handsome. They were not enormous, but they paid us handsomely.

Q. Did you get 5 or 6 per cent. on the investment?—A. Over that.

Q. How much more?—A. I suppose 10 per cent. at that time.

Q. How much did you get for baths at that time?—A. It occurs to me, sir—I do not remember positively now—but it seems to me that we were selling tickets at from \$3.50 to \$4.50.

Q. For how many baths?—A. For a course of twenty-one baths we were charging from \$3.50 to \$4.50.

Q. You were paying \$5 a month rent for each tub, and yet you say you did not run behind?—A. No, sir, we were making money very nicely.

Q. Do you know where the old Ral Hole now runs?—A. That supplies the Big Iron Bath-House, as I understand it.

Q. What was it used for before?—A. It was used by the poor. It was the Pool of Saloom, where they went when they did not have money enough to pay for a bath in the bath-house.

Q. Did it cure them?—A. Yes, sir.

Q. They kept out of the reach of the doctors, did they not?—A. Yes sir; they kept clear of the doctors.

Q. What have you to say about the present management?—A. I am decidedly opposed to the pooling system, simply upon the principle that I think competition is the life of trade, and I think when you make it the prime object of the bath-house keeper to court the favor of his patron you most certainly secure for the bather the necessary attention. I find a good deal of difficulty in having the bathing of my patients carried out to the letter, from the fact that the bathers are crowded into these bath-houses in such number that the bather cannot get the attention that they require, and the attendants are not as attentive as they should be. It is now very difficult to obtain just the right attention for your patient that is necessary to advance his interest in a healthful point of view.

Q. How would you prevent this pooling business?—A. I am decidedly in favor of the Government taking charge of this water and not farming it out at all.

Q. Is there any other method you would suggest?—A. This is the only one, unless the bath-houses were run under the old system.

Q. How is that?—A. That is, allow them to cut as much as they please.

Q. Could you keep them from forming a combination or pooling their interests?—A. There is the difficulty.

Q. Would not they all come in, naturally, from motives of self-interest?—A. Well, as I understand, they are making more money than before. A good sharp fellow that manipulated his cards well under the old system never failed to get his share of the patronage.

Q. Was not that system objectionable on account of drumming?—A. Yes, sir; but my impression is that we might have three times as many bath-houses.

Q. Do you not think it would be a good thing for the town if every drummer in the place was hung?—A. I think so.

Q. Do you think it would be well to establish any system that would invite these drummers to resume their business again?—A. No, sir; I think it was the most hurtful feature of our place.

Q. Do you know no other way to prevent the formation of a pool other than the Government taking charge of the water?—A. It seems to me that is the only plan, and it should be done. The water should be under the eye and control of parties who have no interest in speculating.

By Mr. STORM:

Q. It is not your idea, is it, that it is well to get rid of drummers by introducing a monopoly?—A. I take the drummers in preference to the monopoly. If people allow themselves to be duped it is their own fault.

Q. Was it the passage of the law or the formation of the pool that put a stop to drumming?—A. It was the law.

Q. Drumming has been prevented by the passage of an act by the legislature of this State, has it not?—A. Partly; not entirely.

Q. But there is a law against it, is there not?—A. Yes, sir.

Q. The law attempting to prevent drumming was decided invalid by the court, was it not?—A. By the Supreme Court, I believe.

By Mr. PAYNE:

Q. Was it not this: Did they not hold that the legislature had never given the common council any power to pass a law prohibiting drumming; is that not what the court held?—A. I think so, sir.

Q. And then there was a law passed last winter which authorized it, was there not?—A. There was a law passed last year by the legislature absolutely prohibiting drumming.

Q. Has not drumming ceased in the last six or eight months?—A. Not entirely ceased. You cannot suppress drumming absolutely.

Q. Did or did not drumming continue after the formation of the pool?—A. Drumming now continues to a certain extent, although there is not as much drumming as formerly.

THEODORE F. LINDEY, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Some of the employés of the Rector Bath-House have testified this evening that certain contributions were levied upon them for repairs and other expenses of this bath-house, and you have been sent for to explain the matter.—Answer. On the 24th of last August I took charge of the Rector Bath-House as clerk; I looked around the house and I saw that a little painting would be a benefit to the house, and I had instructions not to make any expenditures whatever. I had nothing to do with that, in fact, and I suggested the cleaning of the house all through, wishing to have it look nice; and I suggested to the boys if they had their rooms painted up it would be a great improvement and be better for them. I told them that I would see that a man was gotten to do the work cheap, and that they should all throw in and pay for it. It was agreed by all of them so to do. It was done through my own solicitation, and unbeknown to any of the proprietors of the house.

Q. Was it done with the consent and concurrence of the employés?—A. At that time, sir, they all consented, but after that it seemed that some of them made objection and said that the house should do it. I told them that I had taken this responsibility in my own hands, and as we had all agreed to do it it should be paid for by us.

Q. Did the owners of the bath-house have any agency in this matter?—A. None whatever.

Q. Did the bath-house association have anything to do with it?—A. None whatever.

Q. Did you consult with them at all about it?—A. No, sir.

Q. It was a matter between yourself and the employés, was it?—A. Yes, sir; I have since coming in there put a great many cedar trees around and placed a good many ornamental things in the house, such as birds and things like that, simply for my own pleasure.

Q. You are only an employé yourself, are you not?—A. Yes, sir.

Q. Were you authorized to make any expenditure of any sort?—A. No, sir.

Q. Did you handle all the money and pay any of the expenditures yourself?—A. I handle all the money that comes in the house.

Q. Do you disburse it?—A. Not unless I am authorized to do so by Dr. Rector.

Q. Dr. Rector is the proprietor, or represents the proprietor, does he not?—A. Yes, sir.

Q. And you represented the proprietor?—A. Yes, sir; and I see that the guests are cared for and the house is run properly.

Q. Do you know who owns the house?—A. Yes, sir.

Q. Who are the owners?—A. Governor Rector, Mr. Rector, Mr. Gaines, and Mr. Smith.

By Mr. STORM:

Q. Do they never go in the house?—A. Yes, sir.

Q. Did they tell you that you should not do any repairing?—A. No; they did not put it in that way. They stated that I should not make any expenditures.

Q. Well, they knew of that painting being done, did they not?—A. No, sir; not until I had almost completed it.

Q. And then they found it out?—A. Yes, sir.

Q. Well, did they think you were doing it at your own expense?—A. Dr. Rector asked me about that painting and I told him I was having it done.

Q. Did you tell him that you were having it done at your own expense or at the expense of the employés?—A. I told him it was being done by the boys and myself.

Q. Then Dr. Rector did know about it?—A. After I commenced. He asked me what about this painting, and said to me, "I thought I told you not to make any expenditures."

Q. Did a woman by the name of Rosa Collier object to paying her share?—A. No, sir; not specially.

Q. Did not she go away at one time?—A. She did not go away for that.

Q. Did she not go away because she was required to pay that assessment?—A. No, sir.

Q. Did the lady bathers object to her going away and insist that she should take care of them?—A. She was discharged from there because she disobeyed my order.

Q. What was that order; to pay this \$6?—A. No, sir.

Q. Was that in October or December?—A. That was probably October.

Q. And you discharged her?—A. Yes, sir.

Q. Was not she taken back, and did she not remain there until December 10?—A. Yes, sir.

Q. How did she come to go back?—A. I took her back.

Q. Why?—A. Simply because she had requested me to take her back.

Q. And not because the ladies she bathed wanted her back?—A. No, sir.

Q. What was the cost of this painting?—A. We did not know. I told them I would have it done as reasonable as possible.

Q. How much did it eventually amount to?—A. To about somewhere in the neighborhood of \$70.

Q. How much was that for each one?—A. Six dollars, sir.

Q. They have stated before the committee that they were obliged to have the wood put in the house and pay for its being stored away?—A. It has been customary that the help of the house, sir, should put the wood away.

Q. And they state that they were obliged to pay for the taking up of the Brussels carpet, the dusting of it, &c.?—A. Yes, sir.

Q. The repair of tubs, is that any part of their work?—A. No.

Q. A man testified before the committee he had to pay something like \$3.50 for the repair of his tub or tubs?—A. If he had reported it to the office it would have been done.

Q. And you know nothing about that, do you?—A. No, sir.

By the CHAIRMAN:

Q. Is Dr. Rector the owner of this bath-house, or the superintendent for his father?—A. He is superintendent.

Q. And he does not own it?—A. No, sir.

Q. Is he employed and paid a salary like you?—A. Yes, sir.

By Mr. STORM:

Q. Did none of the owners of this bath-house come in during the progress of this painting?—A. They live in the house; that is Mr. Smith and Mr. Gaines live in the house.

Q. And do you pretend to say that they knew nothing about this painting going on?—A. They certainly knew the house was being painted.

Q. They knew they were not paying for it. You did not render any account to them for any disbursement of that kind, did you?—A. No, sir.

Q. If they had to pay for it they would have known some time that this painting was being done at their own expense, would they not?—A. Oh, yes.

Q. And you do not mean to say that the proprietors of this bath-house did not know that these colored people paid for the painting of their bath-house?—A. I suppose they know it now.

Q. Well, they approved of it, did they not?—A. They have not disapproved of it. It is something that I had no occasion to speak to them about.

Q. But you must have supposed it was in accordance with their desires, or you would not have had this painting done, would you?—A. I do not know.

Q. Would you do, as a manager, anything that you believed your employer would disapprove?—A. No, sir.

Q. But in doing your duty you need not have done that?—A. I did it for my own gratification and for the benefit of the guests.

Q. Was it your gratification that employes working by the month should pay for the painting of the bath-house, and in case these poor employes should fail to pay they should lose their position?—A. I did not look at it in that light.

Q. Look at it in that light now, and say whether it was for your own gratification that these poor men were forced to pay for that painting?—A. No.

Q. Would these parties refund this money to these poor employes if you call their attention to this thing?—A. I could not say.

Q. You had better go and tell them about it. Is Governor Rector, one of the proprietors of that bath-house, a brother-in-law of yours?—A. Yes, sir.

Q. Is Mr. Gaines one of the owners?—A. Yes, sir.

Q. Is he brother-in-law of Mr. Stitt, one of the proprietors of the Arlington Hotel?—A. Yes, sir.

Q. Are you the mayor of the town?—A. Yes, sir.

SAMUEL HAMBLÉN recalled.

By Mr. STORM:

Question. Now, Mr. Hamblén, we will commence at the beginning and try to go through this whole matter in regular order. Did you make the original surveys for the work done here on Hot Springs Creek?—Answer. No, sir.

Q. Who did make the survey and levels and sections for this work?—A. They were made under the direction of Captain Handbury.

Q. Do you know where are his notes of survey and estimates of the quantities that would be required to be removed to do this work?—A. No, sir.

Q. When did you make your first estimate of the excavation on this work?—A. My estimates are here.

Q. When was your estimate to the contractor?—A. The first estimate I did not make.

Q. Who made that?—A. It was made under the direction Captain Handbury.

Q. That was made in June, 1883, was it not?—A. Yes, sir; I made the measurement and returned it to him—2,676 cubic yards of loose rock and earth.

Q. This first estimate was for earth and stone, was it?—A. Only earth.

Q. How did you make that estimate?—A. By using a level and rod. In the first place I was too busily engaged to do the work alone, and invited an engineer here. He ran the level and I carried the rod and looked after the points I wished to make.

Q. And you measured the hill that was cut out, did you?—A. Then. At the close of the month I merely measured the bottom of the hole and computed it.

Q. You had nothing to show what the height was along the edges of the work, and how did you get at it?—A. We made a measurement under the direction of Captain Handbury at first.

Q. Then you had made a measurement before the work commenced?—A. Yes, sir.

Q. Then you took that measurement and made your estimate for excavating the rock and stone, &c.?—A. Yes, sir.

Q. Now, where is that measurement—that preliminary measurement?—A. That is what I cannot find. That is what I have been looking for ever since you have been here.

Q. When did you last see that measurement which was made by Captain Handbury?—A. You misunderstand me. It was not the measurement made by him, but by myself under his direction.

Q. That was a calculation of a measurement made of the space excavated, and I ask you how you got at that, as you did not know what was taken out? This excavation was in the first place the bed of a stream, was it not?—A. This point where the excavation began was along from the Old Hale Bath-House up to the Rector Bath-House, where we cut through the branch. Its natural channel was against the foundation of the bath-house, and in front was a high bank. His plan called for starting the channel at that point.

Q. This improvement is carried along the bed of a stream, is it not?—A. Not altogether.

Q. Well, it mainly comes down on both sides with precipitous banks, does it not?—A. Mostly.

Q. Now, when the work was completed you had excavated a space of ground with a level surface and with parallel sides?—A. Yes, sir.

Q. And without a knowledge of the contour of that stream, or what was in there before they commenced, how could you say how much was taken out of that stream?—A. I think you failed to understand my statement at first. I stated that under his direction I made an examination of this piece of ground, as we term it, and cross-sectioned it, and that gave me the surface.

Q. Of course it did.—A. And after the excavation was taken out I made still another and took the difference of the two.

Q. That is you made a measurement, not an estimate, of that space?—A. Certainly.

Q. Well, that is just what I thought you had not done. Then you did first make an estimate by cross-sections and levels?—A. Yes, sir.

Q. Now, where is that measurement and those cross-sections?—A. I have already told you I was unable to find it.

Q. So you have not that?—A. I have not it.

Q. And I ask you then when you last saw it?—A. That was a book that I made the returns of the measurements with and used it for the first two or three months on the work, and on some portions used other books, but not so much. I do not recollect of seeing the book. I supposed it was in my book-rack. I do not know when I saw it last.

Q. Did this measurement by cross-sections and levels include the whole measurement of the whole improvement?—A. Oh, no.

Q. For how much?—A. I think that was a space of 350 feet. That is as near as I can remember. I am not sure of that. I will say in regard to that that my—

Q. (Interposing.) I will have to get you down to the question and then you may explain anything you want to. It is not worth while to state what Captain Handbury said. You first made a measurement of 350 feet and you have not it now, have you?—A. No, sir

Q. Now, when did you make the next measurement, I mean for July; and what did you make that estimate on?—A. I made it on measurements taken in the same way.

Q. You had first made a preliminary survey, had you?—A. It would shorten this branch of this examination if I stated to you in full my method of proceeding. At the first of each month I took the level, and by referring it to some known elevation, examined the ground to be excavated for that month, and kept track of it as well as I was able to, and at the close of the month re-examined it, with this exception: in two or three cases where there were perpendicular banks I took their measurement by the use of the level and rod, and then we measured it again with a level rod, that is, the opening, with the level rod and tape.

Q. After the opening was made you measured it again, did you?—A. Yes, sir.

Q. And took the difference of the two for the amount of excavation, did you?—A. Yes, sir.

Q. What did you do with these cross-sections and levels that you made according to this arrangement of yours?—A. I recorded them in that book.

Q. Which book?—A. That book I refer to.

Q. Then, all in that book you cannot find?—A. Not all is in that book. I have some few in this book, but there is no connection with that. My method of proceeding was this—

Q. Well, you stated that. Now this, measurement you say you cannot find?—A. No, sir.

Q. When you measured out a given section of this work, and it was completed and excavated, what did you do to show it? Where did you keep your marks, so that when you came to measure the next month you would not measure the same work that you allowed in a previous month?—A. It was taken at given points the same as we usually do in work of that kind.

Q. What did you do in order to show that when you measured you did not measure the same over again?—A. Let me suppose, for example—

Q. (Interposing.) I suppose you kept a stake?—A. I could not.

Q. Then was it not possible for you to keep a plot on which you would keep the number of feet that you had estimated?—A. My note will answer that fully. What I did do was to take all the benches on the branch, or some point that remained, and as they were removed transfer my benches to other points.

Q. Supposing you wanted to go there and reproduce on the ground in the presence of witnesses what you did in the first place when you made this measurement or estimate for the contractor upon which he drew his pay, could you go and reproduce now your work on the ground?—A. I could reproduce my work on the ground in any height that would be required, because I have known benches.

Q. Can you go there and show to any one that chooses to go and look, either by your papers or marks on the ground, up to the point you estimated during the progress of this work?—A. No, sir.

Q. Was it not all important to protect yourself and the Government you represented that you should keep a map or plot, if you choose to call it, together with your figures, showing just for what space you estimated and the amount?—A. It would have been well. It never occurred to me as a matter of great importance to do it.

Q. It occurs to you now, does it not?—A. Yes, sir.

Q. Now, how did you discriminate in your estimate. How did you get at the amount of rock or ground or earth and stones?—A. I got at that as the work went on, by examinations and notations, and by measurement.

Q. You would not examine a note to get at the number of yards? Now, did you wait until the earth was excavated from the rocks and then go and make your measurements?—A. Yes, sir.

Q. Where have you that entered in your book?—A. It is in the same book I spoke of.

Q. And after the dirt was removed you measured for the rock, and that is in this same book, is it?—A. Yes, sir; but in regard to measuring for earth and rock in that way, it is not always that you know when you come to rock.

Q. In your preliminary survey you cannot tell what is under ground, can you?—A. The best we can do in that way is, when the ground is uncovered to make an examination of it.

Q. What do you mean by an examination?—A. To make a measurement.

Q. Then you did measure the rock after the earth was removed?—A. Yes, sir.

Q. That required, then, three different measurements; the first measurement and then the earth taken off and the rock left, and then the rock taken off and that measured?—A. Yes, sir.

Q. What do you understand by rock in place?—A. Anything that is too large to be removed by man power, or where there is a bed of rock.

Q. Bed-rock is solid rock either in the bed or strata. When you speak of rock too large to remove by man power do you mean men lifting at it, or the use of a derrick?—A. Too large to handle by the number of men who can get around it.

Q. If it required a derrick to lift it out you would not consider that as being rock in place, would you?—A. If I had a pile of rock like that I would give it as rock in place.

Q. Notwithstanding that it was not lying imbedded in the ground?—A. I have been so accustomed to in matters of that kind.

Q. If you had now your figures and measurements on which the excavations were made you would have no trouble in finding the height of that wall, would you?—A. I think I could find it at nearly any point.

Q. You think you can find it now, do you?—A. No, sir.

Q. You would have no trouble in doing that if you had your measurements for the excavations. If you had a map or plot of your excavations, as made by the contractor, you would have no trouble in finding the size of it, would you?—A. No, sir.

Q. Can you show us what was the length of each estimate from June to December, inclusive, in the matter of excavation?—A. No, sir.

Q. Can you give us from your notes that you have with you the number of lineal feet in the walls that were built from month to month? Can you, from your books, show to us just how many feet were estimated for the different months in lineal feet?—A. I can some of them, but some are in the missing book.

Q. Is it much trouble to show us for what months you can—the lineal measurements or estimates?—A. The estimate for November is 38 lineal feet above the city hall, commence. Two hundred feet to center of bridge to brick bath-house.

Q. What is that for, the excavation or wall?—A. For wall.

Q. Was the wall completed from that point 38 feet north of the city hall to the middle of that bridge?—A. That was completed up to the skewbacks; not for the arch.

Q. Give us any other month.—A. I am not quite through with this. From the old Hale to the Rector Bath-House, 200 feet lineal.

Q. Now the next.—A. Two hundred and forty-six lineal feet, skewbacks.

Q. Does that lap over any of these others?—A. Independent of the other.

Q. What other months have you, and for what other kinds of work?—A. I have not got through with this. A hundred and twenty feet of arch above the Arlington.

Q. This is for the month of November, is it?—A. Yes, sir. Twenty-two feet of wall and 200 lineal feet of skewbacks above the arch. Thirty-seven feet on left curve.

Q. That was an arch estimated for that was not completed; is that the fact?—A. No, it was one of the branches put in. Thirty feet on the right.

Q. What other months have you?—A. Besides that I allowed on 200 lineal feet of this lower work 1 foot below grade, and that should be added, and on the work constructed 150 feet above the lower end of work at Old Hale Bath-House 200 feet. There I allowed some as extra. That is all, I think, of that estimate.

Thereupon (at 6 o'clock p. m.) the committee took a recess until half past 7 o'clock p. m.

AFTER RECESS.

Committee met pursuant to adjournment.

Examination of SAMUEL HAMBLÉN resumed.

By Mr. STORM:

Question. You made a measurement since this committee held its first session here, after you were first put upon the stand, did you not?—Answer. Yes, sir.

Q. Who were present at the measurement?—A. Mr. Lowe, Mr. Flemming, Mr. Johnson, and Mr. Sudduth.

Q. What part did you do or take in that measurement?—A. I carried the leveling rod and gave the measurements wherever they asked for them and acted under their directions.

Q. Who took down the figures of the measurement?—A. I think Mr. Lowe and Mr. Johnson, both.

Q. Has Colonel Lowe the estimates and figures containing the measurement?—A. I presume he has.

Q. Did you help him to make the calculations?—A. Mr. Lowe and Mr. Flemming made the calculations.

Q. Well, the measurements you cannot give, of course, as they are on Mr. Lowe's paper?—A. No, sir.

Q. Your present measurement, just completed, includes the whole work as it stands, does it?—A. Yes, sir; with one exception. I heard the report made by Mr. Johnson the other day. He spoke of a sewer that he could not get at. Of that I made an estimate of 54 yards.

Q. Where was that; at the wye?—A. No, just above the Arlington Hotel.

Q. The one built by that man under a contract with Mr. Walton?—A. Yes, sir; Mr. Aldrich.

Q. Is that a part of the plan of the improvement?—A. Yes, sir. That is made on the stream along Fountain avenue, and was made under the directions of the Secretary of the Interior, and is in addition to the original plans for the improvements of Hot Springs Creek, and makes that much additional work.

Q. And that you say is included in the estimates you have to-day?—A. That is not, but included in the estimates I have made heretofore.

Q. Then with that out your last measurement includes all work on Hot Springs Creek?—A. Yes, sir.

Q. I believe you were questioned as to the height of the wall, &c., when you were on the stand before?—A. Yes, sir.

Q. What amount of work was done after your December estimates up to the present time?—A. That I could only tell by an estimate. I was intending to make an examination as near as I could this evening in regard to that.

Q. What do you mean by saying that you could only get at that by an estimate?—A. Because I made no measurement or examination of it.

Q. Do not your notes or plans, or something show up to where you estimated the last time?—A. Yes, sir.

Q. You knew where you stopped before, I suppose?—A. Yes, sir.

Q. And you commenced there to get what work had been done subsequent to the month of December?—A. Yes, sir; I should commence there.

Q. Did not you get that part in yards?—A. I can.

Q. Did you in your measurement to-day?—A. They got it as far as executed.

Q. No; they have the whole work executed. But I want to compare, if I can, your estimates with what was done up to December, because that is where the dispute is. Have you the estimates based on the measurements, that will show what has been done since your December measurements?—A. I can obtain those.

Q. Readily?—A. I do not think it will take me much time.

Q. Then you can do it in the morning?—A. Yes, sir.

The CHAIRMAN. I have that. It was handed me this evening by Colonel Lowe.

Mr. STORM. Well, that will do. What is the length of the excavation on Hot Springs Creek, rock and dirt?

The WITNESS. I will have to give it to you either in pieces or added up.

Q. You may add it up.—A. Three thousand and ninety-four feet is within a very few feet of it.

Q. Then the excavation is longer than the walls?—A. Well, besides the original plan, we have carried out these two wings; the wye as it is called. The original plan stops below the wye.

Q. The excavation there did not amount to very much, did it?—A. It was pretty heavy.

Q. How wide is that excavation?—A. I gave it to them under the first plan 33 feet, but it is narrowed down to 30.

Q. Why did you make it 3 feet wider than the walls would be when erected?—A. That was the direction of Captain Handbury.

Q. Captain Handbury's direction was to make the excavation 33 feet wide, was it not?—A. Yes, sir; and after the Secretary came here we had a consultation, and he decided to narrow the walls above the Arlington.

Q. Well, then, what was the excavation at that point?—A. I could not tell you.

Q. How wide was it?—A. Thirty-three feet.

Q. What distance did it run, 30 feet?—A. From the Arlington to the northern limit.

Q. What distance is that?—A. That would be about 1,250 feet, I should think, including this wye.

Q. Then the balance was 33 feet from that on, was it?—A. Thirty-three feet from that south.

Q. That is what I mean. The work of excavation is substantially completed, is it not, and the contractor has substantially excavated all that is called for under his contract?—A. Substantially; yes, sir.

Q. There have been no excavations since the December estimate?—A. Oh, yes.

Q. How much?—A. That I have not examined.

Q. About how much?—A. Well, I could not tell.

Q. Well, as near as you can tell.—A. I would say in regard to that that I could not tell you anything about it.

Q. Why?—A. Because I have given it no attention at all.

Q. When was the excavation done, in January?—A. Yes, sir; part of it was done in January.

Q. Well, why have you not estimated it?—A. Because I was not here.

Q. Upon what principle are you going to estimate that?—A. Well, the work that has been done above the end of the arch, above what we call Belden's block, I can get at; but the other I cannot tell, because there was a storm and it was washed in there and filled up.

