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FIRST BIENNIAL REPORT

—OF THE—

BOARD OF CAPITOL MANAGERS

—TO THE—

GENERAL ASSEMBLY

—OF THE—

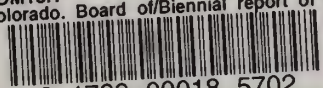
STATE OF COLORADO

DECEMBER 1, 1884.

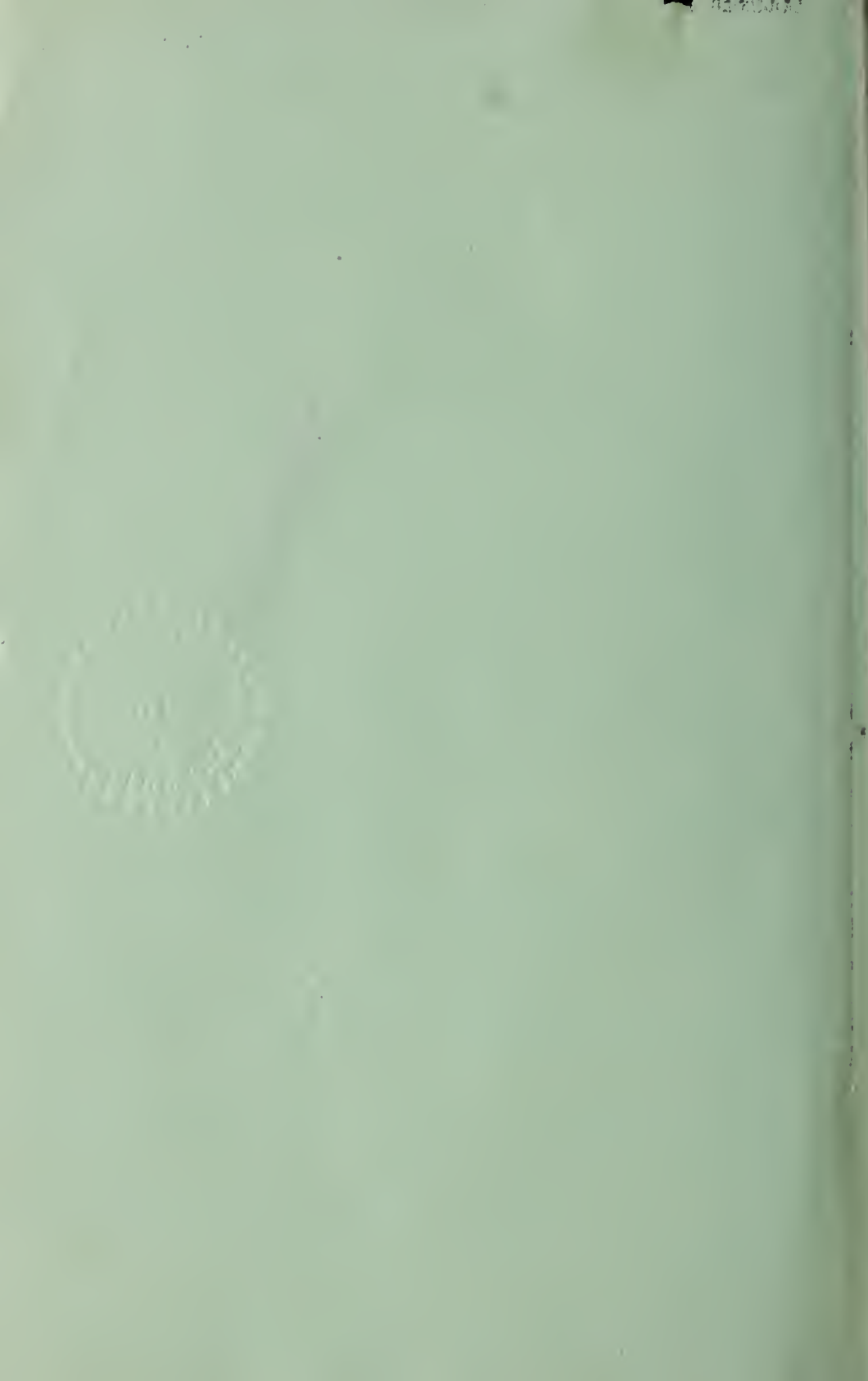
EMBRACING THE REPORT OF THE
COMMITTEE ON BUILDING STONE
AND ALL ACTS OF THE
GENERAL ASSEMBLY
RELATING TO THE CONSTRUCTION OF A CAPITOL BUILDING.