Q. But that has been taken out, has it not?—A. Yes, sir.

Q. The contractor is not bound to take out what is washed in, unless he is allowed pay for it, is he?—A. That is the way I understand it.

Q. Give us an estimate of about how many yards of excavating has been done since December, and of which you have made no estimate.—A. I would give it cheerfully if I could.

Q. Have you no idea what it is, colonel?—A. No, sir.

Q. Is it 500 cubic yards?—A. Well, probably it is, but I would not give even that as an opinion.

Q. Is it 400 cubic yards?—A. If I could go down on the creek and examine it, I would give you an opinion as near as I could.

Q. What do you mean by examining, looking at it?—A. Yes, sir.

Q. Is it 300 cubic yards?—A. I presume it is that.

Q. Does Mr. Alexander know what it is?—A. I do not know.

Q. You have allowed him 14,888 cubic yards, and for rock you have allowed him 9,343 cubic yards. Suppose you add 1,200 cubic yards to that for what he has done since, how much does that make?—A. Twenty-five thousand four hundred and thirty-six.

Q. What would be the number of square yards in that, 1,200 feet at 30 feet wide?—A. Four hundred and forty.

Q. Now take the remaining portion at 33 feet?—A. Sixty-two thousand five hundred and two square feet.

Q. Just give it in square yards?—A. Ten thousand nine hundred and forty-four and sixty one-hundredths.

Q. How high would the excavation have to be to make it contain 25,436 cubic yards?—A. I will omit the fraction. That would be about $2\frac{1}{2}$ yards high.

Q. It would be somewhere about 7 feet then?—A. Yes, sir.

Q. Now do you think that if that ground was put back in that space, with the walls out, it would be higher than the walls now are?—A. Yes, sir.

Q. Do you think that correct?—A. Yes, sir. Take the bed of the stream precisely as it was with the excavation out and put the dirt back, and I will give you an example of that. Down here below the Rammelsburg Bath-House, I ran along down there and put the stakes down and for a distance of three or four hundred feet, my stakes marked for the cut $3\frac{1}{2}$ feet, 4, and 5 feet along down on that plot. Now, we have cut through places that are 12 and 14 feet high; I do not know as we went as high as 14 feet.

Q. What do you mean by the explanation?—A. That the dirt that has been taken out and put back in there.

Q. Yes, but understand this is solid work, this is rock put back solid just as nature made it in the ground, and you allowed Alexander for excavating rock and earth as nature put it in there, did you not?—A. Yes, sir.

Q. Now, that would fill it all up and make it 7 feet high from the bottom, would it not?—A. Yes, sir.

Q. The creek was always in your excavation, excepting at certain points where you straightened it, was it not?—A. Yes, sir.

Q. What was done with the dirt?—A. Part of it was put on the street and part was thrown out on either side of the wall; some of it after the wall was put up, and some thrown up upon the banks wherever they got a chance to put it there and the other was hauled away.

Q. Where was the concrete work done when the contract was changed?—A. In the bed of the creek.

Q. Do you mean under the foundation?—A. In smoothing off the bed of the creek.

Q. You gave the contractor for the wall credit for that, did you not?—A. Yes, sir. The concrete in the rear was put in between the walls to make a bed for the creek.

Q. But that had nothing to do with the laying of the foundation of the side walls, through?—A. Sometimes we used that.

Q. Is that in at the low places or all along?—A. Wherever the creek bed is soft or rough.

Q. Where is the concrete allowed for in August and September?—A. That was other concrete.

Q. Was that the concrete in the side walls?—A. Yes, sir.

Q. When you were laying it up under the original plan?—A. Yes, sir.

Q. What proportion of the whole wall would be concreted; about what proportion?—A. It would be somewhere about one-third.

Q. Why would it not be a fourth?—A. That simply shows you the cross-sections [Indicating on sketch.] The contract called for at least one-third of the stones to be headers.

Q. Then you take it to be one-third, do you?—A. Yes, sir.

Q. Well, would 234 feet of concrete be the proper proportion for 373 feet of granite masonry?—A. That would be too large, according to that.

Q. But you have here for 373 feet of granite masonry, 234 feet of concrete. I am speaking of the concrete in the granite work in August and September.—A. The method of computing that was to compute the stone and then add the remainder of the wall for the concrete.

Q. How did you compute the stone?—A. I computed it one-third for headers and then computed the balance to keep the run of stone as near as it come in and make the measurement on them.

Q. You have here more than one-third. That can hardly be correct, can it? In your letter to the Secretary of the Interior of August 14, 1883, you estimated that the present plans, as per contract, that the walls would cost \$63,101, and then you estimated the covering of brick and iron at \$60,000, making the two items \$123,101. You said that by your plan there would be 950 cubic yards of dressed stone at \$18.45 per yard, amounting to \$17,527.50. What was this dressed stone?—A. Dressed skew-backs.

Q. In this same letter you estimate 6,412 cubic yards of range rubble at \$9 per yard, amounting to \$57,708, and also 1,161 cubic yards of concrete at \$5.74 per yard, amounting to \$6,327.45, making the total, walls and covering complete, \$81,562.95. You state that by your plans you would save to the Government \$46,538.05. Now, you have already expended upon this work about \$79,000, and you say that the work is only seven-twelfths done. You made that statement, I believe, did you not?—A. That must have been stated by some one else.

Q. How much of your work is done—I mean of the walls?—A. I do not recollect quite how much arch there is. There is one-fifth of the side still to construct and the remainder of the arch.

Q. Then you cannot give us the proportion of the work that has been on the side walls. Well, can you tell us what it will cost to finish the wall?—A. If you give me time to estimate I could.

Q. How much time?—A. By noon to-morrow.

Q. Can you not figure it roughly now?—A. I could but it would be roughly. You will understand this, that the excavation does not come into that estimate, and further than that the same thing would apply to both.

Q. We want to recommend an appropriation by Congress to finish the work, and as the Government engineer, how much do you recommend us to ask for?—A. I could give it to you any time.

Q. Did you not see the resolution of Congress empowering us to look into these facts?—A. Yes, sir.

Q. Then why did you not prepare yourself?—A. Because it did not occur to me.

By the CHAIRMAN:

Q. Are you embracing in that estimate the work done above the reservation?—A. The work that has been done above the first plan is not embraced in that.

By Mr. STORM:

Q. Where is that work estimated?—A. At the Wye I referred to.

Q. Has it ever been estimated?—A. He asked me if it appeared in my estimate in my letter.

Q. You did not have in that letter an estimate for this improvement up Spring avenue?—A. That we did not find until we got there.

Q. Could you give us what is the average height of that wall all the way through without reference to sections? What will the wall average throughout?—A. I should say pretty near to 6 feet.

Q. In your estimates that you made to-day you estimated the walls 5 thick at the bottom and 3 feet on top, did you?—A. Yes, sir.

Q. And the arch you took at 18 inches at the crown, did you?—A. Yes, sir.

Q. And 2 feet 8 inches at the spring?—A. I gave them a little more than that.

Q. You gave who a little more?—A. I gave the arch at the spring more. I had the skewback laid on the plan, and that was 2 feet and 10 inches.

Q. What did the plan call for, 2 feet 10 inches at the spring?—A. Yes.

Q. Then, in your estimate you made to-day, you allowed 2 feet 10 inches?—A. Yes.

Q. Was that the fact by actual measurement?—A. I applied the rod to the arch at ten different points; all the points that were exposed both at the crown and spring,

and Mr. Lowe read the rod, except at one time there when I think it measured 2 feet and eight-tenths it measured full 3 feet, and crown of the arch measured 1 foot and nine-tenths.

Q. Well, in measuring, in what direction did you measure, with the rod directed to the center?—A. The rod was laid right on the skewback.

Q. When you measured ten different places, how did you manage to measure in the direction of the stone?—A. The arch was exposed.

Q. You did not measure where it was not exposed, because you could not, could you?—A. No, but we did where it was exposed.

Q. Did you direct the rod at the center of the arch?—A. We measured right on the skewback.

Q. Where were the others?—A. We measured the arch in ten different places with that result.

Q. Did you measure between the arch and the spring?—A. There are ten different parts of the arch exposed and we measured all ten of these ends.

Q. Indicate on this plan [exhibiting sketch of the improvement].—A. I will. [The witness here indicated on the sketch placed before him the points referred to.]

Q. What did you find on your plan as the sectional area of the arch, if you remember?—A. I did not make that calculation. Mr. Lowe made it.

Q. In measuring this arch, what formula did you use in getting at the contents of the arch?—A. The formula I used was to take the depth here [indicating on sketch] and measure across there [again indicating] as near as I could get perpendicular to this point here [indicating]. Take this point and this point and add them together.

Q. So you added 2 feet 8 inches to 18 inches and divided by 2, and that gave you the width of the area, and then you took the distance of the arch at a point one half way between the 18 inches around to the middle of the other one, and you do not know what that gave you?—A. It was right near 50 feet. I have it on paper at the office.

Q. You can easily figure out on the same plan how much the rock would be. Take the area of the bed and take your rock, which was 9,348 cubic yards, and that would make the rock cut over 2 feet high, would it not, all the way through for the whole length?—A. Well, sir, I can figure that out.

Q. In your estimates have you given anything to show on your paper what you allowed for the width of these excavations?—A. I allowed what I told you.

Q. Have you anything to show that calculation?—A. I may have, and I may not.

Q. You excavated 3 feet more than the width, did you not?—A. I excavated under the direction of Captain Handbury. In fact we set the stakes together. He said that he would make the excavation 18 inches wide, but he wanted to lay a pipe under the east side of the wall and he wanted four excavations.

Q. The pipe arrangement had been abandoned, and why did you continue the excavation that width?—A. The pipe had not been abandoned and I continued the excavation until after the Secretary came here, and then I narrowed down to 30 feet.

Q. Now, where did your 30 feet begin?—A. Well, whatever work we did down this way after October.

Q. That is an indefinite statement. Where did that begin, and how many feet of excavation would that include?—A. That I could not tell you now. Allow me to make a statement here. When I started in on that work I expected to act under Captain Handbury's directions, and waited for him to give me instructions as to what he wanted me to do. He came in the first place and laid off the work from the lower end until the excavations intersected the reservation line. He stopped the work then and said he did not feel disposed to go above that, because he thought some legal questions would arise. I was simply asked to assist him. Later he came over and asked me to take my instrument and go with him, and he laid off the center line of the balance of the work, with the exception of running the curves in, and laid what we call the tangent, and turned around to me and said, "I have orders to lay this work off and I have laid it off," and he went away. While he was here I supposed he gave instructions to the contractor, and I took no further notice. I simply assisted him to lay it off and that was all he asked, and I expected he would give me some instructions in regard to it.

Q. You were appointed superintendent here because you were a practical engineer, were you not?—A. I had nothing to do with work until he left.

Q. But he was not superintendent after he left?—A. He was assigned to the work as engineer.

Q. When General Kelley was here?—A. And after the work began a second time.

Q. And you considered that you had nothing to do with it as engineer?—A. Nothing more than any other man in town, except such things as he directed me to do.

Q. Did you not consider it your duty to make estimates for the contractors?—A. I am not speaking about the work. Later than that the contractor went on and did some considerable work. Now, when the work was turned over to me I did the best I could. I then made up my mind to make the estimate every month, and it did not occur to me to preserve the records of the work, because I calculated it every month

and gave the contractor, as near as I could, what had been done, just as I do you, and nothing beyond that.

Q. That book in which you kept a record of this work you did not lose through carelessness, did you?—A. No, sir.

Q. You kept a record to reproduce your work on the ground, did you not?—A. As far as the first account went.

Q. You thought you could reproduce your work if you were called upon to do so, did you not?—A. The upper surface.

Q. And so that you might tell just what was there before the contractor stuck in a spade or pick, and now the evidence is gone and you cannot do it?—A. Yes, sir; but the work later than that has been done by the month.

Q. I understand that. I simply say that you have no data to tell what amount of work is in any given section. You only know this, that you measured it monthly and paid them, and there it stopped?—A. That is all I had to do with it.

By the CHAIRMAN:

Q. What was the amount of your estimate of work done up to the present time?—A. Five thousand one hundred and fifty-four yards.

Q. Does that embrace the walls and arch alone?—A. Yes, sir.

Q. What is your estimate for the excavation at the bottom of the creek?—A. The estimates given are about 22,000 yards.

Q. What is the estimate of the wall and arch?—A. The estimates given for the walls is 5,154 yards, and for the excavation it is 22,000 yards, nearly.

Q. Now estimate the length of the work and its width, how deep would that excavation of 22,000 yards carry the bed of the creek?—A. Without making a calculation, it would be about 6 feet.

Q. Below the surface?—A. That is, it would require about 6 feet of excavation to be made.

Q. What would that make the average excavation of the whole length and width below the bed of the creek?—A. Below the bed of the creek?

Q. Estimating on the basis of 22,000 feet of excavation taken out of the bed of the creek, how deep would that make it on an average?—A. Stone and dirt and everything?

Q. Well, take that amount of square yards, estimating the width and length, how deep would that carry the wall from the surface as it was when you commenced the work, supposing it to be level?—A. About 6 feet high, I should say, without making a calculation.

Q. Do you think it has been carried that deep?—A. I think so.

Q. Do you think the walls average 6 feet below the surface of the creek?—A. That would bring in another answer. You see we have cut out many spaces that were filled up to the grade of the street, taken altogether, as I have already stated, as to what I did to the bed of the creek myself on this plot where the work began, my stake ranged 2½ and 4 and something over 5 feet.

Q. Is there any place on the work where the wall would be over 6 feet?—A. There are places where it would run over 12 feet.

Q. How long are those places?—A. Well, from the Old Hale bath-house through up to the north end of the Rector until we strike the channel of the creek again.

Q. I speak of the bottom of the creek.—A. This is taking out all the excavation necessary to put up the walls. Now, there is another point just opposite to where the creek comes in, at what is now known as McTague's corner. The line is struck north. In fact the line first laid covered the side wall and we were compelled to modify that. There the bank was flush with the height of the street and there we had to take out almost one-half the width of the channel from the height of the street down. I give that as an example, and we had such spots as that all along the line.

Q. But the bed of the creek originally was some feet below the top of the bank, was it not?—A. Yes, sir.

Q. And the excavation was in the bed of the creek, was it not?—A. Well, we had to take away these banks, too.

Q. In widening and straightening the channel?—A. Yes, sir.

Q. Well, was the average about 6 feet?—A. We had still another bank at the head of the work. His line first laid we cut into somewhat, but, upon examining the work, I found that if it was left as it was at that time it would be difficult to bring in the right-hand branch, and that compelled the cutting away of 150 feet of bank there that certainly must have been 10 feet above the bed of the creek. I give that as an opinion, that it would require fully 6 feet; or rather, if the excavation was taken out and replaced just as compactly as it was in the first place, it would be 6 feet high.

By Mr. STORM:

Q. That would not allow anything for the natural bed of the stream?—A. We went far below the bed of the stream. I will give you an example of that which I

would like you to look at; the natural bed of the creek is as it is along by the Big Iron bath-house and the Old Hale. The only place you get a good example of the natural bed of the creek is by the Big Iron bath-house and the Old Hale bath-house.

By the CHAIRMAN:

Q. In the estimates you made yesterday what did you make the entire work amount to in square yards, taking the wall and arch together?—A. You have it there before you.

Q. I will ask you first did you remeasure the whole work yesterday and to-day?—A. I measured it with those other gentlemen who were engaged with me in making the measurement. I intend to make an examination myself.

Q. Has the work been remeasured since the committee has been here?—A. Yes, sir.

Q. By whom was that measurement made?—A. By Mr. Lowe, and Mr. Johnson superintended.

Q. To-day and yesterday?—A. No, it was done day before yesterday.

Q. What Mr. Johnson?—A. E. H. Johnson.

Q. Were you along with them when the work was remeasured?—A. I went along with them and carried the leveling rod.

Q. Now, did they ascertain in that measurement how much work was done up to the 31st day of December, when your last measurement went in?—A. They measured the work as it stood.

Q. Did you indicate to them how much work had been done when your last estimate went in?—A. No, sir; but I gave them all the information they asked for.

Q. Can you tell how much work has been done on the creek since you made your last measurement?—A. I can ascertain.

Q. Do you not know where it stopped the 31st day of December?—A. I could not tell you exactly now.

Q. What was the amount of your last estimate?—A. 5,154 yards.

Q. Did they estimate the work embraced in your last estimate separately from the other?—A. No, sir.

Q. Did you indicate to them where the work stopped at that time?—A. No, sir.

Q. They simply measured the entire work, did they?—A. They decided on consultation to measure the entire work as it stands now.

Q. What did they make it?—A. Near 6,000 yards.

Q. And you do not know what proportion has been done since the date of your last estimate?—A. I have never made an estimate.

Q. Can you not tell where your estimate stopped, and could you not point out about where, and could not these gentlemen make an approximate estimate of the work done since that time?—A. Yes, sir; I could do it. The only trouble would be with the skewbacks.

Q. Do you not know about the point where the work stopped, and where the work has been done since your last estimate?—A. Yes, sir.

Q. And then could you not point out to them what work has been done since your last estimate?—A. Yes, sir.

Q. The work continued during your absence from the 31st of December, did it?—A. Yes, sir.

Q. And your estimate up to the first of December was for work done, was it?—A. 5,154 square yards.

Q. And the remainder of the work has been done since that time, has it not?—A. Yes, sir.

Q. Then you made no separate measurement, but measured it all together?—A. Measured the whole work all together.

Q. Well, could it not be ascertained about what quantity of work has been done since the 31st of December?—A. Oh, yes. I would not have special difficulty in doing it. All I ask is time to do it.

By Mr. STORM:

Q. How are you going to find the place up to which you measured it before?—A. Go back to my old checks and measures.

Q. What do you mean by your old checks?—A. Well, that is technical.

Q. Well, explain and make it plain to a man that is not technical?—A. The points where I worked from before.

By the CHAIRMAN:

Q. That is the same point I wanted to bring out. Do you not know the point on the street where the work stopped before you went away?—A. I can find it.

Q. Well, about where was it? Was it opposite the Independent bath-house?—A. About opposite the Arlington Hotel.

Q. And since that time the remainder of the work, running down to Reserve street, has been done?—A. Oh, no; this down here was done last summer.

Q. You have been working at both ends, have you?—A. Oh, yes, working in four or five places at once.

By Mr. STORM:

Q. Where along this line was that deep cut of 12 feet [exhibiting to witness a map]?—A. [Looking over map.] Commencing here [indicating] and extending up to there [indicating].

Q. That is where you cut through the bank and allowed the stream to flow down?—A. Yes, sir.

Q. About what distance is that? This is drawn to a scale, is it not [referring to map]?—A. Yes, sir.

Q. What is the distance? That was 12 feet high.—A. Well, of course it varied very much, as the topography shows.

Q. How was it down the rest of the distance?—A. Not so deep.

Q. How was it along here [indicating]?—A. Just about one-half of this along here was up to the full height of the street.

Q. How much long here [indicating]?—A. It was up to the full length of the street.

Q. How many feet high would that be?—A. We went about 14 feet below it; not quite that, but it would be very nearly up to grade.

Q. The cross-sections C and D show the bank as it is. Did you work on this plan?—A. No, sir.

Q. You went below what the plan called for, did you?—A. Yes, sir; nearly 3 feet. We had to in order to get in this work, as it is higher than the plan was.

Q. He gave you the levels for this; I mean Captain Handbury?—A. I made no changes until after the works came into my hands.

Q. How much did you go below his plans at the Old Hale bath-house?—A. I judge 2½ feet.

Q. The cross-sections here show that the dirt was not 2 feet high there?—A. His cross-sections there are right.

Q. And they show it could not have been on an average more than 2 feet?—A. Oh, yes; that is 5 feet there [indicating].

Q. How much over here [indicating]?—A. About 2½ feet.

By the CHAIRMAN:

Q. Which plan did you work on?—A. As I have already stated, I followed the general direction of his lines. I was compelled, however, to throw my work deeper. I had to throw it generally deeper to cover this new work. His work was 9 feet 9 inches high, and this work is 11 or 12½ feet high.

By Mr. STORM:

Q. Did you excavate or was the whole bed of the creek excavated at the bottom anywhere except under the foundations, excepting that portion which is now covered by the arch?—A. It was at some points and at others it was not.

Q. So you did not excavate to the bottom of the creek all the way through?—A. Not altogether.

Q. Now, have you excavated the bottom of the creek anywhere except under the foundation walls where the arches cover the same?—A. Yes.

Q. Where have you excavated the bottom of the creek, except under the wall where the arches did not cover it?—A. Between the Old Hale bath-house and the end of the lower arch.

Q. What is that distance?—A. Very nearly 400 feet.

Q. How much does your arch cover now in lineal feet?—A. I could not tell you.

By the CHAIRMAN:

Q. Did not this excavating have to be done more than once? Did not the creek fill up and have to be excavated again?—A. The situation in regard to that is this, that there has been a great deal of excavation at this lower part that is filled in. I do not know where it comes from.

Q. Did the debris have to be removed after being removed before, by reason of being washed in there by floods or anything of that kind?—A. Yes, sir.

Q. When the bank fell in, the Government had to pay for having it thrown out again, did it?—A. No, sir; I did not.

Q. Now there is some earth washed in again, and that must be removed, must it not?—A. I say that if the contractor had excavated along the bank and it fell in, I would expect the contractor to remove it, but where this material came in by reason of the action of the creek the question is whether he ought to be entitled to it.

Q. Well, how does this come in the estimates?—A. It did not occur very often. Two or three times we have had floods.

By Mr. STORM:

Q. What is the number of cubic yards he has thrown out these two or three times you have had floods here? Have you that as a separate estimate?—A. Not as a separate estimate.

Q. Have you made an estimate of that?—A. No sir.

Q. Why have you not done so?—A. If that came in in that way I would be compelled to measure it.

Q. And you have not done that yet?—A. I have not measured anything for the past two months.

Q. You have not anywhere thus far made a measurement for caving or washing in and allowed it, have you?—A. No.

Q. Then, of course, it is not included in any of these figures here?—A. No, sir.

Q. And if that is done hereafter it will have to be added to these estimates?—A. Yes, sir.

Q. How many sections did you measure this wall in yesterday?—A. In 50 feet sections.

Q. Wherever the height of the wall could be ascertained, you took it, did you not?—A. Yes.

Q. Where you could ascertain the height of the wall, how did it run, if you recollect?—A. I did not take any notes at all. I left the matter to the other engineers. I was merely along as a matter of accommodation.

By Mr. PAYNE:

Q. Do you suppose that \$79,000, the amount that has been expended, will complete this job?—A. As far as the masonry is concerned, yes.

Q. I mean to complete the job?—A. It will not complete it if all is done that is necessary.

Q. I mean under your present plans, and the distance at present it is proposed to carry the work?—A. Oh, yes, as far as the masonry is concerned.

Q. I say for everything; I do not confine it to the masonry.—A. Beside that, gentlemen, there is one point that I wish to be either questioned on or be permitted to make a statement in reference to.

Q. Before you get on to that I wish to ask a question; have you ever yet fixed a limit for the north end of this channel?—A. Yes, sir.

Q. How far is it from the wye and the branch that runs in there in a northeasterly direction; how long is that to be?—A. I intended to run that until it closes to the wall; it will be about where the derrick is.

Mr. STORM. If you have fixed the length of this work according to the derrick, I hope you will not remove the derrick any further north.

By Mr. PAYNE:

Q. Who fixed the limit of this thing anyway?—A. When the Secretary was here last summer and asked why the sewer was left there in that condition, I told him that was where the plan stopped, and he said this would not do; that the floods and things of that kind would destroy this, and the two channels cannot answer in the condition they are. He said, "You must extend this out either way and secure your work." I said, "How far," and he said, "Extend it far enough to make a good job." I examined it and decided to extend it until it would take in the Whittington avenue branch, and until it would take in the first street there, which would be about 45 or 50 feet longer than it is now, and the other required about the same amount.

Q. Will you not, for the accommodation of this committee, the first thing to-morrow morning, measure the distance from that wye, which you propose to extend, so that we may know how far this work is to be carried?—A. Yes, sir.

Q. Is there any limit to it in a southerly direction?—A. You have a very extensive field open in a southerly direction if you wish to occupy it.

By the CHAIRMAN:

Q. You might carry it down to the Ouachita River.—A. Yes, sir.

By Mr. STORM:

Q. Do you remember about the time when the lease was granted to Albert Gaines for the last lot down here on the permanent reservation?—A. I remember about the time.

Q. Was the lease transmitted to him through you?—A. Yes, sir.

Q. Do you remember having a conversation with Captain Jacobs on the ground there in reference to it, some time last summer, before the lease was granted?—A. No; I do not.

Q. And did you or not ask him what he was doing there?—A. Captain Jacobs?

Q. Yes; and did he not say that he proposed to include that lot, and wanted that lot below the Rammelsburg bath-house for the purpose of having this ground con-

nected with the building for the Army and Navy hospital, or words to that effect?—A. I do not recall that.

Q. Did you or not say that you would have to block that little game?—A. I think I aid to him that that little game was blocked.

Q. Well, that was before Mr. Gaines obtained his lease, was it not?—A. I think not; if I made that remark.

Q. Did not the lease come to you shortly after that?—A. Well, if I made the remark I guess I had the lease in my possession.

Q. You did not tell him you had the lease, did you?—A. I do not often do that.

Q. Then you did not say you would have that little game blocked, but that the little game was blocked?—A. Well, if I did I had the lease in my possession.

Q. Do you know whether you made the remark or not?—A. I do not recall the circumstances.

Q. And cannot remember anything about it? A few days after that, did not Mr. Gaines get his lease?—A. I could not say; I do not remember.

By Mr. PAYNE:

Q. By whose direction was it that most of this work has been done above the Government reservation, and so little in front of it?—A. No special reason for it, except it is the most convenient way to get at the whole of the contract.

By the CHAIRMAN:

Q. You have been asked why the work was done above the reservation. Do you know any reason why that was done there?—A. The reason I gave was that it was more convenient to do it.

Q. No other reason?—A. Nothing that occurs to me at present.

Q. Was not the creek right in the middle of the street, and had that nothing to do with it?—A. The creek was in the middle of the street, and we proposed to do the whole job. I told the contractor when he went to work that he should commence where he could do the work to the best advantage. I think I suggested to him to commence the work up there.

By Mr. STORM:

Q. Is the street narrower down here where you have no arch than it is up near the Arlington Hotel where you have it arched?—A. The street is 85 feet wide here. At the Arlington it was pretty close driving for teams to pass.

Q. Where did the stream run in the street at the Arlington?—A. Just about the center, and at many points it was difficult for carriages to pass.

By Mr. PAYNE:

Q. Then this improvement was needed more for the improvement of the street where the Government had no property fronting than on the street where the Government's property was located?—A. Yes, it was needed more because the town has not for years, and neither has the Government property, had a street that was suitable for traffic. It was almost impossible to pass on the street there, and it was dangerous to every one. You spoke about fixing limits. Now, as to the lower limit, if it is to go no further than it is now, I advise that it be extended at least across Reserve avenue, especially for these reasons: first, to close the street in that far; and, second, when the Army and Navy hospital building is completed to make it accessible, and it cannot be unless the work is extended.

By Mr. STORM:

Q. Do you think this lot leased by Mr. Gaines should be taken away from the Army and Navy lot?—A. No, sir.

Q. As the engineer in charge of the property of the Government here, do you not think that the Government should have that space?—A. That would depend entirely on the the pressure of business in the way of bath-houses.

E. H. JOHNSON recalled.

By Mr. STORM:

Question. You were present during the last measurement of this work, were you not?—Answer. Mr. Fleming and Mr. Hamblen and Mr. Sudduth and myself went along the creek and made the measurement of the height of the walls as far as they could be determined.

Q. What part did you take in the measurement?—A. Sometimes I made the measurement myself, always with Mr. Lowe or Mr. Fleming noting the measurement with me, so that we agreed. I do not think a single measurement was made but what all parties conceded that it was as near right as we could arrive at it.

Q. At what points do you separate or part in your figuring?—A. In the height of the wall. However, it was agreed upon, and we have made the computations sepa-

rately. I have made my computations, and they have made theirs, but in measuring the height of the wall we put the dimensions down, and I suppose they are all exactly alike.

Q. Can you show us the results of your computations?—A. Yes, sir. I will say, before going further, that Mr. Fleming stopped in my store and said that the committee desired that Mr. French, himself, Mr. Lowe, and myself should go and measure the work. I was busy writing a few letters that I was not able to write in the morning, and he said that he would go and get Mr. French, and I said that by the time he would get back I would be ready. He did not find Mr. French, and asked me if I would go, and I told him I would do so in five minutes. When I got there Mr. Lowe had made a measurement of the work down to the junction or wye, and I did not have anything to do with that. So Mr. Fleming gives me the measurement of 555 cubic yards beyond the junction, and that I take as correct. I had nothing to do with that. I do not recollect the exact quantities that I had for this work, but I think I had about 150 yards on my book. There are my cross-sections (indicating on diagram in memorandum book). We took them at stations of 50 feet apart. These red figures [indicating] show the area of the skewbacks and this area under the skewbacks. I note the skewback ends here (indicating).

(The witness here explained by diagrams and figures the measurements referred to in his examination.)

Q. Then you make the total of masonry up to the present time, which includes all the work and the addition, 5,000 cubic yards?—A. Yes, sir.

Q. What was your former estimate?—A. Here it is. There are the sections [indicating]. There are 3,838 cubic yards there. Since then, according to my estimate, 630 yards of arching have been completed.

By the CHAIRMAN:

Q. Now, was it indicated to you how much work had been done since the 31st of December, or since you made your last measurement?—A. The time I made my estimate was a month later than Mr. Hamblen made his, and what was done between my estimate and the 31st of December I cannot tell.

Q. Do you know what has been done since and before that was embraced in your present estimate?—A. There were some discrepancies, of course, in the height of the wall. You will understand that an inch in the height of the wall or 1 inch in the length of the wall would make a considerable difference.

Q. If it was pointed out to you where the work stopped on the 31st day of December, could you not make an approximate estimate of the work done since that time?—A. Yes, sir.

Q. How long would it take you to do that?—A. It would take us half a day just to measure the work, but I suppose we could do it all in that time. It might, however, take the balance of the day to make the computations.

By Mr. PAYNE:

Q. Were you employed, Mr. Johnston, by anybody to make this measurement you made?—A. No, sir.

Q. What interest do you take in the matter?—A. I have about \$40,000 worth of property here, and I am a citizen, and I am always interested in everything that tends to the welfare of the public.

Q. And you have no other interest than that?—A. No, sir; not that I am aware of. I have been called on repeatedly to do work about the reservation, to make surveys of lots, &c., and I have made surveys for Captain Jacobs, and have not charged a cent in any instance.

Q. The fact that you own \$40,000 worth of property, would that make you do this unless you had some other motive?—A. I have a motive, and that motive is the interest of the town.

Q. How is the town interested whether the Government gets cheated or not? The town is not paying for this work, is it?—A. I was interested in the first place in having a different kind of work done, and I am always interested in public improvements of every kind.

Q. Did you think that measurement made in January was conducive to the public interests?—A. I believed that there was something wrong; and in the second place, I had been told that I would be called on to go to Washington in this connection, and I did not want to go to Washington knowing nothing about the work.

Q. Who told you that you would be called to Washington?—A. Moses Harris told me. He was not the only one, however, that told me so.

Q. Did any one else besides Moses tell you that you would be called to Washington?—A. Yes, sir; but I do not recollect the names.

Q. I want to get at your real motive for making this measurement in January. Are you an applicant for the position of superintendent here?—A. I suppose that I am not an applicant for the position.

Q. Are you an applicant?—A. No, sir.

Q. Now, what was your real motive for making that measurement unsolicited in January?—A. I believe the quantities estimated were too large.

Q. Was that your only reason for taking all that trouble?—A. Not only that, but to inform myself in case I was called before this committee.

Q. And you believed Moses when he told you so, did you?—A. No; I did not have much confidence in Moses, and I have very little use for Moses.

Q. Who else spoke to you about it?—A. I was spoken to by a number.

Q. Can you name anybody?—A. No, sir; I know Moses Harris told me so.

Q. How wide did you calculate these walls at the base in the estimate you made yesterday?—A. I calculated the walls to be 3 feet at the top and at the bottom 4 feet 8 inches, unless the walls were 6 feet high, when I allowed 5 feet at the base.

Q. Then you did not calculate 5 feet at the base, at all, unless the walls were 5 feet high?—A. Unless the walls were 6 feet high.

Q. Did you measure the walls at all yesterday?—A. No, sir; I do not think the walls were measured by any of our party.

Q. Now, why did you take that arbitrary measurement of 5 feet only where the walls were 6 feet high?—A. Because I made my other calculations that way.

Q. Did you calculate the difference?—A. I think the notes are in my memorandum book. But if they are not there, I can give it to you in a few minutes.

Q. I do not ask you to do it now; I ask you did you do it?—A. I have approximated it at about 100 yards.

Q. Now, how much did you allow for the spring of the arch?—A. The skewbacks, do you mean?

Q. Yes.—A. I calculated the face at—

Q. [Interposing.] I want to know the thickness of the wall at the spring of the arch, or at least how much did you allow for it?—A. Two feet.

Q. And you made your calculations at two feet, did you?—A. Yes, sir.

Q. Was not that measured by you and Mr. Fleming and Mr. Lowe and made 2 feet 10?—A. They measured the walls.

Q. Was not it measured and agreed upon as 2 feet 10 by you, Mr. Lowe, and Mr. Fleming?—A. I did not take that down at all; I do not know whether it was agreed upon or not.

Q. Now was it not measured by them and announced at 2 feet 10?—A. I do not know whether or not; they measured it, I know.

Q. And you paid no attention to their measurement?—A. I noticed it only in one instance. Here [indicating on diagram] it was 2½ feet.

Q. That is the center; but the ends of the arch, here, how is that?—A. No, sir; that is not the cross-section of the arch shown to me before, and the arch now shown differs from the other.

Q. Had you any interest there day before yesterday, except to make a fair measurement of that wall?—A. No; I had not.

Q. Well, why in the world did you not measure the ends of the arch with these gentlemen and pay attention to these measurements?—A. Because it would not give a true cross-section.

Q. It would give the thickness of the wall, would it not?—A. But it would not correspond with that [indicating] for the entire length.

Q. How many of these points were there exposed to your view day before yesterday when you went to make these measurements with these gentlemen?—A. Well, there were one, two, three, four—five and four are nine. Some were finished in such manner as not to show plainly.

Q. How many of these ends of these arches are there where no work has been done since you and Mr. French made your measurements in January last?—A. Well, both ends of the arch running in front of the Arlington Hotel have been finished.

Q. Are there any ends of arch exposed where you measured before?—A. Not a single one exposed on the entire work.

Q. How many ends were exposed at the time you measured the work in January?—A. At the time I measured in January there were two ends exposed, and I have measured the different parts of the work.

Q. Now nine ends are exposed, while before there were but two ends exposed, is that correct?—A. Yes, sir.

Q. Can you give us the measurement of these two ends in January; the thickness of the arch?—A. There are the measurements in the book there.

Q. Where did you find that thickness in January?—A. I found it about—I could not tell you—two or three sections; about two or three sections of the lower end of the present arch.

Q. And it was just 2 feet exactly in each place?—A. Yes.

Q. And you think the thickness has changed since then, and it is 2 feet 10 now?—A. I will state further that there were only 400 feet of arch laid then, and the difference in the area of the Smithmeyer plan and this plan would be a difference of about 120 yards.

Q. How did you get at the height of the wall at all day before yesterday?—A. Where?

Q. At any point.—A. From the upper end, from where we commenced down to the lower end of the arch, there are but one or two, possibly; two places where there is any uncertainty, about it at all.

Q. Do your measurements differ now from the measurements you made previously?—A. It varies a little both in height and width, but very slightly, about two-tenths. Two men cannot go along and get the same measurement of a wall.

Q. Cannot the same men go along together and make the measurements and get the same results?—A. Not there. As I said before, from Whittington avenue down to the lower end of the Arlington Hotel, there are only one or two places where the height of the wall could not be determined within one-tenth.

Q. One-tenth of what?—A. One-tenth of a foot.

Q. How much do they vary from your former estimate?—A. I did not compare them.

Q. How can you say that they cannot vary more than one or two-tenths of a foot, unless you did compare them?—A. I have not exactly compared them, but I have compared them generally. I ran along and noticed the heights, and I have not the same measurements I had before.

Q. Yes, that is the trouble; you based these calculations on what you had before, and where these places do not agree with what you had before you do not seem to pay any attention to it. Now, did you observe anywhere, where the wall went below the surface of the creek?—A. We did at one place, and we added $1\frac{1}{2}$ feet where we found these places below the surface by sounding.

Q. How did you find these places when you and Mr. French went there to make the measurement?—A. When Mr. French and I went there, and, as I said before, from the junction of Whittington and Park avenues down to the lower end of the Arlington Hotel there were not more than one or two places where the depth could not be determined within a tenth of a foot. I allowed a batter of 4 inches to the foot, which would make 2 feet in a height of 6 feet. In my measurement from the Arlington up, my former measurement did not differ from the last measurement more than one-tenth or two-tenths of a foot.

Q. I am speaking of the whole; not between Whittington avenue and the Arlington Hotel. I expect you do not understand me. I am speaking about the whole wall. Do you say now that you only found one place that went from 1 foot to $1\frac{1}{2}$ feet below the grade line?—A. I said below the present surface of the creek. The grade line is up 12 feet.

Q. I mean the surface of the creek; I know all about the grade line.—A. Well, that you do not know.

Q. Well, if I knew as much as you think you know, I would know a good deal. On your former measurement you made no allowance for that, did you?—A. We made some allowance.

Q. How much did you make where it was 2 feet?—A. We did not make any sounding at all.

Q. I ask how much allowance did you make where it was 2 feet?—A. I can tell by comparing notes.

Q. Did you allow anything below the height of the wall shown on the plan more than $4\frac{1}{2}$ feet? Did you allow anything below the bottom of the wall, or base of excavation on your first figuring or first measurement?—A. Yes, sir; I allowed 5 and $5\frac{1}{2}$ feet along there [indicating].

Q. Is that the extreme height you allowed?—A. Not the extreme height, but in that place. I have got $6\frac{1}{2}$ feet in some places.

Q. Where was that, to the top of the skewback?—A. That was the height of the wall below the skewback. That section [referring to diagram] is at the end of the first piece of work—no, it is not there. That section is up over near the present end of the arch. I will state that if I allowed 5 feet in that batter [indicating on diagram] it would not make over 100 yards in the entire length of the wall on both sides.

Q. Have you ever figured on your measurement made day before yesterday, independent of your first measurement?—A. I did—well, I may have.

Q. Did you or not?—A. I looked at these [indicating] but I did not compare the measurements. Of course I looked at the cross-sections.

Q. You took the same measurements of the arch, did you not?—A. Yes, sir; I accepted the measurements as to height.

Q. So you simply refigured the side walls?—A. The section of arch I just took as the same. I figured the difference between the section I had before and the section that Mr. Fleming told me he had taken, and also the section showed in Mr. Smithmeyer's plans, and I found a difference of eight-tenths.

Q. Have you anything else in your book that you have not submitted?—A. I will turn the book over to the committee.

Q. We would like to have it.—A. Here it is. [The witness here handed to Mr. Storm the memorandum book referred to in this testimony.]

By Mr. STORM:

Q. Did you learn that a member of this committee had telegraphed to Moses Harris to look after witnesses?—A. I learned through Moses Harris about the witnesses. He came up to me and said that I was under obligation to him for venting this creek work.

Q. Did he tell you he had been telegraphed to by a member of this committee?—A. He did not say whom, but simply that he had been telegraphed to by a member of the committee. He asked me if I wanted to go on to Washington, and I told him I would rather have the committee come here.

Q. Do you think that it was to the interest of Hot Springs to have this work done by the contractors fairly and honestly?—A. I do.

Q. And do you think that the Government should not be wronged?—A. I do.

Q. And do you think that Hot Springs would fare best by having her Government contracts honestly carried out?—A. Yes, sir.

Q. You have not been applied to by any member of the committee to do any work in this connection, have you, and what you have done has been at your own expense and time, has it not?—A. Yes, sir; at my own expense and time, and I was not spoken to by any member of the committee.

The CHAIRMAN. When the resolution first passed Congress, directing this investigation, I had the Hot Springs Horse Shoe sent to me daily, and I saw a good many of the things charged in reference to the work here, and I thought that, as Moses Harris had made the charges, he would give the names of witnesses to substantiate these charges, and when we did not anticipate coming here we asked him to forward the names of those persons who could testify to the matters charged in the newspapers. In reply to that he sent me by telegraph, which telegram I hold in my hand, the names of Mr. Johnson and a great many other people here. I also have telegrams received from Dr. Keller and Dr. Garnett, and others, that they would not come to Washington.

The WITNESS. I want to put myself upon record here as in favor of having this entire matter turned over to the War Department.

GEORGE M. FRENCH recalled.

By Mr. STORM:

Question. What part did you take in the measurement of this wall?—Answer. I measured it in company with Mr. Johnson in January, 1884.

Q. I mean with reference to this last measurement, day before yesterday?—A. Yesterday Mr. Johnson brought me his note-book containing notes of the measurement of the height of that wall and arch, and asked me to make the calculation of quantities. I did it, and sat up until 1 o'clock last night and did it, and the result is in the book you have there.

Q. Then you both made the calculation?—A. Yes, sir.

Q. Did you both come out about the same?—A. I carried out the decimals and we came out a little different. I made a closer calculation than he did, and he made a more liberal allowance than I did.

Q. About what difference was there? What did you make it?—A. The estimate that I made embraced that portion of the work lying below the junctions of the two valleys, from that down to the lower end here, and that made, exclusive of this other, something like 4,000 yards.

Q. What part did you take in the measurement?—A. I did not go out on that measurement. I was in the committee room here and did not go out day before yesterday.

By Mr. PAYNE:

Q. Have you calculated the same cross-sections of the arch that you did before?—A. Yes, sir; just the same as these notes call for.

Q. Did you calculate the same cross-sections that you did in the January measurements?—A. Yes, sir; I compared the two. I do not speak from memory. Here are the notes I made in January. Here they are and can be compared.

(At this point the books of memoranda made by Mr. Johnson and Mr. French were examined by the committee.)

Q. These are virtually the same.—A. Yes, sir.

Q. So that virtually the same calculation is made of the area of the arch that was made in January.—A. Yes, sir; I will state that we found on our measurement of completed work, including that covered in in January, there were 555 feet of that arch. Mr. Johnson testified about 400 feet, but he is mistaken. Now, there are 953 feet as measured day before yesterday from the notes taken. There is a difference of over 400 feet. There are 953 feet of arch now, and when we measured there were 555 feet.

By Mr. STORM:

Q. The difference then shows the work that has been done since the January measurement?—A. Yes, sir; of arch work. I am informed, although I have not seen it

that some of the side wall has been laid since January in addition to what we measured. Our measurement in January amounted to 150 or 155. That is to be added to the measurement we made last January. Now, deduct this 155 feet from this measurement and you have the excess or what has been done there since. Then the difference between 555 and 953 feet of arch, and you have the difference between our estimate then and what it figured out last night, and I presume that is about correct; I believe that the estimate we made last in January was fair, full, and liberal, of all that had been done up to that time.

Q. Have you been upon the work frequently figuring its construction?—A. Ever since the work was started I have been upon it at times once or twice and three times a month and noticed the construction of the work.

Q. You have not been upon the work daily two or three times, have you?—A. No, sir. I will state also that the side walls when we measured we found them exposed in several places, and a great deal more than now, because some filling has been done around the ends, covering them up, and we found the slope or batter of the wall rather uniform, and wherever we found it we took it as fair to conclude that has been kept up during the whole of the work. That is a fair inference, and that is what we base the width of this wall upon at the bottom.

By Mr. STORM.

Q. Are you acquainted with the topography of this stream?—A. I made a topographical survey of this place in 1875.

Q. Do you suppose that the excavation there would average throughout a depth of 7 feet?—A. I find from the estimate of the sum purported to be paid—and if that is true—the quantity of loose and solid rock taken out of that creek would build an embankment 7 feet high 30 feet wide and 3,000 feet long.

Q. Do you think that it is probable this quantity of excavation was done?—A. I doubt it; I do not believe it.

Q. In order to get at the contents of the excavation there, what would be absolutely necessary for an engineer to do?—A. It cannot be done.

Q. What data should the engineer have who made the original estimates?—A. He should have the cross-sections and levels and the lateral lines, as a basis from which to make his measurements in the future. In the absence of that an accurate measure cannot be made.

Q. From that a competent engineer could make an estimate that would be accurate, could he not?—A. Yes, sir.

Q. After the dirt was taken out a measurement should have been made in addition to the measurement made before the excavation began; is that correct?—A. Yes, sir.

Q. An engineer in making estimates generally preserves his cross-sections and levels for future reference, does he not?—A. Yes, sir.

Q. They cannot trust to their stakes, can they?—A. No, they are no good, as they are liable to be pulled up.

Q. Is it true that railroad and other engineers make cross-sections and levels in order to provide against the loss of stakes and lines?—A. Yes, sir; so as to indicate the exact grades, and that cannot be done unless the original notes are preserved.

By Mr. PAYNE:

Q. I suppose you took the same width of wall that Mr. Johnson testified he calculated upon?—A. I took the same batter that he did.

Thereupon (at 10 o'clock p. m.) the committee adjourned to meet again in Washington, D. C., at a day to be named hereafter.

WASHINGTON, D. C., April 29, 1884.

T. H. HANDBURY sworn and examined.

By the CHAIRMAN:

Question. You are an officer in the Corps of Engineers, United States Army?—Answer. Yes, sir.

Q. Where are you stationed?—A. I am at present stationed at Chicago.

Q. Were you ever stationed at Hot Springs, Ark.?—A. I was never stationed at Hot Springs, Ark. I was stationed at Little Rock, Ark.; that is but a short distance from Hot Springs.

Q. While you were stationed there what connection, if any, did you have with the Government work on Hot Springs Creek; just state briefly to the committee what connection you had with that work.—A. At the request of the Secretary of the Interior, made to the Secretary of War, I was detailed to make a plan for the improvement of the creek at Hot Springs.

Q. Did you make that plan?—A. Yes, sir. The plan I made, and the report, together with an estimate, was submitted to the Secretary of the Interior. The plan I presented was approved and accepted, and the contract was let for doing the work in accordance with that plan. Specifications were prepared also in accordance with it. Upon my plan being accepted the Secretary made another request of the Secretary of War, to the effect that I should be detailed to take general supervision of the construction of the work, so that it should be performed in accordance with my plan. After I had entered upon this duty, and the work had progressed to some extent, the Assistant Secretary of the Interior seemed to be dissatisfied with my method of executing the work, and I in a short time asked to be relieved from the charge of the work.

Q. What evidence did you have that your plan was not satisfactory to the Assistant Secretary of the Interior; in what way was that dissatisfaction expressed?—A. I have no evidence whatever that my plan was not satisfactory, but the reasons I have for concluding that my method of executing the work was not satisfactory to him is the fact that, after I had been authorized by letters from the Department of the Interior to carry on the work in the manner which in my judgment seemed best, he sent a request to me by telegram to commence the work at the upper end of the creek.

Q. That is at the junction of the two creeks?—A. Yes, sir. When I received this telegram I replied, stating that in my judgment I did not think it was proper to commence the work at that point. I did not then state my reasons. I stated in the telegram that if he would give me a definite order instructing me to lay out the lines, grades, &c., for the contractor at the point named I would do so. In reply I received a telegram ordering me to give the contractor the grades and the lines for the work at the upper end of the creek. This I did. At the same time, however, I told the agent of the contractor, Mr. Denees, that I did not authorize him to commence work, although I had laid out the lines as ordered. I told him if he did any work at that point it would be on the authority of some other person than myself. I had previously called the attention of the Interior Department to the fact that a part of this plan contemplated carrying on work upon ground that did not belong to the Government. The law on that point was not clear to my mind, and I did not like to take the responsibility of commencing work there. In this same communication I asked for instructions upon this point. Instructions came to me to the effect that the funds could lawfully be expended in the execution of this part of the plan. I had also asked the Secretary of the Interior in my communication whether it was not proper and necessary to have some understanding between the city authorities and the Government, so as to protect the Government interests, as also to protect the contractor from any suits for damages, or anything of that nature that might arise out of the execution of the work. In reply to that suggestion, I was instructed that the Department had written to the city authorities at Hot Springs asking them to state definitely that the Government would be relieved from every responsibility in this matter. It was pending this correspondence that I received the telegram to lay out these lines. That is one reason why I did not feel justified in authorizing the work to be done; another was, as a matter of engineering expediency and policy, it was not proper to commence in this locality.

Q. You say under your plan bids were advertised?—A. Yes, sir; but that was done entirely under the direction of the Interior Department. I had nothing to do with that.