DENVER, COLO.:
TIMES PRINTING COMPANY, STATE PRINTERS.
1884.

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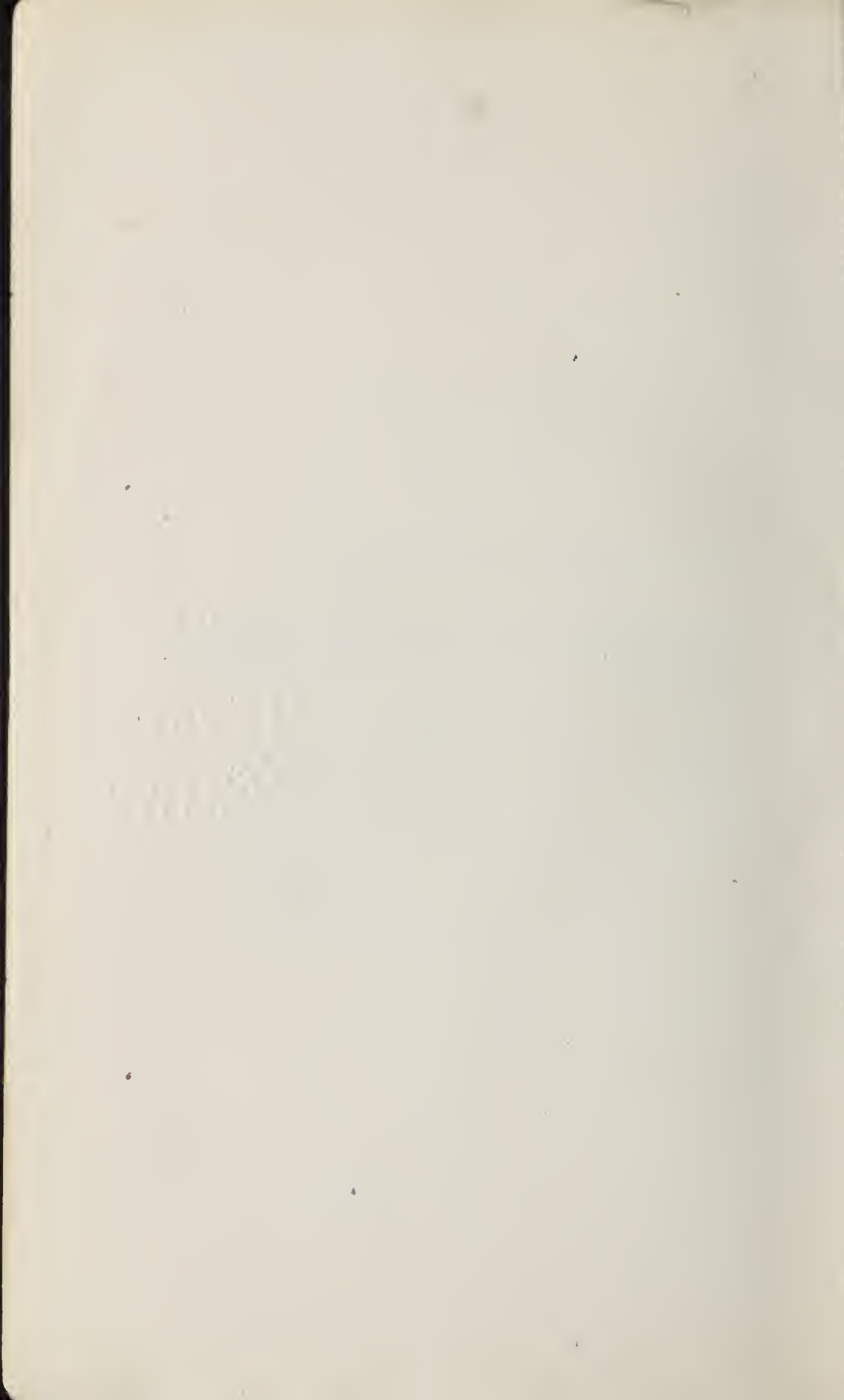
OFFICE OF THE BOARD OF CAPITOL MANAGERS,
DENVER, COLO., December 1, 1884.