Q. But the contract was let in the first instance in accordance with the plan which you had submitted, and which had been accepted?—A. Yes, sir. There were two advertisements for the bids. The contract under the original advertisement, I believe, was let to parties in Little Rock. I think Major Rumbough was one. He, apparently, was the lowest bidder, but there was some difficulty about his bond, so the contract was not awarded to him. The next lowest bidder, I have understood, was Mr. A. P. Robinson. There was some misunderstanding between the Interior Department and Mr. Robinson as to the manner in which the work was to be measured. Mr. Robinson threw up the contract. After that there was a readvertisement of the work, and it was finally let, I believe, to Mr. George H. Bardwell.

Q. Just state in brief what your plan was, and what sort of material was to be used?—A. My plan contemplated first straightening the course of the creek somewhat, then building two parallel walls 8 feet high. These were to be 3 feet thick, and built of courses of cut granite about 1 foot from front to back. This was to be backed with concrete. Headers were to run clear through to the back of the wall. In consequence of the fact that there is but little space available for street purposes in the gorge through which Spring Creek flows, I proposed that this opening between the walls should be covered with iron beams, laid across from one end wall to the other, at intervals of 6 feet, the spaces between the iron beams to be spanned by short, flat arches. In the report brick arches were mentioned; they might have been made, however, of any other suitable material. On top of these it was contemplated to put about 2 or 2½ feet of earth.

The bed of the creek, after it was improved, was to slope from the southern boundary line of the reservation up as high as the Arlington, with one foot rise to 120 feet, horizontal; from the Arlington up to the Catholic church the slope was to be one foot rise to eighty horizontal. In the upper portion the two walls were to be seventeen feet apart. That would give a passage-way for the water of one hundred and forty-four square feet, supposing the center line of the bottom to be one foot lower than the sides. The lower portion, however, where the slope was flatter, required a larger area, and the walls were then to be made twenty feet apart. The area of that cross-section was one hundred and seventy square feet. For the present it was contemplated to cover these walls only from the Rector bath-house up to the Catholic church.

For the purpose of conveying away the sewerage of the town and the bath-houses, I had provided two sewer-pipes, one behind each of the walls. These pipes were to be 1 foot in diameter. By this means all liquid and soluble wastes were to be at once conveyed away.

Q. You mean sewer-pipes run parallel with the walls?—A. Yes, sir; right in behind the walls. Provision was made, so that the drain-pipes from the houses could be led right into these. They extended the whole length of the walls from the lower end clear up. There are quite a number of hot springs in the bed of the creek from the vicinity of the Arlington down to the lower end of the contemplated improvement. In order to collect the water from these, and to prevent it being wasted, I had provided that a six-inch iron pipe should be placed behind the eastern wall. This pipe was to collect this hot water and lead it into a well that was to be made at some convenient place towards the lower end. It was contemplated to pump it from thence to some higher level, although this was not provided for in the plan.

Q. Did you examine those bids that were made for this work to ascertain what they were?—A. No, sir; I had nothing whatever to do with that.

Q. Do you know whether or not the work could be done according to the specifications at the price submitted by the contractor?—A. I am not positive about that. When I made my estimate I thought it very close, and when the contract was let, I was of opinion it would not be possible to do it according to these specifications, for the amount that was contracted for.

Q. Do you know how much work was actually done before your plan was changed?—A. No, sir; not before the plan was changed. On July 5 I handed in a certificate to the Secretary of the Interior, stating the amount of work that had been done during the month of June. Some work was done in July which I did not report upon.

Q. When had it been commenced?—A. That I do not now remember; the correspondence submitted will give the date when I laid out the work. Some work had been done near the upper end before that, but this I did not take into account. I had been informed that some citizens, headed by a band of music, had formed in procession and marched to the upper end near the Catholic church and formally opened the work before any lines or grades had been given. I did not recognize this at all. I only recognized work done from the time I got definite instructions and laid out the work. The correspondence submitted will show this.

Q. When you went to submit those plans and specifications, did you make a survey of the work to be done and an estimate of the amount of excavation and wall work and everything of that sort?—A. Yes, sir.

Q. Have you that estimate now?—A. That estimate was submitted in a report to the Secretary of the Interior, and it is now before the committee.

Q. Is the amount of excavation there?—A. Yes, sir. The total amount that will be necessary in order to put in the walls according to the plan I had submitted and which was approved. In order to enable me to make that estimate, I first got authority from the Secretary of the Interior to make a horizontal contour map of the ground that it was contemplated to build upon. I did that, knowing there would be various buildings that would have to be put up, and it would be necessary to know the amount of excavation and embankment at different times and places. Having such a map before us, we could very readily determine the amount of excavation and embankment necessary to make the contemplated improvement.

Q. Do you remember the entire length of the work?—A. It is in the neighborhood of 3,000 feet, but the report will show the exact amount of feet. I can tell you by looking at the report the exact number. [After examining the report.] It is 2,780 feet. The upper end was not fixed definitely; the lower end was fixed at the lower boundary line of the reservation.

Q. What material did you provide for in your specifications?—A. In my plan it is definitely stated that the walls and the whole of the work should be made of first-class material throughout. On my first visit to that vicinity I noticed granite walls, from which I judged that there must be a quarry in the neighborhood. My attention was directed to the stone upon the Government reservation. It was claimed that this was suitable for the purpose. I examined it carefully and found it totally unfit for

use in a construction of the kind contemplated. Inasmuch as there was granite in the neighborhood which could be obtained at a reasonable cost, I made up my mind from the very first that it was the material that ought to be used. I was decidedly opposed to the use of any stone obtained from the immediate vicinity of the creek.

Q. What kind of masonry was provided for?—A. It was contemplated in the plan to have the joints of these granite walls all "cut and squared." That is, that they should have horizontal and vertical joints; and that each stone should have a good bond, and a good bearing with the other stones in its immediate vicinity.

By Mr. STORM:

Q. Range masonry?—A. I do not know exactly what would be understood by "range masonry," in that case. This was to be cut-granite masonry. It was not contemplated that the face of the wall should be polished, or that anything more should be done with than merely knocked off. The edges of the rock were to be chiseled in order to insure the stone having a perfect bearing.

By the CHAIRMAN:

Q. Do you know anything about the sand and mortar that were used?—A. I do not know anything about the sand or mortar that was used, but I remember that on investigating this subject I looked into the sand question, and found that there was none suitable for this purpose nearer than on the Washita River. The sand I looked at in the neighborhood of Hot Springs would be perfectly worthless for the purpose of making a wall of this kind. I also know that it was understood by other parties who were bidding on the work that that sand would not be accepted. Some of them went over to Washita to look at the sand, to see how much it was going to cost them to get it over to Hot Springs; but what sand was used I do not know. After I was relieved from the work I did not return to Hot Springs at all.

Q. During the time that you had superintendence of the work what sort of sand was used?—A. There was no work commenced during this time which would require sand; the excavation only was in progress.

Q. What do you know of the change of plan, and of materials?—A. Do I know what was the cause of the change?

Q. Just state anything you know about the change. We want to know the cause, if we can ascertain it. There was a change, was there?—A. Yes, sir; after I was relieved from the charge of the work, I understood that my plan was entirely discarded and another one adopted. The first definite or official information that I had of this change I got through a public document that came into my hands. This document contained communications relative to the subject under investigation that were sent by the Secretary of the Interior to the House of Representatives. In that I noticed that the entire character of the plan and material used had been changed. The document which is now before the committee will show the extent of this change. In looking it over, I observe a letter from Mr. Smithmyer, in which it appears that my plan, after its construction had been entered upon, had been submitted to him by the Interior Department for criticism. Mr. Smithmyer makes it appear that the beams which I used have not the requisite strength. His conclusions upon this point arise from the fact that he is putting on these beams a greater depth of earth than is contemplated in the plan. If it should be found necessary to put a greater weight of earth upon them than I had contemplated, it is a very simple matter to have them made larger or place them closer together. The increase in cost would not be great. This, then, is no serious objection to the plan.

Another point which Mr. Smithmyer seems to make is that the plan which was proposed by Mr. Hamblen as a substitute for mine provided for a water area of 180 square feet, as appears from Mr. Smithmyer's discussion; but from Mr. Hamblen's sketch, that is also a portion of this document, the area of the cross-section is only 154 feet. Mr. Smithmyer compares a cross-section, having the width of 20 feet between the walls, and of the form proposed by Mr. Hamblen, with my cross-section for the upper part of the work, which has only a width of 17 feet. He concludes from his discussion of the subject that this new plan provides a great deal more water-way than the one that I proposed. Mr. Smithmyer is a man of eminence in his profession as an architect, but just here he shows that in the practice of that profession he has not found time to give to hydraulics quite as much attention as the importance of that science in its application to a case of this kind demands. Had he compared Mr. Hamblen's section with mine above the Arlington, or his assumed one with mine below the Arlington, the difference in areas would not have been so great. Both he and Mr. Hamblen seem to have lost sight of the fact that the *form* of the cross-section of a conduit has a great deal to do with the amount of water that will flow through it. To illustrate: The simplest form of the formula usually used by hydraulic engineers for obtaining the velocity of streams is

$$v = C\sqrt{R S} = 92.26\sqrt{\frac{h}{L} \times \frac{h}{L}}$$

in which v = velocity, C = constant, R = hydraulic radius, S = slope, A = area of cross-section, p = wetted perimeter, h = height, L = length.

Applying this to the sections, it will be seen that those proposed by me will admit of the passage of a volume of water equal to 3,100 cubic feet per second approximately. Applying this same formula to the section proposed by Mr. Hamblen, the quantity of water which passes in that case is equal to only 2,800 cubic feet. This is for the slope which is above the Arlington. The new channel-way, I understand, is being built with the same section throughout. Where the flat slope pertains—that is, below the Arlington—this section will admit of the passage of only 2,300 cubic feet per second.

In making my plan I estimated from the most reliable data I could obtain that the drainage area to be provided for was about three and a half square miles, and that 3,000 cubic feet of water per second were to be provided for.

Assuming this amount, we must conclude that the section provided in the new plan is not large enough to admit its passage by about 23 per cent.

Q. Do you think that change of plan was a judicious one?—A. No, sir; I think it was a very injudicious one. First, for sanitary reasons. I think that Hot Springs is a place worthy of Government attention, and worthy of improvement as a sanitarium. Those waters are unequalled for certain diseases by any other in the world, and every means should be taken to preserve Hot Springs in a healthy condition. By changing this plan so that the sewerage, instead of being conveyed away in separate pipes, is allowed to go in between these walls, it is liable to make the place very unhealthy.

Q. What do you think of the change of material? Do you think the material adopted under the new plan is a proper one?—A. No, sir; I do not; especially do I think it objectionable to take such material when better can be obtained in the immediate vicinity, and at reasonable cost.

Q. Were you consulted about the change of plan or the change of material?—A. No, sir; I was not consulted.

Q. While you had the superintendency of that work, was the estimate submitted to you at any time—the measurements that had been made?—A. I was to make the measurements. It will appear from the correspondence that the contractor was to receive his pay on a certificate from me as to the amount and character of the work that was done. I was asked by the Interior Department in the outset if I had any objection to Mr. Hamblen being designated as local superintendent of the work while I had charge of it. Not knowing as much about Mr. Hamblen then as I do now, I stated that I did not have any objection.

The rule that I adopted with regard to the measurements was to have Mr. Hamblen, who was on the ground, take the measurements, plot them, and keep his notes carefully, and at the end of the month I would come down from Little Rock and go over the measurements; go over the notes sufficiently to satisfy myself that everything was correct; and then I would make a certificate accordingly.

Towards the end of the month of July I sent Mr. Hamblen a note that I would be down on the 30th, and I wished him to have the necessary data for me to verify, so that I could make out the certificate. When I arrived, expecting to find these data ready, I found that Mr. Hamblen had taken no steps whatever to collect them. After waiting for him all of one evening, and until about 10 o'clock the next day, I saw that he was not disposed to make the measurements, so I came away, and reported the fact to the Secretary of the Interior, stating in my communication that if I was going to continue in charge of this work I desired to have Mr. Hamblen relieved from all duty in connection with it, and that I desired authority to employ some one else for the short time that might be necessary to do the work required. I was satisfied at that time that he was not the proper man to have local charge of the work.

Q. Did you give it as your opinion that he was incompetent?—A. At that time I did not know enough of his engineering qualifications to recommend his discharge on the score of his being incompetent, but I was suspicious of that fact, though I did not like to make such a statement as might injure the man's reputation. My suspicions were aroused from the fact that when I asked him for the plot of the previous month's work, which I expected him to have made, he said he did not have it. Then I asked him for his note books. He said he had taken notes, and had them in a note book. After looking around his office for some little time, and fussing about, he finally said that his note book was mislaid; that he could not find it. I then had my suspicions aroused as to his being a competent engineer. I thought if he were a competent engineer he would have things in better shape.

Q. From your knowledge of such matters, do you think he is competent to superintend that or any other engineering work?—A. From my personal knowledge I could not say, but from hearsay knowledge, I should not think he was.

Q. Do you think he is competent to measure that work?—A. I could not say from my own personal knowledge, but from what I have heard, I should think not. In another month, probably, or if he had taken this measurement that I required of him, it is very probable I would have found it out at that time. At the time of the first measurement, everything was clear and clean; that did not amount to much.

Q. In his first measurement, had he included any material that you knew had not

been used?—A. He reported a certain amount of rock excavation in the first measurement. I have forgotten the exact amount. When I went down to verify his report, I was satisfied there was not any rock excavation at all.

By Mr. STORM:

Q. Were these estimates for June or July?—A. For June.

By the CHAIRMAN:

Q. Was the item for the rock excavation stricken out in the estimate that you made for that month?—A. Yes, sir; I struck out the item for rock excavation, and sent the certificate on without it.

Q. You do not remember how much there was included in that?—A. I do not; but it was not a very great amount.

Q. Was there any complaint made of it to you?—A. The subcontractor, who was on the ground, mentioned something about it, but did I not regard it as a formal complaint.

Q. He objected to it, did he?—A. He made some objection to it, on the ground that it was not right, or something of that sort.

By Mr. ROBERT ALEXANDER:

Q. When you made the objection to that, was it not because the principal part of this work was done above the Arlington, when you had given orders to Hamblen not to do any work above?—A. I do not remember about that. I know this, that I did not recognize any work whatever that had been done above the Arlington.

Q. At that time you did not recognize that?—A. At any time I did not recognize that. I struck that out.

Q. You did not allow anything in the first estimate for such work?—A. No, sir; as long as I was connected with the work, I did not authorize any work to be done above the reservation line, which is near the Arlington.

By the CHAIRMAN:

Q. What is the date of that letter that you wrote to the Secretary of the Interior about Hamblen being relieved from local superintendence of this work?—A. It was the 1st day of August, 1883. That letter is in this correspondence that I have referred to.

By Mr. STORM:

Q. You are a graduate of West Point?—A. Yes, sir.

Q. What have been your pursuits since you left West Point?—A. After graduating I served nearly a year in the artillery on the Pacific coast. Then I was engaged in various duties; amongst others, topographical surveying, making such maps as I have made of Hot Springs. I was recorder of a board of engineers for fortifications for several years. After service of seven years on the Pacific coast I was ordered to West Point as assistant instructor in civil and military engineering. There I served a term of four years. After that I was ordered to Willets Point in command of one of the companies of the Engineer Battalion. I served there nearly two years. After that I was ordered to Saint Louis on river and harbor duty, and while there I had charge of the improvements of some of the Western rivers, principally the Missouri, under the direction of Major Suter, of the Engineer Corps. I served in Saint Louis about two years. After that there was a district made for me, with headquarters at Little Rock, Ark.

Q. Connected with the river improvements?—A. Yes, sir. Then I had charge of the improvements of various rivers in the State of Arkansas.

Q. What is your present employment?—A. At present I am serving with General Schofield as chief engineer of the Division of the Missouri, with headquarters at Chicago.

Q. You have seen the letters in this executive document that the Secretary of the Interior has had printed, dated January 21, 1884?—A. Yes, sir.

Q. Does that contain all of the correspondence between you and the Department?—A. No, sir; it does not. There are a number of letters that have been omitted.

Q. Relative to this improvement?—A. Yes, sir.

Q. Among them is this letter of yours to the Department concerning Captain Hamblen?—A. Yes, sir.

Q. Have you copies of those letters?—A. I have. Those letters are also on file in the Interior Department.

Q. Can you give the stenographer the dates of those letters?—A. Yes, sir. I will state that the letters received are dated April 26, 1882; June 6, 1882; October 13, 1882; June 1, telegram, 1883; June 2, telegram, 1883; June 2, 1883; June 6, 1883; June 18, telegram, 1883; June 19, telegram, 1883; June 25, 1883; July 30, 1883. Letters sent May 9, 1882; September 18, 1882; November 16, 1882. The last two, September 18, 1882, and November 16, 1882, are published in the document referred to.

January 22, 1883; May 28, 1883; June 8, 1883; June 18, 1883, telegram; June 22, 1883; August 1, 1883. Some of these letters have an important bearing on this matter under consideration; others are of less importance.

Q. In your letter in which your original plan was set forth to the Secretary of the Interior you also discussed the plan of a semi-cylinder arch over this work?—A. That is in the letter that is published.

Q. I say that in your letter of November 6, 1882, you also discussed that question?—A. Yes, sir; in the first letter I wrote, in which I submitted the project for this survey, I mentioned that there were three ways in which—

Q. I only ask the question, whether you discussed in your letter to the Secretary of the Interior the plan of a semi-cylinder arch?—A. Yes, sir; and I also discussed plan having a section somewhat similar to the one proposed by Mr. Hamblen.

Q. How much did that topographical horizontal profile map cost?—A. A little over a thousand dollars.

Q. What was the purpose of that survey?—A. The object of that survey was that we might have at all times an exact profile, as it were, of the ground, or something from which we could make such a profile. Having such a map as that, all that was necessary at any time was to go to the map and we could take off the shape of the ground in any direction.

Q. That map, then, was to be the basis upon which the Government made its estimates and entered into its contract for the work?—A. Yes, sir.

Q. Was it difficult under that horizontal profile survey, or topographical horizontal profile, as you call it, to estimate the amount of excavation?—A. No, sir. It was a very simple matter; that is, the amount that was in accordance with any plan proposed.

Q. Any departure from the plan properly noted could always be referred to this original profile, and estimated from that?—A. Yes, sir; it would be necessary, though, to note the extent of this departure from the plan. If that had been done there would have been no difficulty whatever at any time in getting a very good approximation of the amount of excavation.

Q. Was it the duty of the succeeding engineer, if he departed from your plan of doing the work, to have noted all these departures properly upon his book?—A. Certainly.

Q. Would there be any difficulty now in getting at the whole amount of excavation, if the departures from the original plan were given to any civil engineer?—A. None whatever.

Q. You do not know of your own knowledge what departures have been made from your plan as to the excavations?—A. No, sir, I do not; I know nothing about that.

Q. Would you consider it careful work by an engineer to make changes without properly noting them?—A. I should not. I should consider him either as very incompetent or very careless.

Q. In estimating the work done by a contractor, what should he do to show at any given stage of the work what should be done?—A. He should have kept his notes in a clean, clear, and precise manner, and he should also have made a plot of the work, showing its progress.

Q. From month to month?—A. Yes, sir.

By Mr. ALEXANDER:

Q. What was your grade right in front of the old city hall, at the end of the reservation; how much were you to sink there; what depth?—A. About a foot; this map shows it exactly.

By Mr. STORM:

Q. If the grade line of the lower part of the work was sunk below—I mean the bottom of the creek was made deeper by 6 feet—of course it would affect the flow of water?—A. Yes, sir. That would have an effect on it.

Q. You do not know what changes have been made?—A. No, sir.

Q. I am requested to ask you if you had ever had charge of work, or any practical knowledge or experience of work of like character with this?—A. Yes, sir. I had at one time charge of a large sea-wall, near Fort Point, in San Francisco Harbor. It was constructed of granite and concrete, and was designed to prevent the sea from washing away the foundation for forts. I have made the subject a matter of study, it belonging to my profession.

By Mr. GEORGE H. BARDWELL:

Q. Was that a retaining wall that you built in San Francisco?—A. No, sir; not so much a retaining wall as it was a wall intended to prevent the sea from encroaching on the land.

Q. Nothing in character like a sewer?—A. Oh, no; but so far as the sewer question goes, I will state that I have had other experience in the matter of sewers than what is in this. I devised a system of sewerage for West Point while I was there.

By Mr. STORM:

Q. Who assisted you in making this profile map you speak of?—A. Captain McKowan. He was an ex-volunteer soldier, a man who had had a great deal of experience in the Engineer Department, having served in that department for a number of years.

Q. I am also requested to ask you if you ever heard of Mr. McKowan being intoxicated while he was engaged on the work?—A. Yes, sir. It was reported to me at one time that he was intoxicated, and I immediately went down and spoke to him about the matter. I kept strict watch of him after that, and during the remainder of the time he was there I never heard of his being under the influence of liquor. I have always regarded him as a very careful, painstaking man.

By Mr. ALEXANDER:

Q. In your estimate to the Government, what was the price you put on the excavation?—A. \$18 a cubic yard. (Mistake.)

Q. That is what, in your report to the Government, you estimated it could be done for?—A. Yes, sir.

Q. What did the contractor get?—A. That I do not know.

By Mr. BARDWELL:

Q. Was Mr. Rumbough the lowest bidder for this work?—A. That I do not know, except from hearsay.

Q. Did Mr. Robinson, the original contractor, desire to throw up the work and relieve his bondsmen?—A. That I do not know. In fact I know nothing about the letting of the contract, or the amount of the bids, except from hearsay; mere street rumor. I know this, however, that Mr. Rumbough told me that he had received a letter from the Interior Department, after the bids were opened, asking him to put in a bid for rock excavation, which he had omitted in his bid.

Q. Your 8-foot wall—8 by 3—was without batter, was it not?—A. Yes, sir; there was no batter.

Q. Then a retaining wall is all that it was?—A. Yes, sir.

Q. Was not your plan of span from the upper end of the avenue to the Arlington a 20-foot span?—A. No, sir; 17 feet.

Q. And 20 feet from there down?—A. Yes, sir. When I say "Arlington," I mean some place in the vicinity. It is marked definitely on the map.

Q. Had you provided for any coping stone upon your wall?—A. Yes, sir; the top course was to be coping stone. I do not know whether it was in the specifications or not. That can be ascertained by reading the specification.

Q. Your wrought-iron beams were to lap on the walls 3 inches at each end?—A. I think that is the amount. I cannot state exactly now. That is also stated in the report, which is in evidence.

Q. Would the square box that you made carry off more water than an arch eleven and a half from center to center; from the center from the bottom of the creek to the top of the keystone arch?—A. That will depend a great deal on the width of this creek that you have just—

Q. The cross-section being the same, of course?—A. The question is not clear, and consequently I cannot give you a satisfactory answer.

Mr. STORM. I think I can put the question in a shape that will bring out the idea of Mr. Bardwell. I will put the question in this form:

Q. Supposing the width to be the same, and the height of the walls the same, in each plan, but instead of being covered in the one case by these horizontal beams, you raise an arch, which will be 11 feet from the center, from the bottom of the creek. The width is the same, the height of the wall is the same, but in the one case it is covered with an arch, and the other it is covered square.—A. In that case it would carry off more water, but Mr. Hamblen's plan does not contemplate that the wall shall be of the same height. According to his plan, the wall is only 5 feet high. Then he throws this arch over, and that from the top of the wall to the top of the arch, as I understand it, is 5 feet, making the segment of that circle 5 feet.

Q. With regard to the velocity of the water: Mr. Hamblen has made the grade in it there deeper or heavier than you have made it. Will that have a great effect?—A. That would depend altogether on how far back he extended this grade. It is very likely that the grade is not extended back any great distance. That would not make any difference in the discharge of the water farther up.

Q. The slope of the creek now is greater than what you contemplated by that original design?—A. That I do not know.

Q. Had you any friends who were interested in quarries of stone at that time?—A. No, sir; none whatever.

Q. Did you know of any other granite in that country, except that owned by Diamond Joe, belonging to the railroad company?—A. I knew that there was granite in the neighborhood, and I had made up my mind that the stone along the bed of the

creek was not fit for the purpose, and that granite ought to be used, before I found out exactly where this granite was to be found. On inquiry, I ascertained that there was a quarry opened along the line of the Hot Springs Railroad, about 16 miles from Hot Springs. I supposed that other quarries might be found somewhere in the neighborhood, which supposition proved to be correct on examination.

Q. Did a man by the name of French show you that or call your attention to it?—A. No, sir; I never was at the quarry at all.

Q. Did you go to Hot Springs when asked by the contractors to measure or to lay off work promptly every time?

The WITNESS. When asked by the contractors?