*To His Excellency, James B. Grant,
Governor of the State of Colorado :*

SIR: We have the honor to submit for your consideration, and to be laid before the next General Assembly, the First Biennial Report of the Board of Capitol Managers.

Respectfully,

JOHN L. ROUTT,
W. W. WEBSTER,
ALFRED BUTTERS,
E. S. NETTLETON,
DENNIS SULLIVAN,
GEO. W. KASSLER,



BOARD OF CAPITOL MANAGERS.

JAMES B. GRANT, CHAIRMAN.

JOHN L. ROUTT,

W. W. WEBSTER,

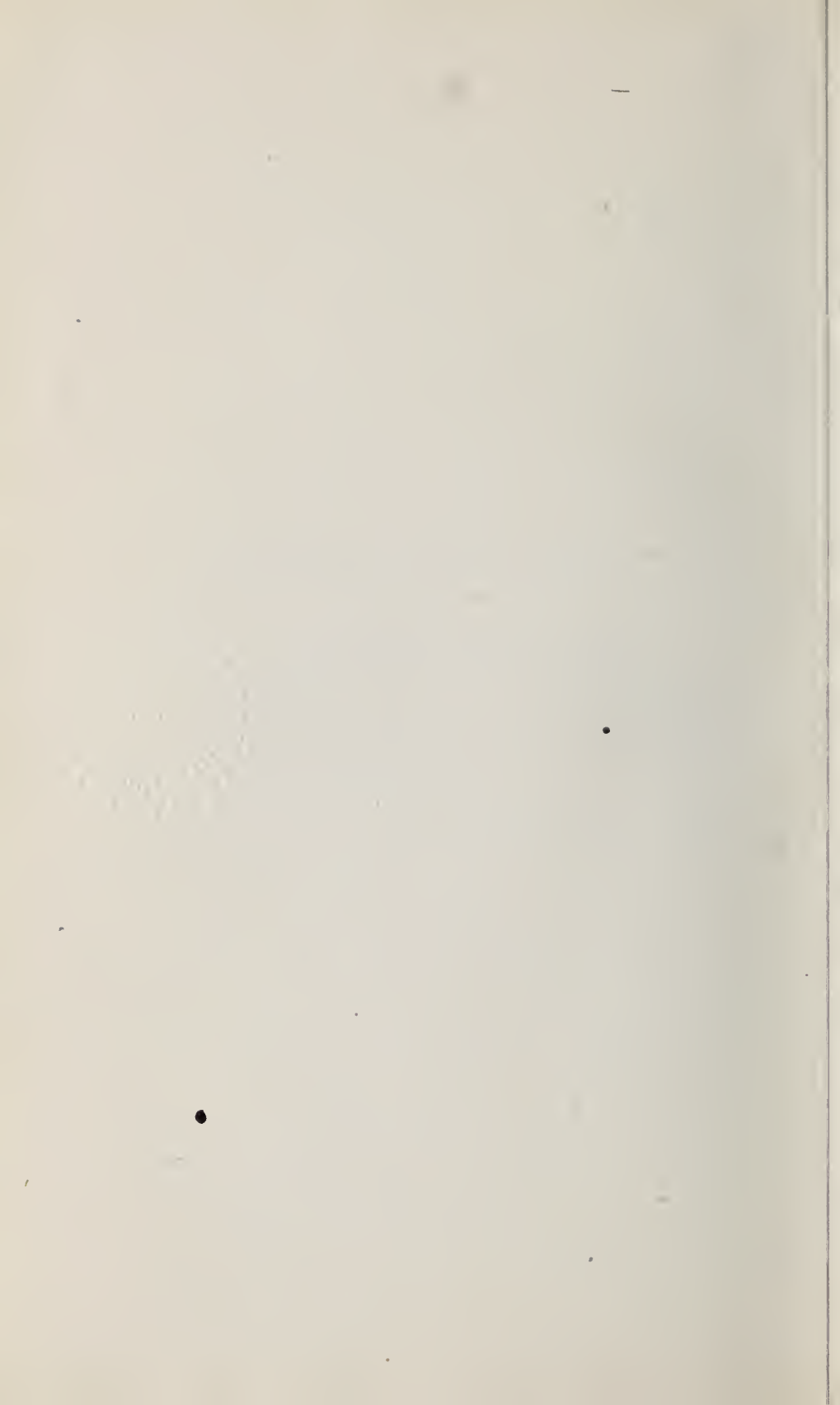
ALFRED BUTTERS,

E. S. NETTLETON,

DENNIS SULLIVAN,

GEO. W. KASSLER.

GEO. T. CLARK, SECRETARY.



REPORT
OF THE
BOARD OF CAPITOL MANAGERS
OF THE
CAPITOL BUILDING.

DENVER, COLO., Dec. 1st, 1884.

To the General Assembly of the State of Colorado :

We have the honor to make the following report of our transaction and doings for the years A. D. 1883 and 1884, in accordance with the provisions of an act of the General Assembly of the State of Colorado, entitled "An Act to provide for the erection of a State Capitol Building at the City of Denver, and creating a Board of Directors and Supervision, and appropriating funds therefor," approved February 11, 1883:

The Board of Capitol Managers met at the State House in Denver, under the call of the Governor, on Saturday, February 24, 1883, at 10 o'clock a. m., and proceeded to organize for business—the following members of the Board being present: Governor James B. Grant, Chairman; John L. Routt, Dennis Sullivan, Geo. W. Kassler, W. W. Webster, E. S. Nettleton.

Absent—Alfred Butters.

The Board proceeded to the election of a Secretary, and George T. Clark having received all the votes cast, was declared duly elected.

The following advertisement was ordered inserted in several papers of the State:

THE STATE CAPITOL.

To OWNERS OF STONE QUARRIES:

DENVER, March 1st, 1883.

Owners of Stone Quarries who may desire to contract for furnishing stone for the State Capitol Building, are hereby notified that the Board of Managers are now ready to select material for the same, and request that the following samples be sent for inspection, on or before March 30th, 1883: .

1. One block of not less than three cubic feet, finished as follows: One side tool dressed, with chiseled edge; one side broken "out of wind," without tool marks; one side rubbed or polished; one side rustic.

2. One block six inches square, for test of strength.

3. Fragments of same material, for chemical analysis.

Samples must be accompanied by a statement giving location and extent of quarry, size of patterns that can be supplied, the nearest railway station, and such other facts as may be deemed important.

After examination, the dressed samples not used for testing will be sent to the Mining and Industrial Exposition to be opened in this city in July next.

Address samples and communications to

GEO. T. CLARK,

Sec'y Board of Capitol Managers, Denver, Colo.

In answer to said advertisement there was submitted for the inspection of the Board about forty samples of building stone, all but two of which came from the State of Colorado.

Each specimen was numbered as it came from the quarry, and a record made of its location. Meantime, attention was given and inquiries instituted as to the proper parties to entrust with the important duty of giving the acquired specimens thorough scientific and practical tests. To the Denver Society of Civil Engineers was entrusted the conduct of the chemical and mechanical tests, who were ably assisted by Professor Regis Chauvenet, of the State School of Mines at Golden, Professor J. A. Sewall, of the Colorado State University at Boulder, and Professor P. H. Van Diest, President of said Society of Civil Engineers.

The report of said Board of Civil Engineers is herewith submitted, and made a part of this report.