Mr. BARDWELL. Yes; had not we to wait several times for a week or more for your appearance?—A. You never had to wait on me after I received my instructions from the Secretary of the Interior as to who the contractor was, as can be shown by some of those telegrams. You did not have to wait longer than it would take me to go from Little Rock down to Hot Springs. The correspondence will show that I went down as soon as I found out who the proper persons were with whom I had to deal with.

Q. The work that was done at the upper end, near Whittington avenue, you never took out?—A. That I knew nothing about.

Q. It never was measured to us?—A. I never gave any authority to have that done, because this legal question was pending between the Interior Department and the city authorities, and I did not wish to take any step that would compromise the Government so long as that was the case.

Q. But when they had ordered you to go on they were supposed to have a knowledge of the law?—A. When I received a definite order to lay out the lines and give the grades, I obeyed that order. Even then I did not authorize the contractor to commence work at the upper end.

Q. These two branches, what are called the "V" at the upper end, you never laid out or had anything to do with?—A. No, sir.

Q. That portion of the work you never counted; never laid off or designed, and know nothing about its sufficiency?—A. No, sir; nor about the work which is below the reservation line.

Q. Therefore you never made an estimate on the cost—the full length and cost of doing the work?—A. No, sir.

By Mr. ALEXANDER.:

Q. You have examined this map carefully, and regard it as correct?—A. Yes, sir; it is correct so far as the contour lines are concerned; that is, so far as the contour lines on which this work depends are concerned.

Q. Here is a point. The contour lines commencing at the Grand Central bath-house and ending up here at the end of your reservation shows, according to several engineers, a dead level?—A. Oh, no; it would not do that; there are a number of lines that run together. It is vertical, and there are a number of these horizontal contour lines that run together.

By Mr. STORM:

Q. You know nothing about the pink lines laid down in the map?—A. No, sir. Adjourned.

J. P. LOW, being duly sworn, was examined as follows:

By the CHAIRMAN:

Question. Where do you reside, and what is your occupation, Mr. Low?—Answer. I reside in Washington. I am a civil engineer by profession.

Q. Did you go with the committee of Congress to the Hot Springs, in Arkansas, recently, for the purpose of examining certain works being prosecuted there by the Government?—A. I did.

Q. Did you make an examination of that work?—A. I did.

Q. Did you make any measurement of it?—A. I made an approximate measurement of the masonry.

Q. Were you assisted in that measurement by anybody?—A. Yes, sir; by Mr. Fleming, and Mr. Johnson was also present.

Q. At what point of the work did you commence your measurement?—A. We commenced at the upper end, where the culvert divides into two branches.

Q. At the junction of the two creeks?—A. Yes, sir; we measured the work in the two branches, and then measured down the culvert from the junction.

Q. Did you continue your measurement to the conclusion of the work?—A. I did.

Q. Now, have you your notes of that measurement?—A. I have.

Q. What is the result?—A. We made the total quantity of masonry 5,927 cubic yards.

Q. Did that embrace the walls and covering on the top?—A. It did.

Q. You did not embrace in that measurement, though, the excavations of the creek?—A. No, sir.

Q. Did you compare the measurement you made with the estimate of the local engineer, Colonel Hamblen?—A. Colonel Hamblen had not testified to his estimate at the time we made the measurement. I think he testified afterwards, maybe the day after. I have the copy of his estimate.

Q. Have you the estimate that he furnished to the Interior Department, upon which payments were made?—A. I suppose I have; that is, I have what purports to be a copy.

Q. Have you before you now the papers alluded to as copies of his estimates?—A. I have.

Q. Now, where did you obtain those papers?—A. I received them from Mr. Fleming since I returned to Washington from Hot Springs. I said Mr. Hamblen, but the letter is signed by Mr. Fleming.

Q. Does that letter state that they were signed by authority of Mr. Hamblen?—A. Not distinctly. He says, "I inclose you copy of Colonel Hamblen's estimate for the work done up to January 1, 1884, and also up to March 19, 1884, when we took our estimate."

Q. Well, just state who Mr. Fleming is.—A. Engineer of the city of Hot Springs. He went over the work with me when I made the measurement.

Q. Was Colonel Hamblen present at the time you were making the measurement?—A. He was.

Q. Did you make any effort to have him furnish to you maps of his estimates or measurements before that time?—A. Yes; I requested him to do so, and to furnish me with any engineer's notes he might have.

Q. What did he say in response to that request?—A. So far as the original notes were concerned, he was not able to give me any. He said that he had memoranda, and that he would have to "hunt the same up," but he did not find them.

Q. And he did not furnish you with any data at all while you were in Hot Springs?—A. No, sir. In regard to the estimates, he told me what the amount of the estimates up to December were. He told me that verbally.

Q. But he did not furnish you with any notes of measurements?—A. No, sir.

Q. Did you think that the estimates you were able to make were reasonably correct as to the real amount of work done?—A. I did. They were, of course, only approximate, because the work was covered, and it was impossible to be sure about the thickness of the walls. The measurements, however, were made wherever it was possible to make them, and I endeavored to use my best judgment as to the assumed thickness.

Q. The work, then, was to a great extent covered up, was it not?—A. Yes.

Q. Now, in respect to the depth of the walls, Mr. Low, do you think you arrived at a correct approximate estimate of that; how deep are the walls in the bed of the creek?—A. Well, my judgment about that is, that there are many places where it was impossible for us to get to the bottom of the wall, and I did not include anything in the estimate for that, as it was such an entirely uncertain quantity. But I endeavored to measure carefully what was exposed, and sometimes would dig down a few inches.

Q. And you made no estimate of the amount of excavation?—A. No, sir; that was impossible.

Q. Did Colonel Hamblen furnish you with a profile of the creek?—A. No sir.

Q. Was anything of that sort furnished you by him?—A. No, sir; I was unable to get anything that would show the original condition of that ground before the work was commenced.

Q. Now, Mr. Low, would a competent engineer, having charge of work of that sort, have a profile of the original condition of the ground before the work commenced?—A. I think so; certainly.

Q. Well, would it not have been the duty of a competent engineer to have kept notes of his measurements?—A. Certainly.

Q. And he had neither one nor the other?—A. Nothing, except, as I have said, in the shape of memoranda. He had none of the profiles and cross-sections and regular note-books such as engineers keep; that is, he did not exhibit them. I understood from him that he did not have any.

Q. Now, did you examine the material in that work?—A. I did.

Q. Well, what is your judgment about that? Is it good material, and fit for work of that sort?—A. So far as the rock is concerned, I think it is a good, durable rock, suitable to build rubble masonry of.

Q. Well, what did you think of the cement and sand?—A. The mortar in the work is not good, in my judgment.

Q. Well, what is the matter with that; what is the defect?—A. I examined the mortar all the way under the long arch in front, I think, of the Arlington Hotel. It was at that point that my attention was first called to the defective character of the mortar; and Colonel Hamblen was with me then, and one of the foremen, I think. I

noticed first that the mortar that would usually be left on the soffit of an arch had dropped off, and I then examined it more carefully and found that the mortar was soft. Then we all went back under the arch some distance and examined the mortar all the way, and I inquired as to how long it had been since that work was built, and the foreman said that it was put in in January or February, but the mortar had not set at all in the arch. As I went along down the work and looked at the mortar more carefully in the side walls I saw that the joints had been pointed up, and the pointing mortar was good.

Q. What do you mean by pointing up; do you mean the mortar put into the joints?—A. It is usual in finishing up a piece of masonry to rake out the joints and fill them with fresh mortar, usually made richer in cement than the mortar in the body of the work, in order to make close, tight joints. That pointing mortar was good; but wherever I took that off and got out mortar in the body of the work, it did not seem to me to be good. It was, however, better than that in the arch of which I have spoken. On examining the material that was for sand with which to mix the mortar, I came to the conclusion that the defective character of the mortar was owing to the use of that sand, which was very poor, and not at all suitable, in my judgment, to make mortar of. I mean that the material used as sand was not properly a sand, and not suitable for the purpose in my judgment.

Q. You say, then, that the mortar is defective?—A. The mortar is defective, except the pointing mortar.

Q. Now, Mr. Lowe how does that rock which is used compare with the granite proposed to be used in the first place? Which is the better material of the two?—

A. Well, that rock now used is just as good for rubble masonry as granite would be, and would make as good a job as the granite. The rock comes out with horizontal beds, and needs very little dressing to make it fit to go in the wall, and is certainly, in my judgment, a durable rock, as it is almost all silicate.

Q. Do you recognize that rock [exhibiting to the witness a piece of rock]?—A. [After examining the rock referred to.] That looks like it. It is usually in much thicker pieces than that.

Q. What sort of rock do you pronounce that to be?—A. I think it is one of the metamorphic rocks. It is a changed sandstone. It is a metamorphic rock which varies a great deal in different parts of the same stratum, but it is a siliceous rock, being almost all silicate, and, I should say, a sand rock that has been subject to metamorphic action.

Q. And you would pronounce that a durable rock and suitable for this class of work?—A. Yes, sir.

Q. Did you notice the Hot Springs, their location, &c., while you were at that place with the committee?—A. Yes, sir; I did.

Q. What would be your idea about securing all that water, utilizing and preventing its waste, if you have any idea about it?—A. I must say I did not look at the springs with a view to that particular point, and, as I heard some testimony on the subject, my opinion would be very likely to follow the drift of what I heard.

By Mr. BARDWELL:

Q. You said that the mortar underneath the arch was soft, or had not set yet, probably, but the pointing of the side walls was good, but when you came beneath the arch it was not all good?—A. Yes, sir; the pointing was all good.

Q. Now, did you take into consideration, or did you know, or were you told, that that wall was laid last summer, in July or August, and exposed to the air and sun, while the arch was recently put in and subject to neither sun nor air, and I ask you, would that make any difference in the setting of the mortar?—A. That would make some difference in the setting, especially with mortar mixed with that material.

Q. Would it not be, naturally, damper under there, and take longer to set and make its bond?—A. If I am to give my judgment about that mortar under the arch, I would say that it would not set at all; that is, where it is exposed to moisture. If it was out in the sun and air it would dry out, which is a different thing from setting.

Q. Did you see any of this mortar that was placed in a bucket, and which set under water?—A. I do not remember. Some samples were shown me, but I really did not know whether they set in water or in the open air.

Q. Well, with that knowledge it would make a difference in your opinion, would it not? [Mr. R. Alexander here submitted a sample of cement mortar, which he claimed had set under water.]—A. [After examining the sample referred to.] Well, I confined my examination to the mortar that was in the work. I thought that was the most important thing. As to samples, of course I could not swear to them.

By the CHAIRMAN:

Q. Just state what sort of samples you exhibited to the committee at Hot Springs, where you got them, and what their appearances were.—A. The morning we left Hot Springs I exhibited to the members of the committee two samples of mortar which I

had taken from the work. One was a sample of the mortar which I took from the soffit of the arch in front of the Arlington Hotel, which the foreman told me had been in the work a couple of months. The other sample was a sample of the mortar used in pointing, which I had broken out of one of the joints. I put these samples in water in the presence of the committee, and showed them the difference in the two mortars.

Q. Now, what was the appearance of the mortar, Mr. Low; that is, the color, &c.?
—A. Well, it was darker than this sample which has been submitted here by Mr. Alexander, but, so far as that was concerned, it was owing to the amount of water in it. It was still wet.

Q. Did it present the same appearance that this sample now before us does?—A. No, sir; I attribute the difference between these two mortars to two things—first, the mortar that was used in pointing had been exposed to the sun and air, and was in small masses and had a good opportunity to dry out, and it was also probable, as is usually the case, that the pointing mortar was richer with cement, which would cover, to some extent, the defect in the sand. The mortar under the arch had been in a damp place from the time it had been put in. It was almost as soft as when it was put in—not quite, but it was very nearly as soft.

Q. That had been in the work how long?—A. The foreman told me that it was put in either in January or February, and it was the middle or latter part of March, I think, when we were at Hot Springs.

By Mr. BARDWELL:

Q. Did you examine the mortar on the upper side of the arch, the outside?—A. No; that was covered with earth.

Q. Then you could not get at any of that?—A. Only that put in within a few days.

By the CHAIRMAN:

Q. Did you examine these papers which I now show you [handing papers to witness]?—A. I did.

Q. Just state what they are.—A. [After examining the papers.] The first paper is an approximate estimate of the amount of masonry on Hot Springs Creek to March 19, 1884, signed by Samuel Hamblen, superintendent. The second paper is an estimate of work done on Hot Springs Creek up to December 31, 1883, also signed by Samuel Hamblen, superintendent.

(The papers referred to are as follows:)

Approximate estimate of amount of masonry on Hot Springs Creek to March 19, 1884.

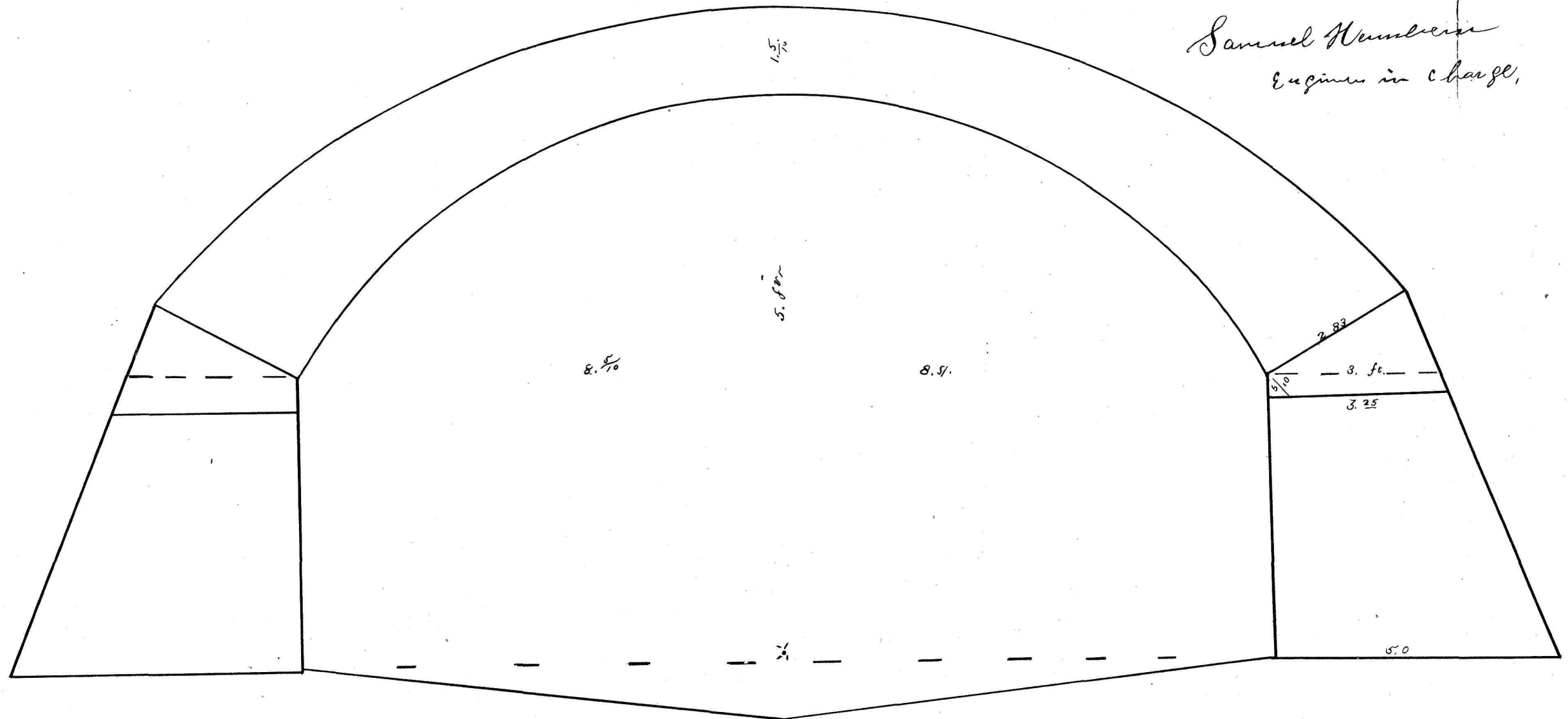
Position.	Area.	Distance.	Since January 1, 1884.	Total to March 19, 1884.	Remarks.
Above junction	18.45	<i>Feet.</i> 28	\$517	\$8,261	Walls.
Below junction					
Near Arlington	22.50	80	1,800	98,416	
Skewbacks	3.50	277	970	10,640	
Arches above junction	40.40	135+	5,460	5,460	
Arches below junction	51.30	418	21,443	41,963	
			30,190	164,740	= 6,101 cubic yards.
Cubic yards			1,118		

	Cubic yards.
As above	6,101
Cubic yards in Fountain street sewer	54
Granite walls torn down on adoption new plan	117
Total to March 19, 1884	6,272
Previous estimate	5,154
	1,118
Earth excavations	14,489
Rock excavations	9,348

SAMUEL HAMBLEN,
Superintendent.

This plan was followed on construction,
except when required to go below grade
for rock foundation; - in such cases the
base remained the same width.

Samuel Hunsicker
Engineer in charge,



Estimate of work done on Hot Springs Creek up to December 31, 1883.

Position.	Height.	Area.	Length.	Cubic feet.	Remarks.
Park avenue	4.5	18.45	116	2,694	Right side.
Whittington avenue	4.5	18.45	273 ⁷ / ₁₆	5,050	
From junction at P. W. & C. avenues to jog in wall	4.5	19.07	120	2,364	
From same point	4.5	18.45	630	11,655	
Thence	5.5	22.55	700	15,750	
Thence	5.2	21.32	286	6,092	
Wall resumed	7.	28.07	457	13,116	
				56,721	
Skewbacks				2,763	Lin. feet.
Arches				400	Do.

Position.	Height.	Area.	Length.	Cubic feet.	Remarks.
Park avenue					3.2
Whittington avenue					<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Avg. width 4.1 </div> Under Skewbacks.
From junction at P. W. & C. avenues to jog in wall	4.5	18.45	120	2,214	
From same point	4 ⁵⁵ / ₁₀₀	19.05	664	12,948	
Thence					
Thence	5.5	22.55	986	22,185	
Wall resumed		24.33	423	10,292	Left side. 5.0 Base.
				47,639	
				56,721	
				104,360	The above was the uniform rule for top and base of walls. 134,550 = 4,983 cubic yards.
Skewbacks (average area)	3 ⁵ / ₈			9,670	
Arches (average area)	51.3			20,520	
				27	

As above	Cubic yards.
Cubic yards in Fountain street sewer	4,983
Granite walls torn down on adoption of new plan, &c., not otherwise shown in estimate	54
Total to December 31, 1883	117
Earth excavations	5,154
Rock excavations	14,489
	9,348

SAMUEL HAMBLÉN, C. E.,
Superintendent.

Q. Now, by looking at these papers can you form any idea as to the correctness of the estimates, comparing them with the measurements, estimates, &c., that you made?—A. Yes, sir.

Q. Well, now, what do you say in that respect?—A. There is a difference of 174 yards between my estimate and that made by Mr. Hamblen.

Q. In what respect is there a difference?—A. Mr. Hamblen's estimate exceeds mine 174 yards.

Q. In what classification?—A. In masonry.

Q. What difference would that make in the cost?—A. I do not know the contract price.

Q. The contract price was \$10.50 per cubic yard.—A. \$1,827.

By Mr. BARDWELL:

Q. You do not know anything about the depth of the wall in some places, or in any place particularly—I mean how much deeper the wall went than you could ascertain in your measurements?—A. No, sir; I think there was masonry there that I could not include in my measurement.

Q. And that might be added to cover the discrepancy between the two estimates?—A. I think so. That is not a great discrepancy in an approximate estimate—174 yards.

By the CHAIRMAN:

Q. But if there had been an honest, competent engineer in charge of that work, could not he have furnished you with data that would have made it accurate with absolute certainty?—A. If I took all his data as facts the work could be correctly measured.

Q. If he had furnished you with profiles, &c., by which you might make an accurate estimate, there would be no doubt about it? What I want to arrive at is this: If he were an honest and competent engineer he would have been able to furnish you with data by which you could have made a perfectly accurate estimate; is not that so?—A. Yes, sir; I have already stated that.

By Mr. BARDWELL:

Q. How did you ascertain your measurement in trying to get the bottom of the wall; what means did you use?—A. Well, we used a bar, but it was rather unsatisfactory.

Q. What kind of a bar?—A. A crowbar.

Q. That would not go very far down, would it?—A. No; that is, we could not be sure always where the bottom of the wall was. Of course, some places rested on the natural rock and other places were exposed; but in other places, as I say, we could not be certain even by sounding with the bar in the water, and could not feel exactly where it was.

Q. Did Colonel Hamblen accompany you at the time you made your measurement?—A. Yes, sir.

Q. Well, could he not give you information on that point—I mean as to the depth of the wall at certain places?—A. Well, he said frequently, "This wall is deeper here," and made use of expressions of that kind, but I could not measure it. If he had notes to show it was deeper, I might have proved it, but his statements simply were that it was deeper, without exhibiting his notes or estimates. I could only make such tests as were possible at the time; but I believe that his statement was correct. There were undoubtedly points where that wall went down deeper.

Q. How do these statements read by you and submitted in this testimony compare with those sent to you personally?—A. They are just the same.

Q. Can you estimate from these measurements how high the walls would have to be, how long, &c., to agree with these figures here?—A. Yes; in fact I made a rough estimate for my own satisfaction.

Q. Well, do you remember how that came out?—A. My recollection is that the difference between my estimate and that of Colonel Hamblen's would account for an increase in depth, on an average, of 3 inches. That is my remembrance; possibly I may find the memorandum, but I think I can give it to you now. [The witness here made a computation.] That would account for an average increase of depth of about 2½ inches.

Q. Well, what do you mean by increase in depth?—A. (Witness draws a diagram.) Now, suppose this to represent my estimate of 5,900 and odd yards, and this whole area to represent Colonel Hamblen's estimate of 6,101 yards; then this additional depth of 4 inches would account for the difference between these two estimates.

Q. And would add an additional depth?—A. Yes, sir; an additional depth of 2½ inches would be 174 yards.

Q. Now, if you had the original profiles, &c., before the work commenced, could you tell then just how much had been estimated?—A. If it was a profile with proper cross-sections, made on the exact line of the work, of course I would be able to get at it.

By Mr. STORM:

Q. If there was a topographical horizontal profile of the depths every 2 feet, and then every departure from the plan noted, would there be any trouble in getting at the exact amount of excavation?—A. Oh, no; not if the departures were noted. But simply with the topographical horizontal profile, without any data to get at any departure from it, it could not easily be gotten at.

Q. You have seen this map, have you not [exhibiting the topographical horizontal map referred to]?—A. (After examining the map.) Yes, sir.

Q. Well, with the figures on this you could easily tell how much excavation was made, could you not?—A. Well, this is a very small scale, and it is hard to tell.

Q. With the aid of such data as has been spoken of you could. But you could not make any calculation unless you had the notes of variations from it, could you?—A. No, sir; such a drawing only gives the surface and the superficial excavation above the grade line, and if the engineer went deeper and made no notes of it, you could not tell.

Q. Did Colonel Hamblen give you any figures or estimates or measurements by which it would throw any light upon the question of variations in the original plan?—A. No, sir; he did not. I think I have already testified to that.

By Mr. ALEXANDER:

Q. Suppose these side walls of the creek were moved to the eastward or westward from the line indicated in the original plan, would that make any difference in the amount of excavation there?—A. Of course.

By Mr. STORM:

Q. But you could not get at the amount unless you knew what distance the side walls were moved east or west?—A. No, sir.

By Mr. ALEXANDER:

Q. Did you make any estimate at all of the excavation?—A. No, sir.

T. H. HANDBURY recalled.

By the CHAIRMAN:

Question. Look at these papers and say what they are [handing papers to witness].—Answer. (After examining the papers.) The first one, judging by the heading, is an estimate of work done on Hot Springs Creek up to December 31, 1883.

Q. What is the date of it?—A. The date of it—I see no date on it. I see no date showing the length of time included. It does not say from what time. It seems to be indefinite on that point. The second is an approximate estimate of the amount of masonry done on Hot Springs Creek to March 19, 1884.

Q. Does that state from what time?—A. No, sir; that does not state from what time.

Q. Now, are these proper estimates and papers to be sent in by a competent engineer having charge of Government work?—A. Well, sent in as they are, or as I suppose them to be, to the committee, without their previous knowledge in relation to them, I think they are not in proper shape.

Q. Well, would it not be proper for them to show the time from which this estimate was made, the dates between which this was done? Now, a competent engineer in charge of public works, would it be his duty or not to keep notes of his measurements, so that they might be referred to at any time and verified by any engineer or by himself?—A. Yes, sir.

Q. Is not that the usual and ordinary way of doing business of that sort?—A. That is the ordinary and proper way.

Q. Well, would it not be proper also for him to keep a profile of the work, so that he might know what has been done?—A. Yes, sir.