The object sought to be attained by the Board of Managers, in advertising for specimens of building stone becomes apparent when it is taken into consideration the entire absence of authentic information as to the character, extent and relative value of the building stones of the State, upon which reliance could be placed when the Board should be called upon to make a selection for the building of the State Capitol. No examination of quarries has been made, but it has been demonstrated fully that we have in Colorado building stone combining beauty, durability and strength, sufficient to enter into the construction of the Capitol building.

Under section two of the law creating the Board of Capitol Managers, it was made the duty of the Board to to advertise within thirty days of the taking effect of the act, for sixty days in six newspapers of the largest circulation in the respective places named, four of which shall be published in the State of Colorado, viz.: One in the City of Denver, one in Pueblo, one in Greeley, and one in Leadville; one in the City of Chicago, Illinois, and one in the City of St. Louis, Missouri, calling for plans and specifications for a State Capitol building. Pursuant to the foregoing provisions the Board met upon the 10th day of March, 1883, and after giving the subject as much consideration as the limited time would allow, adopted the following as the advertisement to be inserted in the newspapers in the places named:

NOTICE TO ARCHITECTS.

STATE OF COLORADO,
OFFICE OF THE BOARD OF CAPITOL MANAGERS, }
DENVER, COLO., March 10, 1883. }

In pursuance of an act of the Fourth General Assembly of the State of Colorado, approved February 11, 1883, entitled "An act to provide for the erection of a State Capitol building at the City of Denver, and creating a Board of Managers therefor," plans and specifications for a Capitol building which, when erected, shall not cost to exceed one million of dollars, will be received by the Board of Managers of the Capitol building until 12 o'clock meridian on the 9th day of May, 1883.

Drawings must consist of foundation plans, basement plans, which must be at least 16 feet between joists, and must extend at least 12 feet above the surface of the surrounding ground.

Second floor plan, said story not to be less than 20 feet between joists; third floor plan, roof plan and section of same, longitudinal section, transverse section, front, rear, and end elevations, dome plan, giving section of same and material used and method of construction from base to summit, also giving diameter or area of base, style of architecture and extreme elevation.

The foundation and basement of said building will be of stone. Must be constructed with especial regard to strength and durability. The facing and ornamentation of the superstructure, including cornices, pediments and balustrades, will be of stone. The length of said building must not exceed 300 feet; the breadth, height and general form must be in such proportion to its length as to constitute a symmetrical building.

Said building must contain the following rooms, and may contain such other rooms as convenience of symmetry require:

One hall for House of Representatives of appropriate dimensions to accommodate 100 members, also lobbies and galleries for same.

One hall for Senate, with lobbies and galleries of appropriate dimensions.

One room for President of Senate.

One room for Speaker of the House.

One room for Engrossing Committee of Senate.

One room for Enrolling Committee of Senate.

One room for Engrossing Committee of House.

One room for Enrolling Committee of the House, and not less than 10 other appropriate committee rooms for Senate and House respectively.

Governor's reception and other apartments, 4 rooms.

Secretary of State, 4 rooms.

Auditor of State, 4 rooms.

Treasurer of State, 4 rooms.

Attorney-General, 3 rooms.

Superintendent of Public Instruction, 4 rooms.

State Board of Land Commissioners, 4 rooms.

Adjutant General, 3 rooms.

State Library room, not less than 2,400 superficial feet.

State Librarian, 1 room.

Supreme Court room of appropriate dimensions.

One room for Supreme Court Library, for not less than 40,000 volumes.

Ten private rooms for Judges, Clerk and Marshal of Court.

State Engineer, 3 rooms.

State Geological Department, 2 rooms.

Agricultural Department, 3 rooms.

Department of Statistics, 3 rooms.

The laws of acoustics must be carefully observed and the entire building made as nearly as possible fire proof.

Provisions must be made for elevators, water closets, etc. The said Capitol building must contain such number of fire proof vaults as

may be necessary for the preservation of the books and papers of the various departments of the State Government. Provisions must be made for draining, heating, lighting and ventilating said building in the most approved manner. One wing of said building is to be immediately constructed, containing not less than 9,000 superficial feet, or equivalent to a building 90x100 feet, and the person whose plans are accepted will be required to furnish working drawings for said wing; and as a compensation for said plans, specifications of entire building and working drawings of said wing, said person will be allowed one thousand dollars, and one and one-half per cent of the contract price of said wing. The plan which is accepted will be required in triplicate.

No compensation will be allowed for plans which are rejected.

The said Capitol building will be erected upon the summit of a plat of ground in the City of Denver, State of Colorado, known as Capitol Hill, with its principal facade to the west.

The drawings must be sent to the "Board of Capitol Managers, Denver, Colorado," and be endorsed "Plans for State Capitol Building," and must come under a nom de plume, the real name and address to be sent to the Board of Managers in a sealed envelope, marked "private," which will not be opened until after the award is made.

The material used in the entire building must be of the best quality, subject to the approval of the Board. The Board reserves the right to reject any and all plans.

For further information apply to Board of Managers. By order of the Board of Managers,

JAMES B. GRANT

Chairman.

GEORGE T. CLARK, Secretary, P. O. Box 2,291.

The said Notice to Architects was published in the following newspapers, to-wit:

Denver *Republican*, Denver, Colorado.

Pueblo *Chieftain*, Pueblo, "

Leadville *Chronicle*, Leadville, "

Greeley *Tribune*, Greeley, "

Each day for sixty days.

Chicago *Times*, Chicago, Illinois,

St. Louis *Globe-Democrat*, St. Louis, Missouri,

For sixty days in their weekly editions.

Also five hundred of the advertisements were mailed to the leading architects of the United States in order that the wants of the State should receive as large a circulation as possible. The Board were soon informed by leading architects that there was not time enough allowed to prepare plans for such a building, and further, it was the

general custom to offer an inducement for the most approved plan that might be presented, and without these essentials the work could hardly be undertaken. The Board being powerless under the law to offer any inducement to architects or to extend the time, were greatly discouraged in regard to receiving any plans or specifications for a Capitol building. However, on the expiration of the time stated in the advertisement, to-wit sixty days, there was submitted to the Board plans, drawings and specifications for a Capitol building at Denver, Colorado, under the following *noms de plume*: "Common Sense," "Renaissance," "Candidus," "Nil Sine Numine," "Tuebor," "Numine," "Vox," "Light and Air," "Hard Pan;" nine in number. The Board spent several days in close examination of the plans, and finally, upon the 19th day of May, 1883, at a meeting of the Board, adopted the following resolution:

Resolved, That feeling a great responsibility rested upon the Board of Capitol Managers in regard to the adoption of plans for a Capitol building in the State of Colorado—that in view of the several plans that have been submitted, that it was the opinion of the Board that great care should be exercised before committing themselves to any particular plan, therefore be it

Resolved, That the Board visit immediately the several Capitol buildings in the Northwestern States with a view of informing themselves more thoroughly in regard to the wants and construction of such a building as would meet the requirements of the people of the State of Colorado, and that no further action be taken upon the plans submitted until the Board had made such examination.

In pursuance of said resolution, the following members of the Board left Denver on the night of May 22, 1883: Gov. James B. Grant, John L. Routt, Alfred Butters, E. S. Nettleton, Geo. W. Kassler and George T. Clark, Clerk of the Board.

The Board returned to Denver June 4, 1883.

At a meeting of the Board held June 9, 1883, the following report was submitted for the consideration of the Board:

We, the undersigned members of the Board of Capitol Managers of the State of Colorado, beg leave to submit the following report of our visit to examine the several Capitol buildings of the Northwestern States, which visit was made pursuant to a resolution of the Board passed at a meeting held May 19, 1883:

We left Denver May 22, 1883, at 6:30 p. m., and visited the Capitol buildings of Iowa at Des Moines, Wisconsin at Madison, Michigan at Lansing, Indiana at Indianapolis, Illinois at Springfield, Kansas at Topeka, arriving at home on Monday, June 4, 1883.

We made as careful and minute an examination of all of said buildings and manner of construction as was possible to do, taking the shortness of time into consideration.