Q. Now, captain, are you familiar with the location of the hot springs at that place?—A. Do you mean the springs themselves?

Q. Yes.—A. I am in a general way familiar with them.

Q. Do you know the flow of water daily or hourly?—A. From an estimate I caused to be made, it was ascertained that the approximate amount of flow from all the springs was 500,000 gallons in 24 hours.

Q. That is the approximate estimate?—A. Yes, sir; the approximate estimate, as near as they could get at it.

Q. And that embraced all the springs, did it?—A. Yes, sir; that embraced all the springs.

Q. Well, what would be your idea of the preservation and utilization of all that water? That is one of the things that the committee want to report upon, and we would like to have your views about it.—A. Well, my views on that subject are expressed in a general way in a letter which I wrote to the Secretary of the Interior, and that letter, I believe, is now before the committee; it is in that printed report. If I may be permitted to read my views from that, it would express better my ideas than I could express them verbally at this moment. Quoting from this report I refer to, I say "From actual measurements of their discharges," that is, the discharges from all these springs, "I find that their aggregate flow each twenty-four hours closely approximates to 500,000 gallons. Of this about 175,000 gallons come from springs in and near the bottom of the creek; the balance from the springs above. All issue from the west slope of Hot Springs Mountain.

"The iron pipe that I have provided for in the plan and estimate submitted is designed to collect the hot water that would otherwise go to waste in the creek. The whole of this amount of water, 500,000 gallons, can very easily be collected, and, if necessary, at a reasonable expense be placed high enough to be delivered by gravity into the upper houses of the valley.

"This amount is sufficient to furnish 20,000 people each with 25 gallons per day of the purest water that flows from or on the face of the earth."

Now, the conclusion I have come to in regard to the collection of that water was

that there should be a series of reservoirs provided, so that they might be placed in one or two tiers along the face of the hill, the water from the lower springs down in the creek to be pumped up into one of these tiers of reservoirs, and from there to be taken by gravity to any place in the valley. That plan, however, I have not worked out, and have made no estimate on it, although it was originally intended that I should submit a plan for the purpose of distributing this water.

By Mr. STORM:

Q. These estimates which have been referred to show upon their face that they have not been made up in monthly estimates, or by measuring the whole work at given points?—A. That I could not say.

Q. Well, these estimates do not state what was done on Park avenue or Whittington avenue, or from the junction, or where the work left off at the time of one estimate, or where it resumed at the time of another estimate, or anything of that kind. Now, I ask you is that estimate made up on the face of it from monthly measurements, or by measurements of the wall at given points?—A. Well, there is nothing on the face of the paper which shows how the estimates were made up. It only gives, as I understand it, the quantities of material for given distances.

Q. Now, a monthly estimate would not always show that the side walls and arch were carried out to the same extent. The arch would not always be carried along as fast as the side walls, would it?—A. If the engineer in charge divided up his work into different parts, as, for instance, the wall or the archway, each monthly estimate should show how much of each part had been built.

Q. Up to a given point?—A. Yes.

Q. But, then, he ought to have his papers of measurements to show whether that was so?—A. Yes, he ought to keep his papers in such shape as to be able to tell, at the end of every month, just what has been done during that month.

Q. If he had made up his statements monthly would not they show that the walls on the west side had been carried along further than on the other, and that portions of the walls were not yet arched?—A. It is possible they might show that.

Q. It is hardly likely that arches were carried along there as fast as the walls were built, is it?—A. No, sir; it is not likely that they carried them along as fast as the walls, but it might be that the contractor so arranged it as to have the arch up with the walls at the end of the month. It is not likely, but he might do that.

By Mr. BARDWELL:

Q. Does that estimate show all the work from the time it commenced up to the 1st of December, 1883—

Mr. STORM. This goes up to December 31 and the other paper up to January 1, 1884, and then all the way up to March 19, 1884; but he gets at the work from the 19th of March by subtracting what was done to January 1 or December 31, getting that by calculation.

The WITNESS. In answer to Mr. Bardwell's question, I would say that there is nothing in these papers which shows when this work was commenced.

By Mr. BARDWELL:

Q. You certainly would not think that that estimate was for any one month, would you?—A. That I could not say, not knowing how fast the work was pushed along.

By Mr. ALEXANDER:

Q. Captain Handbury, in yesterday's statement you said that this granite could be got at a reasonable cost from the "Diamond Joe" quarry. What would you call a reasonable cost?—A. Well, for granite there, I should say \$5 a cubic yard.

Q. For the granite at the quarry?—A. No, I mean granite delivered at the Hot Springs; that is, in that neighborhood. I do not say that it would cost exactly \$5.

Q. Would that include the quarrying and handling? What would your \$5 cover?—A. That should cover the expense of the rock delivered at Hot Springs.

Q. Do you know anything about the terms proposed to contractors for the use of that quarry when you put in this estimate?—A. When I was making my estimate of the cost, I went to these gentlemen and asked them on what terms they would give us that rock, for use in walling up the creek. My recollection is that Mr. Conger said they would charge nothing for the rock at the quarry, but they would charge their usual rates for freighting it from the quarry up to Hot Springs.

Q. Then the parties who got the use of the quarry were to quarry the rock at their own expense, load the cars, &c.?—A. That was my understanding.

Q. What about the plant? Do you recollect that whoever got the quarry were to put in steam drills and all that?—A. Well, Mr. Conger said nothing of that kind to me.

Q. Well, you heard of this, did you not?—A. I heard afterwards that certain contractors went to him and asked him upon what terms they could have this rock, and he demanded something more than I had understood he would ask for the rock.

Q. Do you recollect a conversation between yourself and me about it, and my telling you I had his estimate, he stating to me that he wanted me to put in a \$10,000 plant?—A. I recollect we had a conversation, but I do not recollect what it was about.

Q. Don't you recollect my stating to you that he required us to quarry the stone, load and unload it, and then pay \$5 a cubic yard freightage after that, and then leave the plant at the quarry when we got through?—A. I do not remember exactly what it was.

Q. How much do you think that would run the expense up to at the rate of \$5 a cubic yard for freightage?—A. That I could not fix.

Q. You do not know what it is worth to quarry, load and unload, and then haul to the work, do you?—A. I have not made any calculation.

Q. Did you know at that time that there was any other granite near there?—A. I was not positive.

Q. Had you heard of any, or heard any talk about there being other granite in the vicinity of Hot Springs?—A. At the time I wrote my original report I was not positive that there was any granite in the neighborhood, but I had been informed that there were indications of granite not far from Hot Springs, although I had not examined any locality for it.

Q. Did Mr. French ever tell you about any being out at Mr. Fordyce's place?—A. I do not remember Mr. French speaking about it. I remember Mr. Fordyce telling me that he thought there was granite some place there in the neighborhood where he lived.

Q. Did you have any conversation with Mr. French or anybody else about running a switch on the reservation for hauling the stone there?—A. I do not remember.

Q. Did you never go down on the railroad to the quarry with Mr. French and Mr. Conger in a baggage-car?—A. I never went down with them with the view of going to the quarry. It is possible I rode with them. I have a recollection that I did go down the road with them one time. I never had an arrangement with them for anything of that kind, however.

Q. Did you ever have any conversation with Mr. Conger at his house about the use of this quarry?—A. No, sir; I was never at Mr. Conger's house; nothing further than what I have in substance mentioned.

Q. What was A. P. Robinson's reason for giving up the contract?—A. That I do not know.

Q. Was it not by reason of some dispute, between you and himself, in regard to the thickness to be allowed for the granite?—A. I have heard that it was on account of the manner in which the measurements were to be made.

Q. Between you and him?—A. Well, I had nothing to do with the measurements at that time. I mean at the time Mr. Robinson had the contract. I had not been appointed to the general supervision of the work.

Q. Did you know anything about Mr. Robinson's reputation as an engineer?—A. I did not.

Q. Did you know that he made the map of Hot Springs?—A. Yes, sir; I heard so, and I also saw his name on the map.

Q. Yesterday, when I spoke to you about the contour line at the Grand Central bath-house, I said that it might be displaced?—A. It might have been a clerical error of some kind.

Q. Will you look at that contour line and tell whether it is correct [handing map to witness]?—A. (After examining map.) That is 121 up at the junction, as it is at the bottom of the creek, or, rather, the bottom of the creek when it is improved. Now, this 121 down opposite the Grand Central bath-house is up on the bank.

Q. It is on the road, is it not?—A. Yes; upon the road. Now, right opposite this 121 we have been speaking about, and in the bottom of the creek, we have the curve 113, so that the fall in the creek from the principal end down to this point we are speaking of is 8 feet.

Q. That would make the fall 8 feet then?—A. Yes, sir; it would make the fall 8 feet in that distance instead of being on a level, as you supposed it was. In one case you took the 121 curve up on the bank, or the side of the hill, as it were; and in the other case you took the 121-foot curve down in the bottom of the creek.

Q. But this line was up on the bank, and not in the bottom of the creek?—A. Well, that would not make any difference.

Q. Do you think that map is correct all over in regard to contour lines; did you examine it fully after your engineer made it?—A. It is my opinion that that map is correct, so far as the contours in the bottom of the creek are concerned. The contours that affect this work are as correct as a map of that character is ordinarily made.

Q. How would you consider it up on the street?—A. That I could not say.

Q. Well, on the east side of the east mountain say?—A. I do not know so particularly about the curve there, but down in the bed of the creek, of course, that is different.

Q. Then there were parts of that map that you were not particular about?—A. Parts of it that I was not very particular about, yes.

Q. Well, if the lines were changed as you originally laid them out at the lower end to the eastward, would it make much difference in excavation?—A. The little change from the plan that I made in laying out would not affect it.

Q. Say one-half the width of the creek?—A. That would not affect the excavation materially.

Q. Will you please look at these contour lines at the south end of the reservation [indicating on the map]?—A. I say that would make very little change in the amount of excavation. Of course, if it increased the amount right at the reservation line the change would diminish the amount of excavation necessary.

Q. These colored lines show better what I mean [exhibiting to witness a colored map]?—A. Well, I answered that question.

Q. Yesterday you stated that you just ran down 1 foot there, I believe [indicating]?—A. My plan called for a depth of 1 foot below the bottom of the creek.

Q. Mr. Hamblen's change gave me 635; that is 635 one-hundredths, is it not?—A. I would suppose so. There is a small dot in front of the 3.

Q. What would be the difference in excavation, then?—A. Well, that I could not say without—

Q. (Interposing.) That would be over 5 feet in all, as the difference in your excavation and his, would it not?—A. I could not say the exact amount without going all over it.

Q. Well, there would be 5 feet difference, would there not?—A. Well, that would depend altogether on the shape of the ground over which you moved in the center line of the channel.

Q. Then, you think there would not be any more excavation by going down 5 feet deeper?—A. I should think there would be, if that is your question.

Q. Here is Colonel Hamblen's notes on that lower end. Do you, as an engineer, recognize any marks about them [exhibiting notes and map to witness]?

Mr. STORM. I wish to raise the point here that we have not attacked either Mr. Bardwell or Mr. Alexander. This investigation has nothing to do with them. This committee wants to know whether the Government has managed this property in a proper manner. We asked Mr. Hamblen, the Government superintendent, if this work had been carried on properly, and if he had his notes and data with respect to the improvement, and I do not propose, for one, that the contractors shall come in here with fragments of notes and offer them in evidence. We simply want to know whether this engineer has discharged his duties in an honest, capable, and business-like manner. Our resolution empowered us to investigate whether the work was properly done and honestly estimated. If the contractors get into a fight with the Government, and the engineer of the Government has been so careless as not to preserve all the data in connection with this work, then the contractors have a right to offer what data they may have to fortify their own position in the matter. We are not after the contractors, but, as I said, Mr. Hamblen was requested by us to produce the papers connected with the matter of inquiry, and he has said he did not have them, and now he comes in here, through Mr. Alexander and Mr. Bardwell, and offers these fragments. Now, if you gentlemen want to take up this fight with Mr. Hamblen, you are free to do it.

Mr. ALEXANDER. The point made here is as to the amount of excavation and masonry.

Mr. STORM. Well, that does not affect you. We asked the superintendent to produce his papers, and he failed to do so. This is an investigation into the conduct of the Government and its officers in the management of a great public improvement, and we do not propose that you or anybody else shall be hurt, and I do not think it is necessary for you to come in here and take up this fight.

Mr. ALEXANDER. I want to show by Captain Handbury that the United States engineer changed his plans, and carried us down a good many more feet in the excavation, &c., than the original plans called for. I will ask Captain Handbury if he could make an estimate of the amount of excavation done for the sub-foundation wall, or could any man, at this time.

The WITNESS. I should think it could not be done without a great deal of trouble and expense, and digging down to find exactly where the foundations were.

Q. And then could only figure on the exact thickness of the wall, but not what I had to slope off in getting at that?—A. No, sir.

By Mr. BARDWELL:

Q. Did your original specifications require coping?—A. The plan from which those specifications were drawn indicated that there was to be a coping-stone, but that is not in the specifications. Those were shown by a map which was furnished by the Interior Department to some of the bidders. I do not know whether they all received this map or not.

The committee adjourned.

Capt. J. W. Jacobs submitted the following correspondence, which explains itself.

ARMY AND NAVY HOSPITAL, OFFICE ASSISTANT QUARTERMASTER,
Hot Springs, Ark., March 22, 1884.

SIR: I have the honor to transmit herewith certain correspondence relative to a strip of land immediately south of the Rammelsburg bath-house, for the use of the Army and Navy hospital, which you requested me to furnish. Should there be any further information desired by the committee I will be glad to furnish it.

Very respectfully, your obedient servant,

J. W. JACOBS,
Captain and Assistant Quartermaster, United States Army.

Hon. CASEY YOUNG,
Chairman of the Committee of Investigation, Hot Springs, Ark.

SURGEON GENERALS OFFICE, UNITED STATES ARMY,
Washington, D. C., October 23, 1882.

SIR: I have the honor to report that, in obedience to a special letter of instructions from the Adjutant-General, dated August 16, 1882, I have visited Hot Springs, Ark., and, in company with Medical Inspector Adrian Hudson, United States Navy, who was detailed for that purpose, have selected as the best site for the proposed Army and Navy hospital at that place the southwest corner of that part of the Government reservation known as Hot Springs Mountain. The selection of this site was made after a careful examination of the grounds, and is believed to be the only one which will afford the necessary space, exposure to sunlight and winds, and sufficient nearness to the water sources.

The whole southwest corner should be set apart for the purposes of the hospital, and no more bath-houses should be allowed upon this corner.

The site selected is entirely satisfactory as regards space and exposure. With regard to proximity to hot-water springs, the site selected would permit of the introduction into the basement of water from a spring about 400 feet distant. As, however, we were agreed that it was advisable to have the hot baths in a separate building, and not in the hospital itself, this became a question of minor importance, since the bath-house can be readily located either northwest or southwest of the hospital so as to secure every necessary advantage.

The only objection to the site selected is that the arching of the creek and the sewer to be constructed by the Government terminates at the southwest corner of the reservation, about 200 feet from, and 65 feet below, the hospital. If this sewer is not continued for at least 250 yards further, a great nuisance will certainly be produced. We were assured, however, that the continuation will be effected by the city; and, indeed, it will be necessary for the owners of private property to do it if the city does not.

I present herewith a map, upon which is indicated the proposed location of the hospital.

Very respectfully, your obedient servant,

J. S. BILLINGS,
Surgeon, United States Army.

General C. H. CRANE,
Surgeon-General, United States Army.

OFFICE ASSISTANT QUARTERMASTER,
Hot Springs, Ark., March 21, 1884.

The report of Medical Inspector A. Hudson, United States Navy, is practically the same as the above.

J. W. JACOBS,
Captain and Assistant Quartermaster, United States Army.

[Indorsement.]

SURGEON-GENERAL'S OFFICE,
October 24, 1882.

Respectfully submitted to the Secretary of War, with map showing the location of the proposed hospital at Hot Springs, Ark., approved and recommended.

C. H. CRANE,
Surgeon-General, United States Army.

DEPARTMENT OF THE INTERIOR,
Washington, March 5, 1883.

SIR: I have the honor to return herewith the map of the Hot Springs reservation which accompanied your letter of the 21st ultimo, having caused to be designated thereon, in compliance with your request, the strip of two hundred feet width on the Hot Springs Creek, except one hundred feet on the southwest corner of the reservation as shown by the map, which in the view of this Department should not be included in the proposed site for the Army and Navy hospital.

Very respectfully,

H. M. TELLER,
Secretary.

The Hon. SECRETARY OF WAR.

[Indorsement.]

Respectfully referred to the Surgeon-General of the Navy and to the Surgeon-General of the Army.

ROBT. T. LINCOLN,
Secretary of War.

WAR DEPARTMENT, March 9, 1883.

DEPARTMENT OF THE INTERIOR,
Washington, August 31, 1883.

SIR: I have the honor to acknowledge the receipt of your letter of the 29th instant, with inclosures, in which you request that, if compatible with the public interests, a piece of ground adjoining the site of the Army and Navy Hospital at Hot Springs, Ark., be set aside for the use of hospital, and in reply to state that on the 24th ultimo the piece of ground referred to was leased to Mr. A. B. Gains as a site for a bath-house, and that therefore it is not possible for this Department to comply with your request.

Very respectfully,

M. L. JOSLYN,
Acting Secretary.

The Hon. SECRETARY OF WAR.

[Indorsement.]

QUARTERMASTER-GENERAL'S OFFICE,
Washington, September 6, 1883.

True copy. Respectfully referred, by direction of the Quartermaster-General, to Capt. J. W. Jacobs, assistant quartermaster, Hot Springs, Ark., for his information and guidance.

J. G. CHANDLER,
Deputy Quartermaster-General, United States Army.

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., February 6, 1884.

CAPTAIN: By direction of the Quartermaster-General the following copy of correspondence is respectfully furnished for your information:

WAR DEPARTMENT,
Washington, D. C., January 19, 1884.

SIR: I have the honor to inclose herewith for your consideration a communication from Capt. J. W. Jacobs, Assistant Quartermaster United States Army, January 4, instant, in which he very forcibly urges the importance of obtaining, for the use of the Army and Navy Hospital to be constructed at that place, a certain piece of land lying between the north line of the southwest corner of the hospital ground and the Rammelsburg bath-house. The drawing which accompanied the letter of Captain Jacobs, and to which reference is therein made, is also inclosed herewith.

In thus bringing this subject to your attention it is not to be understood that this Department has lost sight of the information communicated by your letter of August 31 last, relative to the leasing of the land in question, * * * yet in view of the seemingly unquestionable value of the land for hospital purposes, I deem it proper to invite a further consideration of the subject in order that unless it be absolutely

unavoidable the hospital may not be deprived of the great advantages which the possession by it of said land would confer.

After you shall have further considered the subject in connection with the accompanying papers, please return the papers with information as to your conclusions in the matter.

Very respectfully, your obedient servant,

ROBT. T. LINCOLN,
Secretary of War.

The Hon. SECRETARY OF THE INTERIOR.

DEPARTMENT OF THE INTERIOR,
Washington, January 30, 1884.

SIR: I have the honor to acknowledge the receipt of your letter of the 19th instant, inclosing for consideration by this Department, in connection with former correspondence upon the same subject, a communication from Capt. J. W. Jacobs, assistant quartermaster, United States Army, in which he urges the importance of securing for the use of the Army and Navy Hospital at Hot Springs, Ark., an additional portion of the west front of the reservation lying between the present northern boundary of the hospital grounds and the Rammelsburg bath-house.

Referring to the letter addressed to you by this Department, on the 31st of August last, in which it was stated that the parcel of land desired by Captain Jacobs had been leased as a site for a private bath-house, I have to inform you that the said lease is still binding upon the Government, and it is therefore not within the power of this Department to assign the lot in question to the use of the hospital.

Very respectfully, your obedient servant,

H. M. TELLER,
Secretary.

The Hon. SECRETARY OF WAR.

Very respectfully, your obedient servant,

J. G. CHANDLER,
Deputy Quartermaster-General, United States Army.

Capt. J. W. JACOBS,
Assistant Quartermaster, Hot Springs, Ark.

The following article was submitted by Mr. G. G. Latta:

BROOKS AS SEWERS.

When a natural water-course traverses a town, and its banks become built upon, the easiest way of getting rid of filth and house wastes is to throw them into the stream. Every man's instinctive impulse is to get rid of what annoys him, and not to mind how his neighbor will be affected. After a while, when the water-course has become sufficiently nasty, the people come to a realizing sense of what they have brought upon themselves, and then they try to devise a remedy. In this they begin usually at the wrong end. They look on the stream as creating the nuisance, and don't consider that it is their abuse of the stream that is the source of the trouble. So they go to work and cover the stream up and call it a sewer. What is the result? Simply that the stench of the foul matter in the old channel is bottled up somewhat, to be vented through every manhole, every inlet, and every house-drain, and probably do more real injury than when the rotting filth was exposed to the air and the sun, and diffused its aroma through the whole atmosphere.

The channel of a small natural stream through a town or village ought never to be converted into a sewer for house wastes. This will strike a good many people as an odd doctrine, but still it is sound doctrine. The functions of a natural stream and of a sewer are so diverse that one cannot be made to do duty for the other.

A natural water-course serves for the drainage of the land all along its course. Its banks cannot be made water-tight without obstructing the natural progress of the water in the soil and backing it up and retaining it where it ought not to be retained. A sewer, on the other hand, is intended to carry off foul matters which must be gotten rid of as quickly as possible, and the channel for conveying them must be absolutely impervious, so that nothing can soak through it to the soil. As the level of the water in the soil rises and falls with the season and the amount of rain, an open-jointed or pervious channel would sometimes admit water from the soil and sometimes permit fluids flowing in the channel above the level of the ground-water to flow out, and thus pollute the soil and the air in the soil.

Again, a natural stream draining a considerable territory is subject to great variations in its volume. A channel to carry its extreme discharge in floods must be many

times larger than can ever be necessary for the carriage of the greatest amount of sewage that can be brought to it. A large channel is not suited to the rapid removal of a small flow of filthy fluids, and, moreover, costs a great deal more than a sewer of the proper size. Even if the large channel for a fluctuating stream is built through a village, the sewage from the houses should not be turned into it, unless the minimum volume of the natural flow in the dryest seasons is large enough to keep the channel thoroughly scoured. There are a good many small towns which have for years gotten along without sewers and have arched over natural water-courses running through the heart of the town, but are now impelled by the "sanitary revival" to construct sewers for removing household wastes. The first impulse is to utilize the covered streams to save the expense of constructing a few hundred feet of sewer. They should be very careful how they proceed. It is better to spend a little more money and be safe than to economize in first cost and spend ten times the saving in doctor's fees and undertaker's bills.—(The Sanitary Engineer, New York, November 15, 1883.)

APPENDIX.

DEPARTMENT OF THE INTERIOR,
Washington, May 10, 1884.

SIR: In compliance with your request of the 7th instant, I have the honor to inclose herewith copies of the correspondence between this Department and Captain Thomas H. Handbury, relative to the work at Hot Springs, Arkansas, also copies of the monthly estimates of work performed from June to December, 1883, inclusive.

The letter of Captain Handbury addressed to your committee is also inclosed.

I will thank you to return to this Department the "monthly estimates" after you have examined them.

Very respectfully,

M. L. JOSLYN,
Acting Secretary.

HON. CASEY YOUNG,
*Chairman Committee on the Expenditures in Interior Department,
House of Representatives.*

DEPARTMENT OF THE INTERIOR,
Washington, April 26, 1882.

Captain T. H. HANDBURY,
Corps of Engineers, U. S. A., Little Rock, Arkansas:

SIR: The care of the Government reservation at Hot Springs, Arkansas, was, by act of Congress approved March 3, 1877, entrusted to the Secretary of the Interior, who was authorized to use the revenue from the rents of water and sales of lots for the improvement of the reservation. In order that the fund may be expended to the best advantage, it is deemed necessary that certain surveys should be made and that a competent engineer should lay out the plan for the improvements. The Secretary of War having approved the request of this Department that the surveys be made under your direction, I shall be pleased to have the matter attended to by you at as early a date as may suit your convenience.

The most important matter upon which your action is desired is a plan for the improvement of the portion of the reservation through which the Hot Springs Creek runs. Should the banks of the creek be walled up or arched over, or what plan of improvement should be adopted? What will be the approximate cost of improvements upon such different methods as in your opinion may properly be adopted? It is desirable that so far as practicable the plan for the improvement should be marked out upon the ground.

The distribution of the hot water has been a matter of complaint. Is there any system of distributing the water to the bath-houses which would better subserve the interests of the public than the present? I will thank you to give your views of the matter, and also to make any suggestions which you may think proper to make concerning the improvement of the reservation.

The expenses incurred by you in this matter will be paid by the Department.

Very respectfully,

H. M. TELLER,
Secretary.

UNITED STATES ENGINEER OFFICE,
Little Rock, Arkansas, May 9, 1882.

The honorable the SECRETARY OF THE INTERIOR,
Washington, D. C.:

SIR: I have the honor to acknowledge the receipt, through the Chief of Engineer's Office, of your communication of the 26th ultimo, instructing me as to the general character of the duties that I have been detailed by the Secretary of War to perform.

under your direction, in connection with the improvement of the Government reservation at Hot Springs, Arkansas. I also have the honor to submit the following general project for the commencement of this work, and to ask your approval of the same:

After receiving your instructions as above mentioned, I proceeded at once to Hot Springs, Arkansas, with a view to familiarizing myself with the general character of the ground and ascertaining the nature of the engineering problem that is there presented for solution. In very brief terms I find the situation to be about as follows: Here are a number of hot springs clustered together, as it were, in a very limited area. The waters of these are of inestimable value, possessing remedial properties such as are nowhere else to be found in the world. In order that the greatest possible number may enjoy their benefits at the most reasonable expense practicable, and to prevent the extortions which the monopoly of so valuable a privilege as this in the hands of private individuals would engender, the Government in its wisdom has reserved these springs and certain lands in their vicinity to its exclusive control. From this fact, and also that a provision has already been made for the commencement of the improvement of these reserved lands, it is presumed that the Government contemplates putting them in a condition such that every possible benefit may accrue to the afflicted who may seek relief there, and that the place may be made worthy the object for which it was reserved and worthy of the country in which it was found. The waters from these springs flow from the hillside into a small stream, called Hot Springs Creek, that has its course down through a narrow gorge with steep hills on either side. The control of this stream is reserved, as I understand, by the Government, but the land on both banks, excepting for a few hundred feet on the slope from whence the springs issue, has passed into the hands of private individuals and become a part of the incorporated city of Hot Springs. All the available space in this gorge, which is but a very narrow strip of ground on either bank of the stream, is now occupied, or will soon be, principally by cheap wooden structures devoted to retail business purposes and offices. That portion over which the Government still retains control is occupied principally by bathing-houses, some of them picturesque and substantial, and structures of a temporary character which are adjuncts to these. The Arlington Hotel is, I believe, also upon the Government ground. After taking out the space necessary for the bed of the creek and that occupied by the two rows of houses on its banks, what is left for street purposes is barely sufficient for the present needs of communication through the gorge, and will be entirely inadequate to these of the future.

The creek is now the common depository of all offal and refuse of every description whatever that is thrown out upon its banks. The waste from the baths, the contents of water-closets, privies, and cess-pools all eventually find their way into its bed. I am told that during the summer months the odors that assail the nostril while in its vicinity are anything but pleasant. Such atmospheric conditions would eventually impair the health of a well person if obliged to live under them. How can the invalid, then, hope to be benefited by a sojourn here, however efficacious may be the waters of the springs?

Such, in brief, is the state of affairs as it appeared to me during my short visit to Hot Springs.

The remedy for this, I think, in general terms, to wall up the banks of the creek with a good substantial vertical wall of cut stone laid in cement, suitably shape the bottom, cover over with an arch or perhaps a series of iron girders which would support a roadway, thus making so much more street space available. Behind each wall I would lay an earthen sewer-pipe of perhaps ten or twelve inches in diameter. Into these should be conveyed all the waste water from the houses, such as comes from the baths, water-closets, kitchens, pantrys, &c. The surface water should be conducted directly into the creek. Everything in the way of refuse, offal, or sewerage should be strictly forbidden being deposited there, at least in any portion where it would be liable to give offense. In this way the creek could be restored to its primitive purity and the sewerage from the houses along its banks led away to any distance and disposed of as may be found necessary. With regard to the method that should be adopted for distributing the waters of the springs themselves to the various bath-houses in the vicinity, with the data at hand I could not come to my general conclusion. It will probably be found that some system of collecting reservoirs placed at different heights along the hillside where the springs are situated will be the most practicable solution of this branch of the problem. From these reservoirs the water can be drawn and accurately measured, should circumstances require it.

To enable me to develop the general plan of improvement herein outlined, work up its details, and submit an estimate of its probable cost, an accurate topographical map, with horizontal contour lines showing all the natural and artificial features of the ground within the limits to be considered, will be of essential importance. For the present necessity the map need extend only over that portion of the creek over which

the Government has retained control and up the adjoining hillsides a short distance. The hill upon which the springs are situated should, of course, be delineated above the highest spring. All the springs should be accurately located both in plan and elevation above some assumed datum plane. So with all structures and pipes that are at present on the ground. Upon such a map any proposed plan of improvement can be thoroughly studied, and when adopted it can be accurately projected. A copy of this should be placed in the office of the superintendent of the reservation and one in that of the Secretary of the Interior.

My duties at this place that have been assigned to me by the Chief of Engineers will prevent me from personally going into the field and making this map; it will therefore be necessary for me to employ the services of a competent assistant engineer for this purpose, and also to assist in making up the details of the project I shall propose. I estimate that the expense of this will be about as follows:

For field work:

1 ass't engineer, 1½ months, at \$150 per month	\$225 00
1 rodman, 1½ months, at \$90 per month	135 00
3 laborers, 1½ months, at \$50 per month each	225 00
Transportation	25 00
Lumber, &c	20 00
	<hr/>
	630 00

For office work:

1 assistant engineer, one month	150 00
Stationery, &c	20 00
	<hr/>
	800 00

I respectfully request authority to have this map made. Upon inquiry of the superintendent of the reservation, I find that for making a survey there are no suitable instruments in his possession. It will be necessary, therefore, to send to him, for the use of my party, the following, viz: 1 transit or theodolite, 1 V-level, 1 level rod, 1 100' tape.

With regard to the funds that you may authorize to be expended upon the work herein estimated for, I would suggest that it would probably simplify matters in the rendition of accounts if the amount be placed in the hands of the superintendent of the reservation, and he be authorized to expend it in the payment of the expenses that will be incurred by me.

Very respectfully, your obedient servant,

THOS. H. HANDBERY,
Captain, Corps of Engineers.

(Through Chief of Engineers, Washington, D. C.)

DEPARTMENT OF THE INTERIOR,
Washington, June 6th, 1882.

Captain T. H. HANDBURY,

United States Engineer Office, Little Rock, Arkansas:

SIR: Referring to your letter of the 9th ultimo, in which you submit a general project for the commencement of the work of improvement of the Hot Springs Reservation, in Garland County, Arkansas, I have to state that your suggestion that a topographical map of the ground to be embraced in the projected improvement be prepared, to enable you to develop the general plan, is approved by this Department. You are hereby authorized to employ assistants, and have such a map made, confining the cost as nearly as practicable to the estimate submitted.

In compliance with your suggestion, the funds for the payment of expenses of the survey will be placed in the hands of the superintendent for disbursement.

Referring to your statement relative to the instruments required for the work, I have to state that a transit instrument has this day been shipped to the superintendent of the reservation.

If the other instruments required cannot be obtained by you for temporary use, you are authorized to purchase the same for the Department of the Interior. Payment for them will be made by the superintendent of the reservation. The superintendent will be instructed to afford every facility for the prosecution of the work.

Very respectfully,

H. M. TELLER,
Secretary.

DEPARTMENT OF THE INTERIOR,
Washington, October 13, 1882.

Captain T. H. HANDBURY, U. S. A.,
United States Engineer Office, Little Rock, Arkansas:

SIR: I acknowledge the receipt of your very interesting and satisfactory report giving plans and estimates for the projected improvements at the Hot Springs Reservation, accompanied by a topographical map of the portion of the reservation adjoining the projected improvements, and have to thank you for your valuable services to the Department of the Interior.

I find on reference to your preliminary report dated the 9th of May, 1882, that the plan of covering the creek with an arch was alluded to. I will thank you for your opinion whether, with the knowledge you obtained by the survey, you deem the plan of covering the creek with an arch practicable, and if so, what would be the cost of arching it with granite or other proper material, and the advantages or disadvantages of that plan as compared with the plan of walling up the banks and covering the creek with short arches of brick between iron beams.

Very respectfully,

H. M. TELLER,
Secretary.

UNITED STATES ENGINEER OFFICE,
Little Rock, Arkansas, January 22, 1883.

Hon. H. M. TELLER,
Secretary of the Interior, Washington, D. C.:

DEAR SIR: A few days since while at Hot Springs, in this State, I learned from several of the citizens of that place that there is considerable solicitude on their part as to the kind of stone that will eventually be selected for the walls that are to be built in connection with the Government work of rectifying the course of Hot Springs Creek. It is currently reported that there has been considerable pressure brought to bear upon your Department to induce you to depart from your decision to use granite in this work, and to accept an inferior material to be found in the immediate vicinity of that creek.

On several occasions I have carefully examined the stone that it is proposed to substitute for the granite, with the view to recommending its adoption if possible, but I am forced to the conclusion that it is totally unfit for any governmental work of an expensive and permanent character, such as that which is necessary in this locality. From what I can learn it would seem that those who are so anxious that this particular material should be used have a more or less pecuniary interest in the matter. The excavation of certain of the lots, recently purchased from the Government, that are contiguous to the creek, and their preparation for sites for buildings, is an undertaking that would be attended with considerable expense to their present owners. With regard to the granite, the most accessible locality where this can be obtained is about twelve or fifteen miles from Hot Springs, and near the line of the Hot Springs and Malvern Railway. The only quarry at present open is the property of this railway company. Before making an estimate of the cost of this improvement I ascertained from Mr. Conger, the superintendent of this railway, that his company would make no charge to the Government for this granite at the quarry, and would lay a track at their own expense from their main line to the quarry, but would charge their usual freight rate, 10 cents per 100 pounds, for hauling it to Hot Springs. This proposition seemed to me as reasonable as could be expected under the circumstances. Had there been such material in the neighborhood, I certainly should have recommended that a good class of stone be brought from a distance, even at a much greater expense, rather than adopt the inferior class found along the line of the creek in the immediate vicinity of the creek. My interest in the stability of this creek and in the permanent success of a project that you have done me the honor to adopt, is my apology for thus intruding my views upon a part of this subject which might with propriety be considered as being outside of my proper province.

Very respectfully, your obedient servant,

THOS. H. HANDBURY,
Capt., Corps of Engineers, U. S. A.

UNITED STATES ENGINEER OFFICE,
Little Rock, Arkansas, May 28th, 1883.

Hon. H. M. TELLER,
Secretary of the Interior, Washington, D. C.:

SIR: I have the honor to state that, in compliance with your request to the hon. the Secretary of War, under date of May 19, 1883, I have been instructed by the Chief of Engineers, U. S. A., to furnish the alignment, grades, &c., that may be requisite to

enable the contractors to commence the work of improving the Hot Springs Creek at the Hot Springs Reservation, Arkansas, in accordance with the plan proposed by me, and that I hold myself in readiness to furnish this information at any time that I may be called upon by parties exhibiting the proper credentials from you.

Should it be decided, in compliance with your second request contained in the above-mentioned communication, that I am to be charged with the general supervision of this work, before entering upon this duty I would respectfully request that, in addition to other instructions that you may deem necessary to give me, I be informed as to whether or not you deem it advisable at present to enter upon the construction of that part of this work of improvement which falls upon ground not now owned or controlled by the United States Government.

As projected on the tracing submitted to you with my project for this improvement, under date of September 12, 1882, the walls designed for the rectification of the channel of Hot Springs Creek fall partly within the boundary lines of the Hot Springs Mountain and partly upon ground given to the town of Hot Springs for street purposes. The inclosed tracing, when superimposed on the one in your possession, will show the situation clearly. The projected walls, after crossing the boundary line of the reservation in the northerly direction, are no longer upon land controlled by the Government.

Section 6 of the act of June 16, 1880 (suppl. R. S. page 568), provides "That the streets, courts, and alleys and other thoroughfares of the town of Hot Springs, as surveyed, opened, or established by the Commissioners and represented on the map of said town, and not included in the permanent reservation, be, and the same are hereby, ceded to the corporation of the town of Hot Springs for public use. Provided, however, &c., &c." Section 7 of the same act, after providing for the sale of lots, &c., directs how the proceeds of the sale shall be disposed of, and would seem to authorize the expenditure of the funds for carrying out such a plan of improvement as is proposed, although not to my mind, clearly so expressed. With my present knowledge of the legal aspect of this problem it appears that additional legislation is necessary, or at least a definite understanding with the authorities of the town of Hot Springs, who control the ground upon which it is proposed to build, before any work can be done outside of the reservation boundary lines without subjecting the Government to liabilities for damages, injunctions; and various other legal processes that would interfere with the progress of the work.

Very respectfully, your obedient servant,

THOS. H. HANDBURY,
Capt., Corps of Engineers, U. S. A.

[Telegram.]

WASHINGTON, June 1, 1883.

Capt. THOS. H. HANDBURY,
Little Rock, Arkansas:

I am advised by the War Department that you will supervise work on Hot Springs Creek. Contractor is on the spot anxious to have the grades and alignments. I have to request that you will furnish them as early as practicable, to obviate all complaint.

M. L. JOSLYN,
Acting Secretary.

DEPARTMENT OF THE INTERIOR,
Washington, June 2nd, 1883.

Captain THOS. H. HANDBURY,
Corps of Engineers, U. S. Army,
Little Rock, Arkansas:

SIR: Referring to telegrams of yesterday and to-day in regard to the work at Hot Springs, I inclose herewith for your information a certified copy of a contract entered into on the 8th ultimo, by George H. Bardwell, of this city, for furnishing the material and performing the work required in the projected improvement.

In response to a letter addressed by me to the Secretary of War, in which a desire was expressed that you should be authorized to assume the general supervision of the work, I am advised by the Chief of Engineers that directions to that effect have been forwarded to you by telegram of this date.

If it will be acceptable to you, Mr. Hamblen, the superintendent of the reservation, can be charged with the immediate supervision of the work under the contract subject to your direction, and he will be notified to report to you for instructions.

Very respectfully,

H. M. TELLER,
Secretary.

DEPARTMENT OF THE INTERIOR,
Washington, June 6th, 1883.

Capt. THOS. H. HANDBURY,
Little Rock, Arkansas :

SIR: I am in receipt of your letter of the 26th ultimo respecting your assignment by the Secretary of War, in compliance with a request of this Department, to the general supervision of the work under contract for improvement of Hot Springs Creek, and requesting to be informed of the desire of the Department in regard to prosecuting, at this time, the portion of the work upon ground not under control of the Government.

As stated in your letter, the plan of the improvement, as projected, extends beyond the limits of the original reservation set apart in conformity with section 4 of the act of March 3, 1877, and includes a portion of the creek lying between the divisions which were added to the permanent reservation by the third section of the act of June 16, 1880, described therein as "North Mountain, West Mountain, and Sugar-Loaf Mountain." The prosecution of this part of the work would necessitate the occupation of streets which by the act last mentioned were ceded to the corporation of the town of Hot Springs, and therefore not under control of the Government. It also appears from the official map that certain lots facing upon the streets in question, and lying between the creek and the divisions of the reservation added by the act of 1880, are not now owned by the Government, and consequently cannot be regarded as part of the reservation.

In the same act (1880) it is provided that the money arising from the sales of lots, as authorized therein, "shall be held as a special fund for the improvement and care of the permanent reservation at Hot Springs and of the Hot Springs Creek, adjacent to and between the permanent reservations," &c. In my opinion the terms used of this act are sufficiently clear to warrant the application of the fund specified to the improvement of the upper portion of the creek embraced in the plan. This portion of the creek lies between the divisions of the permanent reservation, and though separated therefrom by the lots before mentioned, the creek at this point may properly be regarded as "adjacent to the permanent reservations."

In regard to the suggestion contained in your letter as to the possibility of interference on the part of the corporate authorities of Hot Springs with work upon ground embraced in the streets under their control, I have to state that, in March last, a petition was addressed to the Department by the mayor and city council (a copy of which is herewith inclosed), requesting that the portion of the work north of Fountain street be completed before that upon the lower part of the creek. This was after the plan had been adopted, and it is presumed that the request was made with a full understanding of what it involves. It would seem, therefore, that no opposition by the town authorities need be apprehended. With a view, however, to definitely settle that question, the Department will communicate with them and require an explicit understanding that they will not interfere in any way with the prosecution of the work within the limits of their jurisdiction.

So far as the above-mentioned considerations are concerned, I do not think there is any reasonable objection to the commencement and prosecution of the work upon any portion of the creek embraced within the proposed plan of improvement. You are therefore authorized to commence the work at such point as in your judgment may be the most suitable and convenient.

Very respectfully,

H. M. TELLER,
Secretary.

UNITED STATES ENGINEER OFFICE,
Little Rock, Arkansas, June 8, 1883.

Hon. H. M. TELLER,
Secretary of the Interior, Washington, D. C. :

SIR: I have the honor to acknowledge the receipt of your communication dated Washington, D. C., June 2, 1883, referring to telegrams of June 1 and 2, inclosing a certified copy of the contract entered into on the 8th ultimo by George H. Bardwell, for furnishing material and performing work required in the projected improvement of Hot Springs Creek, Ark., notifying me that you had been advised by the Chief of Engineers that I had been instructed by telegram to assume general supervision of this work under your direction, and stating that if acceptable to me Mr. Hamblen, the Superintendent of Hot Springs Reservation, would be charged with the immediate supervision of the work, subject to my orders.

The copy of the bond mentioned in the agreement of the contract as "bearing even date herewith," I do not find among the papers inclosed.

The assignment of Mr. Hamblen to the immediate supervision of the work under contract, subject to my orders, will be acceptable to me.

To comply with the directions contained in the telegram above referred to, I at once proceeded to Hot Springs, Ark., where I met Mr. J. H. Dewees, who presented me with a letter signed by George H. Bardwell, notifying me that Mr. Dewees was his sole and only representative in all matters pertaining to the work he is under contract to perform at Hot Springs. A copy of this letter is herewith inclosed. Mr. Dewees is recognized by me as Mr. Bardwell's agent.

Early on Monday morning, the 4th instant, I gave Mr. Dewees the alignment of that part of the work contracted for, together with its grade, which lies wholly within the boundary lines of the "permanent reservation." There being a doubt in my mind as to the legal status of that portion lying without these lines on ground granted by the Government to the city of Hot Springs for public use, I informed Mr. Dewees that until this doubt was removed or until I received definite instructions from you I would not authorize any work to be done beyond the limits given. The fact that the whole of the alignment is not given at present need not delay the commencement of the work, nor will it add anything to its cost to the contractor. In a communication addressed to you on the 28th ultimo, I submitted this question for your decision and instructions, and await your reply. In the absence of any instructions from you I would respectfully request that I be informed as to the extent of the authority that is delegated to me in the discharge of my duties in connection with this work. In several instances throughout the specifications and agreement it is specified where certain matters shall be decided by the Secretary of the Interior. In these, how far am I to assume to be his authorized representative? I am as yet uninformed as to the amount of funds that are at present available for the prosecution of this work. In order to avoid the liability of authorizing work to be done that would obligate the Government beyond this amount, it will be necessary for me to have instructions upon this point. In the matter of payments to the contractor, I would respectfully request to be informed as to whether or not a certificate of the amount and character of work performed by him is expected from me before payment is made. In the performance of my duty in connection with this work it will be necessary for me to make occasional journeys from my station to Hot Springs and return, the expense of which would naturally fall upon the appropriation for this work. Of the manner in which such expenses are paid and the particular forms and orders required in the Interior Department I am uninformed, and therefore asked to be instructed.

Very respectfully, your obedient servant,

THOS. H. HANDBURY,
Captain, Corps of Engineers, U. S. A.

[Telegram.]

JUNE 19, 1883.

Capt. THOS. H. HANDBURY,
Little Rock, Arkansas.

Telegram dated 18th received. Give contractor alignments and grades at upper end of creek.

M. L. JOSLYN,
Acting Secretary.

UNITED STATES ENGINEER OFFICE,
Little Rock, Arkansas, June 22, 1883.

Hon. H. M. TELLER,
Secretary of the Interior, Washington, D. C. :

SIR: I have the honor to acknowledge the receipt of a telegram, under date of the 19th instant, from the Acting Secretary of the Interior, directing me to give the contractor for the work of improving the creek at Hot Springs, Ark., the alignment and grades necessary to enable him to commence work at the upper end of the creek, and also to report that on the 20th instant I proceeded to Hot Springs, and there gave the agent of the contractor the alignment, as directed, and left the necessary instructions with Mr. Hamblen to furnish the grades whenever needed by the contractor or his parties at work. Having fully complied with the spirit of this order, I now have the honor to respectfully request that I be relieved from farther duty in the Department of the Interior in connection with this work, and that the Hon. the Secretary of War be notified to that effect. When you did me the honor to request the Secretary of War that I be charged with the general supervision of the entire work under the

contract in order to insure its performance in strict conformity with my plan, approved by you, it was assumed, at least by myself, that your design was that I should have the general control of all matters pertaining to the engineering features of this work, and I expected to be held strictly accountable for its proper execution. I infer, however, from the developments of the last three or four days, which culminated in the dispatch above referred to, that I have mistaken your design. The direction as to the execution of the work is still to remain in the office of the Secretary of the Interior in Washington, D. C.

Under these circumstances, since there is a superintendent on the ground in the person of Mr. Hamblen, the superintendent of the reservation, my position becomes an unpleasant one, and I can see no good object that can be subserved by my farther connection with the work. I therefore ask to be relieved from duty in connection with it.

Very respectfully, your obedient servant,

THOS. H. HANDBURY,
Capt., Corps of Engineers.

(Thro' the Chief of Engineers, U. S. A.)

DEPARTMENT OF THE INTERIOR,
Washington, June 25th, 1883.

Captain THOMAS H. HANDBURY,
Corps of Engineers, U. S. A., Little Rock, Arkansas :

SIR: I acknowledge the receipt of your letter of the 8th instant, in which you state that the assignment of Mr. Hamblen, Superintendent of the Hot Springs Reservation, to the immediate supervision (subject to your directions) of the work to be performed under the contract with George H. Bardwell, for the improvement of the Hot Springs Creek, is acceptable to you, and in which you request certain information and instructions in connection with your duty in the general supervision of the work, to which you have been detailed by the Secretary of War, at the request of this Department.

The recognition of J. H. Dewees, as the agent of the contractor, representing his interests, in accordance with the written authority presented by the former, a copy of which accompanied your letter, would seem to be proper. The Department had understood from Mr. Bardwell, verbally, that he had given such authority to Dewees.

In respect of the prosecution of that portion of the work lying outside the limits of the permanent reservation, and upon the streets which were placed by Congress under the control of the corporate authorities of Hot Springs, and of the availability of the appropriation for payment for work upon such portion of the proposed improvement, the views of the Department were communicated to you by letter of the 6th instant.

On the 11th instant an urgent request was received from the mayor of Hot Springs for the commencement of the work on the upper portion of the creek, and the contractor also expressed to the Department, verbally, a desire to be allowed to commence work upon that portion, alleging that he could employ a larger force and thereby hasten the completion of his contract. As the objections suggested in your letter had been found, upon consideration, not to be such as would seem to prohibit acceding to these requests, the Department felt justified in directing you, by telegrams of the 18th and 19th instants, to lay out the work for the contractor upon the north end of the plan of improvement. While there was much hesitation in directing this, in view of the expression by telegram of the 18th instant, of your judgment to the contrary, in the absence of any known obstacle and in consideration of the urgent request of the mayor, representing the citizens of Hot Springs, and the reasonable representation that it would tend to expedite the completion of the work, the Department felt justified in directing that such course be pursued.

In order that there may be a distinct understanding in the matter between the Government and the city authorities, the Department addressed a letter to the mayor on the 23d instant, calling his attention to the fact that the upper portion of the proposed improvement involved the streets which have been by law placed under the control of the corporation, and requested him to bring the subject to the attention of the corporate authorities, with a view that they may give expression in proper form to their acquiescence in the plan, so far as it embraced the streets in question, declaring expressly that the necessary use or occupation or excavation of the streets shall not subject the Government to liability for damages, or to interference in any way whatever on the part of the city authorities.

In reply to your inquiry as to the extent of the authority delegated to you in connection with the work, and particularly whether you are to assume to represent the Secretary of the Interior in the determination of certain matters left to his decision by the terms of the contract, I have to state that in placing the work in your charge it is the desire of the Department that you shall assume the whole management of it, and decide such questions as by the contract are made subject to the decision of the

Secretary, reserving to the Secretary the right to require that the management and the determination of the questions referred to shall conform to his judgment if it should occur that his views do not coincide with yours.

The amount of funds at present available for payment upon the contract is about \$60,000. In the contract the right is reserved to the Secretary of directing the discontinuance of the work whenever the amount due the contractor shall reach that limit. This amount can be increased by the proceeds of further sales of lots if found to be necessary.

As a voucher for payment to the contractor he will be expected to produce a certificate from you showing the nature and the whole value of the work performed under the contract and the net amount due to him at such payment after deducting the reserved percentage as provided in the contract. The Department will also be pleased to receive from you, from time to time, reports of the progress made in the work, and such items of information in connection therewith as you may deem of public interest.

In reply to your inquiry as to the manner in which your personal expenses growing out of the supervision of the work are to be paid, you are informed that such expenditure will be reimbursed to you upon your certificate. A voucher substantially conforming to Form No. 9, of the forms prescribed by the Army Regulations for the payment of similar expenses of Engineer officers, would seem to be adapted to the present purpose.

Very respectfully,

M. L. JOSLYN,
Acting Secretary.

DEPARTMENT OF THE INTERIOR,
Washington, July 30th, 1883.

Captain THOMAS H. HANDBURY,
Corps of Engineers, U. S. A., Little Rock, Arkansas :

SIR: Your letter of the 22nd ultimo, forwarded through the War Department, was duly received, in which you request that you may be relieved from further supervision of the work in the improvement of the creek at the Hot Springs Reservation, Arkansas.

It appears that your desire to be relieved of the duty referred to grows out of the fact that the Department directed you by telegram, of the 19th ultimo, to lay out the work for the contractor upon the upper portion of the creek, notwithstanding you had expressed your judgment to the contrary, and that you regard that action as an indication of a design on the part of this Department to retain the direction of the engineering features of the work, which is contrary to the understanding you had reached as to the extent of your control.

It should seem hardly to be profitable now to enter into any discussion of the matter, but it is due to the Department to state that in the communications received from you upon the subject no objection, relating purely to the engineering of the work, had been advanced by you to the commencement of the work upon the upper part of the creek.

The only obstacles you had suggested and which you had set forth in a letter apparently for decision by the Department, were (1), a doubt whether the appropriation was, by the terms of the act, available for that part of the work, and (2), the possibility of interference on the part of the corporate authorities of Hot Springs, with the necessary occupation, &c., of the streets under their control involved in the plan of improvement. These were deemed to be questions properly for determination by this Department, and on the 6th of June you were advised by letter that the considerations above mentioned were not regarded to be sufficient to prevent the prosecution of the work on the upper part of the creek.

No other reason having been assigned by you, and representations having been made by the contractor that by having the work laid out for him on the upper part he would be enabled to increase his force of laborers and greatly expedite the completion of the work, and in view of the urgent request of the mayor that this portion of the work should be commenced, you were informed by telegraph on the 18th ultimo of the desire of the Department that the necessary alignment and grades should be given, in reply to which, by telegram of the same date, you stated, "my judgment does not approve of commencing at the upper end of the creek. Alignment and grades for that part of the work will be given to the contractor on receipt of definite order to that effect." This expression of your adverse judgment was regarded by the Department as referring to the legal objections which you had previously advanced and which had been disposed of, and the invitation of a definite order was construed as a desire on your part that the Department should assume the responsibility of commencing this portion of the work. Accordingly, on the 19th ultimo, you were directed by telegraph to "give contractor alignment and grades at upper end of creek." If the Department had been advised of any objection to this action relating to the engineering features of the work,

have no hesitation in saying that it would have deferred to your judgment in the matter; and there would have been greater hesitation under any circumstances in ordering you to lay out this work, had not your telegram been construed as a desire that the willingness of the Department to assume the responsibility should be expressed in that form.

Before the receipt of your letter, to which this is a reply, a letter was addressed to you, dated the 25th ultimo, in which the reasons for the action of the Department to which you object were fully set forth.

It was thought that these reasons might prove sufficient to move you to reconsider your determination to sever your connection with the work, and the Department delayed replying to your request, awaiting an answer to the last communication above referred to. It seems, however, from your letter of the 20th instant, received through the War Department, that you still desire to be relieved of the duty.

The Department regrets that it has failed to convey to you a correct understanding of its position in the matter, and while it is believed that there should be no difficulty in arriving at an understanding by which your services, which are particularly valuable owing to the fact that the plan of the improvement was devised by you, could be retained for the best interests of the Government, the Department does not feel warranted in asking you to favor it by further supervision of the work after having expressed a desire to be relieved of it. Mr. Hamblen, the superintendent of the reservation, will be instructed to assume the supervision of the improvement.

Taking this occasion to thank you for the services you have rendered in the matter, and to state that any expense you may have incurred in connection with the work will be reimbursed upon the presentation of a voucher of the same,

I am, very respectfully,

M. L. JOSLYN,
Acting Secretary.

(Through the honorable the Secretary of War.)

UNITED STATES ENGINEER OFFICE,
Little Rock, Arkansas, August 1, 1883.

Hon. H. M. TELLER,
Secretary of the Interior, Washington, D. C.:

SIR: In regard to the work of improving Hot Springs Creek, at Hot Springs, Arkansas, now under contract, I have the honor to submit for your information the following:

With the view of obtaining the data necessary to enable me to forward to you a certificate of the amount of work done by the contractor for this work during the month of July, under date of July 28, I informed Mr. Hamblen, the superintendent of the reservation, who, by your direction, was charged with the immediate supervision of the work, with orders to report to me for instructions and to observe such directions as I might give in relation thereto, that I would be in Hot Springs on the 30th, and wished at that time to verify his measurements of the amount of work done during the month. This verification, so far as to satisfy my own mind that the results given are correct, I deem to be necessary before signing and forwarding the certificate. Upon my arrival at Hot Springs on the evening of July 30 I found Mr. Hamblen in his office, no steps having been taken to procure me the data that I desired, and apparently no attention having been paid to my communication. The following morning, at 10 o'clock, the earliest hour at which I could see Mr. Hamblen, he informed me that he would not make the measurements that day, alleging some private matter that required his attention.

Being obliged to leave Hot Springs on the morning train to attend to other official matters that demanded my presence here, I was unable to get the necessary data on which to base certificates for the work done during the month of July. This need result in no detriment to the Government, and but slight, if any, inconvenience to the contractor.

In this connection, and pending the favorable action of the Secretary of the Interior upon my communication of June 22, in which I request to be relieved from this duty, I respectfully request that Mr. Hamblen be relieved from the immediate supervision of this work, and from all duty under my orders in connection therewith, and that I be authorized to employ for such time as may be absolutely necessary, a suitable person to perform his duties at a rate not to exceed \$90 per month, the same to be paid by the Department of the Interior.

It is evident that so long as I am charged with the general supervision of this work, Mr. Hamblen is not the proper person to have the immediate supervision. In order that the duties with which I am charged by my own Department may not be interfered with, it is necessary that the man in this position be under my entire control, that he obey my orders and instructions promptly and implicitly, and that he

understands distinctly that the public service cannot await the adjustment of private matters, and that I will not dance attendance upon his leisure and await his personal convenience.

On my last visit to Hot Springs I was unable to find any representatives of Mr. Bardwell, the contractor, on the ground. I was informed that Mr. Dewees, his accredited representative, had not been there for some weeks, and it was currently reported that he does not intend to return. In this case, who is the legal representative there of the contractor, and to whom are instructions in regard to the work to be given?

I noticed that cut stones were being delivered along the line of the proposed wall and was informed that these were gotten out under the contract and are to form part of the walls. If this is the case, from their general shape and dimensions, I fear that there is a misapprehension on the part of some one as to the thickness of the granite facing of these walls.

The drawings which show their construction represent the stretcher of the first two courses from the bottom as eighteen (18") inches wide, measured from the face of the wall back, the headers running clear through. The remaining courses are shown twelve inches (12") wide, header running clear through, with the top course of coping three feet wide. The remaining part of the wall which is to be three feet thick is a filling of concrete. The specifications call for a total of about 3,100 cubic yards of granite masonry and 1,900 cubic yards of concrete, this being in the proportion, approximately, of three of granite and two of concrete. The width of these stones from the face back would indicate that the contractor expects to use a much larger proportion of granite than this, and, as a matter of course, will naturally expect to receive pay accordingly. This will make the wall unnecessarily expensive since the contract price of the granite is about three times that of the concrete. An understanding upon this point should be had at once with the contractor, and he should be notified that the excessive depth, being unnecessary, will not be paid for. There is no objection to this excessive depth excepting on the score of expense if he expects to receive pay for it.

By letter from the Acting Secretary of the Interior under date of June 25, 1883, I was informed that "in order that there may be a distinct understanding in the matter between the Government and the city authorities, the Department addressed a letter to the mayor on the 23d instant calling his attention to the fact that the upper portion of the proposed improvement involved the streets which have been by law placed under the control of the corporation, and requested him to bring the subject to the attention of the corporate authorities, with a view that they may give expression in proper form to their acquiescence in the plan, so far as it embraces the streets in question, declaring expressly that the necessary use or occupation or excavation of the streets shall not subject the Government to liability for damages or interference in any way whatever on the part of the city authorities. Not having been informed as to the result of this communication, and in the absence of definite instructions to proceed with this part of the work, I have refrained from authorizing any trespassing upon the ground controlled by the city authorities, lest I should compromise the case of the Government in these pending negotiations. In obedience to telegraphic instructions received from the Acting Secretary of the Interior to that effect on the 20th of June, I gave the contractor the alignment and grades at the upper end of the creek. On this occasion I was particular to inform Mr. Dewees, the agent of the contractor, that I did not authorize any work to be done above the northern boundary line of the reservation.

As a matter of public expediency, and from both an engineering and sanitary point of view, it is my judgment that the construction of these walls and the laying of the sewer pipes should be commenced at the southern boundary of the reservation. In this matter all considerations should yield to the sanitary aspect of the question. It was my design to instruct the contractor to commence laying the walls at the southern boundary of the reservation and proceed up the creek, putting in the sewer pipes and the hot-water pipe as required by the terms of the contract, the walls to be carried only to a height of five feet, leaving three feet yet to be constructed. The intermediate earth and rock could be taken out to the grade of the new bottom of the creek and thrown over behind the walls. If when the northern boundary of the reservation was reached the pending negotiations between the authorities of the city of Hot Springs and the Government had reached a conclusion satisfactory to the Secretary of the Interior, the work might thus continue to the upper limit of the proposed plan; then, if the funds available for the prosecution of this work were not exhausted, the walls could be completed from that point down as far as those remaining would suffice.

By this method of procedure we have with the funds on hand provided for all the sanitary features of the problem, have taken care of all the hot water at present going to waste, insured an ample waterway for the destructive torrents that sometimes visit this locality, and at the same time left the work in a favorable state for

awaiting the uncertain contingency of future appropriations or the slow process of accumulating funds for its completion from the sale of Government lots.

Very respectfully, your obedient servant,

THOS. H. HANDBURY,
Captain, Corps of Engineers, U. S. A.

HOT SPRINGS, ARK., *March 26th, 1884.*

Hon. CASEY YOUNG,

Chairman Congressional Committee, Washington, D. C.:

SIR: I forward herewith estimate of work done on Hot Springs Creek up to December 31st, 1883. Also estimate of masonry completed since that date up to March 19th, 1884. In no case is the height of walls to be taken at less than the plan, as where solid rock was found the contractor was required to dress it to correspond to front of wall and prepare the top for the superstructure. I required this as I considered the solid rock better than any masonry, and by his so preparing it allowed it to him as so much masonry.

Estimate for amount of work to be done and plan of new system for supply of water will be forwarded as soon as completed.

Very respectfully,

SAMUEL HAMBLÉN,
Superintendent.

NEW YORK, *March 21, 1884.*

SAMUEL HAMBLÉN, Esq.,

Supt. Hot Springs Reservation, Hot Springs, Ark.:

DEAR SIR: Your communication to our supt., Wm. M. Barr, is before us and contents noted.

We have been over carefully the service described by you of pumping 500,000 to 800,000 gallons per day of the flow of Hot Springs each 24 hours from the impounding reservoir to the distributing reservoir, a total lift of 125 feet, the temperature of the water being 157° Fahr.

Should you be willing to use the pump, running night and day, we would recommend a 10" & 16" x 10½" x 10" compound Worthington pump, as shown upon the 8 & 9 pages of catalogue sent you by this same mail, the price of which would \$1,220, f. o. b. this city. Should you prefer to have this quantity of water pumped in the day time only, say 10 to 11 hours, we could recommend a 12" & 18½ x 14" x 10" pump, price of which would be \$1,750, f. o. b. here.

The arrangement of these steam pumps is intended for using steam expansively, which cannot be done in the ordinary high-pressure pump, and is recommended in a service where the saving of fuel is an important consideration, as it requires 30 to 33 % less coal than the high-pressure form for the same work. Your scheme for warming the bath-houses is perfectly practicable.

Radiators can be placed in the different bath-houses, and the steam supplying them is controlled by valves, so that the temperature can be kept very even. The returns from these radiators should be conducted back into the boiler-room, and by a proper lay out of these pipes a perfect circulation can be kept up from the boiler, and thence through these radiators, and the condensed water returned back to the boilers again. We have an example of this on a very extended scale in this city, where a large district is all heated up by a battery of boilers at a central point, and the steam is conducted in the same way, as above described, through the various buildings, and thence returned back to the boilers again.

We should be pleased to receive an order from you for the pumping machinery, and awaiting your further favors, we are,

Yours, truly,

HENRY R. WORTHINGTON.

P. S.—It is the practice in laying out such pumping plant as you described to have duplicate pumps, one standing alongside of the other; then when one is running the other can be thoroughly overhauled, repacked, &c. If you thought well of it, and after deciding upon the size pump you want, we should be glad to give you sketch of engine-room, delivery and suction pipes, and appurtenances belonging to same.

BROOKLYN, N. Y., *March 24, '84.*

SAMUEL HAMBLÉN, Esq.,

Supt. Hot Springs Reservation, Hot Springs, Ark.:

DEAR SIR: Your favor of the 11th March came duly to hand. You will please find a reply to your letter herewith. One question seems to have been overlooked in your

letter, *i. e.*, the elevation of pumps above impounding reservoir. The temperature of the water being 157°, will require the pump to be placed very low, in fact it ought to be so that the water would run into the pump. I have no doubt we can give you the very best pumping machinery for the purpose, and shall be glad to give you any information you desire upon application.

Respectfully,

WILLIAM M. BARR,
Sup't.

Account of Col. Hamblen, Supt. Hot Springs Reservation.

THE UNITED STATES.

1883.			1883.		
Jany.	Expenses	\$89 45	Jany.	Collections	\$563 75
	Deposit	250			
	"	224 30			
		<u>563 75</u>			<u>563 75</u>
Feby.	Expenses	44 70	Feby.	Collections	313 75
	Deposit	269 05			
		<u>313 75</u>			<u>313 75</u>
Mch.	Expenses	42 65	Mch.	Collections	313 75
	Deposit	270 80			
		<u>313 75</u>			<u>313 75</u>
April.	Expenses	36 35	Apl.	Collections	565
	Deposit	528 65			
		<u>565</u>			<u>565</u>
May.	Expenses	66 85	May.	Collections	315
	Deposit	248 15			
		<u>315</u>			<u>315</u>
June.	Expenses	47 75	June.	Collections	315
	Deposit	267 25			
		<u>315 00</u>			<u>315</u>
July.	Expenses	42 25	July.	Collections	565
	Deposit	522 75			
		<u>565</u>			<u>565</u>
Aug.	Expenses	74 40	Aug.	Collections	315
	Deposit	240 60			
		<u>315</u>			<u>315</u>
Sept.	Expenses	174 78	Sept.	Collections	302 50
	Deposit	127 72			
		<u>302 50</u>			<u>302 50</u>
Oct.	Expenses	74 65	Oct.	Collections	552 50
	Balance	477 85			
		<u>552 50</u>			<u>552 50</u>
Nov.	Expenses	46 50	Nov.	Balance	477 85
	Balance	733 85		Collections	302 50
		<u>780 35</u>			<u>780 35</u>
Dec.	Expenses	138 35	Dec.	Balance	733 85
	Balance	904 25		Collections	308 75
		<u>1,042 60</u>			<u>1,042 60</u>
1884.			1884.		
Jany.	Expenses	355 57	Jany.	Balance	904 25
	Balance	1,107 43		Collections	558 75
		<u>1,463</u>			<u>1,463</u>
Feby.	Expenses	487 51	Feby.	Balance	1,107 43
	Balance	928 67		Collections	308 75
		<u>1,416 18</u>			<u>1,416 18</u>
			Balance		<u>928 67</u>

Estimate of masonry and excavation required to complete Hot Springs Creek improvement.

Total amt. of masonry for the improvement of Hot Springs Creek..... 12, 106 c. y.
 Amt. returned to Jany. 1st, 1884 5, 154 "

Amt. required from Jany. 1st, 1884 6, 952 "

Excavations to complete work:

Earth 3, 000 c. y.
 Rock 200 "

Estimate is made to cover entire line of creek from junction of Cedar street with Whittington avenue, and from the Rockafellow bath-house to and across Reserve avenue on south boundary of Hot Water reservation, a total distance of 3,353 linear feet.

SAMUEL HAMBLIN,
Supt. and Engineer in charge.

Estimate for filling in above arches and reservation front, Hot Springs Creek improvement.

Station.	Area.	Cubic feet.	Remarks.
0	674	
1	524	59, 900	
2	554	55, 400	
3	513	53, 350	
4	370	44, 150	
5	280	32, 500	
6	215	24, 750	
7	216	21, 550	
8	243	22, 950	
9	257	25, 000	
10	246. 2	25, 160	
11	220	23, 310	
12	220. 7	22, 035	
13	292	25, 635	
14	500	39, 600	
15	299	39, 950	
16	196	24, 750	
17	196. 4	19, 640	
18	196. 4	19, 640	
19	196. 4	19, 640	
20	196. 4	19, 640	
21	196. 4	19, 640	
22	196. 4	19, 640	
23	196. 4	19, 640	
24	196. 4	19, 640	
25	196. 4	19, 640	
26	196. 4	19, 640	
27	196. 4	19, 640	
28	196. 4	19, 640	
+20	196. 4	19, 640	
Above junction		40, 458	206 feet, Whittington avenue.
Do.		45, 170	230 feet, Park avenue.
Opposite lots 10 and 11, block 126		9, 350	
Do.		23, 460	
From Opera House to junction west side		34, 000	
Above junction Whittington avenue		10, 200	
Above junction Park avenue		11, 040	
		27,968, 988	
			35, 888 cubic yards.
Add for contingencies, 15 per cent.			5, 383 cubic yards.
Total			41, 271 cubic yards.

HOT SPRINGS RESERVATION, OFFICE OF SUPERINTENDENT,
Hot Springs, Ark., March 29th, 1884.

Hon. CASEY YOUNG,

Chairman of Committee, Washington, D. C. :

SIR: I have the honor to forward herewith estimate of cost of securing all the water of the Hot Springs Reservation, and conducting it to a point where it can be made available; a copy of a letter from H. R. Worthington on the subject, and on the matter of warming the bath-houses by steam; a transcript of balances for each month as

they appear on my books, and a sketch of the Reservation front, showing the proposed system of collecting and distributing the water.

The 12-inch pipe will collect all the water from the different springs by branch pipes extending to them, as indicated by dotted lines on the sketch, and conduct it by natural flow to the impounding reservoir, placed below their flow for that purpose; thence by pump to the distributing reservoir, at an elevation sufficient to supply any point where it is likely to be needed.

These reservoirs are planned to be circular, covered in by an annular brick arch, and sunk in the ground to insure durability, and preserve the water at the highest possible temperature; by this plan the water can be brought to the several houses with very little loss of heat.

I considered it advisable to construct the distributing reservoir of capacity sufficient for one day's flow of water, estimated at 500,000 gallons; the impounding reservoir to contain one-half as much, or the flow of the night.

By the letter of Mr. Barr, hydraulic engineer and superintendent of the Worthington pump-works, Brooklyn, New York, a copy of which is inclosed, it appears advisable to place the pump as near as possible to the level of the impounding reservoir, which must be sunk in the ground in order to receive the water by natural flow. This position of the boilers becomes necessary also if the plan of warming the bath-houses by steam is adopted. He suggests, further, that it may be best to allow the water to flow direct to the pump, and dispense with the impounding reservoir. This would make it necessary to work the pump constantly or the night-flow would be wasted. The flow for the day may prove sufficient for the houses on the reservation. If so this plan might be adopted, and the water flowing during the night conducted to some point below, thence to be distributed to private houses. Many applications have been made for water which this flow would supply. This plan, if approved, would reduce the estimated cost of the reservoirs nearly one-half.

As the reservoirs are planned to be sunk in the ground, the cost of excavating will be greater than if constructed on the surface; but the cost of the masonry required will be much less, and the total cost less.

I have no data for cost of engine-house and boilers, and omit them from estimate. I expect to receive this from Mr. Worthington at an early day, and will forward on receipt.

The system of the duplicate pump is now generally adopted as the best, and therefore I have included it in the estimate, and recommend its adoption.

Very respectfully,

SAMUEL HAMBLIN,
Superintendent.

Estimate of labor and material required in securing the hot waters and conducting them to a point where the entire flow can be made available.

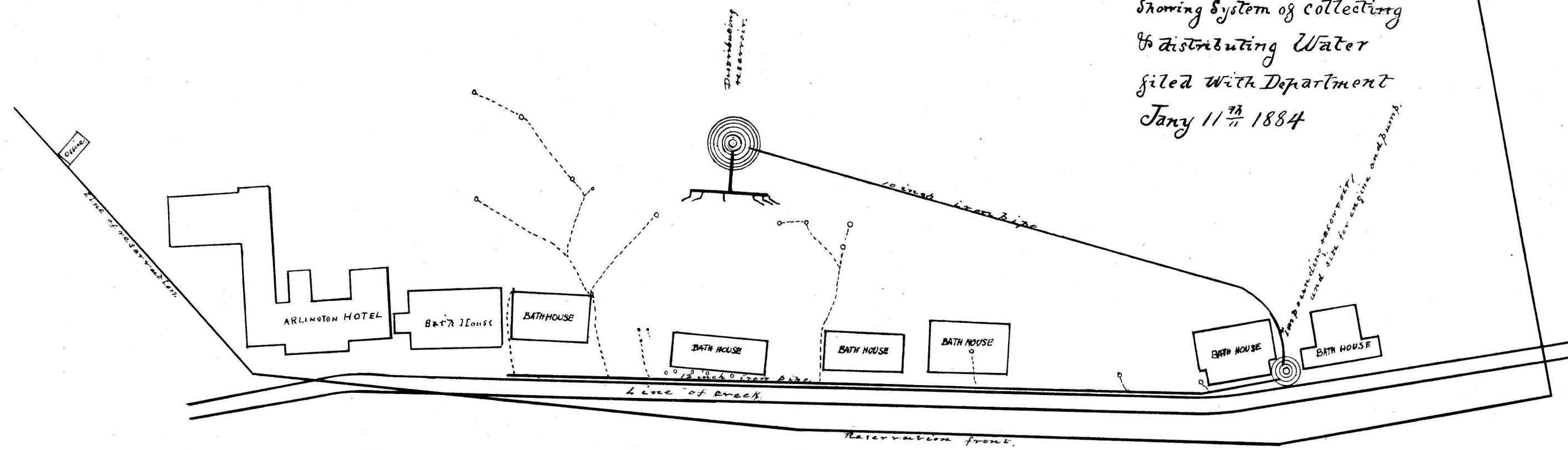
RESERVOIRS.

One impounding reservoir, capacity 250,000 gallons.	
One distributing reservoir, capacity 500,000 gallons, or one day's flow.	
Total excavation 4,440 cubic yards, at 80 cents per cubic yard for earth, \$2.50 per cubic yard for rock; estimated at equal quantities, average price per cubic yard \$1.65.	
4,440 cubic yards at \$1.65.....	\$7,326 00
Masonry for side walls and center piers, laid in Portland cement mortar,	
640 cubic yards at \$9 per cubic yard	5,760 00
Annular arches of brick for covering the two reservoirs, laid in Portland cement, $\frac{1}{2}$ rise, 13 inches thick, mortar, 253 cubic yards at \$12	3,036 00
12-inch pipe laid outside base of left wall, on creek, to conduct water from the springs to impounding reservoir, 970 feet, at \$2.30 per foot, laid.	2,231 00
10-inch pipe from pump to distributing reservoir, 780 feet, at \$1.80 per foot, laid	1,404 00
Securing springs, estimated.....	5,000 00
Pumps, duplicate, see copy of letter of H. R. Worthington, inclosed 1,720×2=.....	3,440 00
Engine-house and engine, no data.	
See copy of letter above referred to.	

	28,197 00
Add 10 per cent. for contingencies	2,819 00
	31,016 00

Sketch

Showing System of collecting
 & distributing Water
 filed with Department
 Jan'y 11th 1884



H. MIS. 58, 1, 48.