We were very fortunate at all of said places in coming in contact with the principal officials connected with the construction of said buildings, and from them, together with our personal inspection of the material used, manner of construction, and the actual, estimated and probable cost of said buildings, with the examination of plans, specifications, records, reports furnished for inspection, obtained for the Board very valuable information. From such examination, inspection and cost of erection of said buildings, we are of the opinion that a State House for Colorado cannot be properly built under the provisions of existing law.

Respectfully,

JAS. B. GRANT,
JNO. L. ROUTH,
ALFRED BUTTERS,
E. S. NETTLETON,
GEO. W. KASSLER.

The following report and petition was also submitted and adopted by the Board:

DENVER, COLO., June 9, 1883.

To His Excellency, James B. Grant, Governor of Colorado :

SIR: We, the undersigned, Board of Capitol Managers of the Capitol building for the State of Colorado, created under an act of the General Assembly, approved February 11, 1883, beg leave to submit the following report or statement, viz.: The members of the Board named in the act met and organized for business on the 24th day of February, 1883. On the 26th day of February the Board ordered an advertisement inserted in the newspapers of the State, calling on quarries to furnish samples of stone. Said advertisement was as follows:

THE STATE CAPITOL.

TO OWNERS OF STONE QUARRIES :

DENVER, March 1st, 1883.

Owners of Stone Quarries who may desire to contract for furnishing stone for the State Capitol building, are hereby notified that the Board of Managers are now ready to select material for the same, and request that the following samples be sent for inspection, on or before March 30, 1883:

1. One block of not less than three cubic feet, finished as follows: One side tool dressed, with chiseled edge; one side broken "out of wind," without tool marks; one side rubbed or polished; one side rustic.
2. One block six inches square, for test of strength.
3. Fragments of same material, for chemical analysis.

Samples must be accompanied by a statement, giving location and extent of quarry, size of patterns that can be supplied, the nearest railway station, and such other facts as may be deemed important.

After examination, the dressed samples not used for testing will be sent to the Mining and Industrial Exposition to be opened in this city in July next.

Address samples and communications to

GEO. T. CLARK,

Sec'y Board of Capitol Managers, Denver, Colo.

A committee of the Board was also appointed to prepare an advertisement "To architects," to submit plans for a State Capitol Building.

The Committee reported the following advertisement to the Board, which was adopted and ordered

inserted in the following newspapers: *Chicago Times*, Chicago, Illinois; *Globe-Democrat*, St. Louis, Missouri; *Denver Republican*, Denver; *Pueblo Chieftain*, Pueblo; *Chronicle*, Leadville; *Tribune*, Greeley, Colorado.

NOTICE TO ARCHITECTS.

STATE OF COLORADO,
OFFICE OF THE BOARD OF CAPITOL MANAGERS, }
DENVER, COLO., March 10, 1883.

In pursuance of an act of the Fourth General Assembly of the State of Colorado, approved February 11, 1883, entitled "An act to provide for the erection of a State Capitol building at the City of Denver, and creating a Board of Managers therefor," plans and specifications for a Capitol building which, when erected, shall not cost to exceed one million of dollars, will be received by the Board of Managers of the Capitol building until 12 o'clock meridian on the 9th day of May, 1883.

Drawings must consist of foundation plans, basement plans, which must be at least 16 feet between joists, and must extend at least 12 feet above the surface of the surrounding ground.

Second floor plan, said story not to be less than 20 feet between joists; third floor plan, roof plan and section of same, longitudinal section, transverse section, front, rear and end elevations, dome plan, giving section of same and material used and method of construction from base to summit, also giving diameter or area of base, style of architecture and extreme elevation.

The foundation and basement of said building will be of stone. Must be constructed with especial regard to strength and durability. The facing and ornamentation of the superstructure, including cornices, pediments and balustrades, will be of stone. The length of the building must not exceed 300 feet; the breadth, height and general form must be in such proportion to its length as to constitute a symmetrical building.

Said building must contain the following rooms, and may contain such other rooms as convenience and symmetry require:

One hall for House of Representatives, of appropriate dimensions to accommodate 100 members, also lobbies and galleries for same

One hall for Senate, with lobbies and galleries of appropriate dimensions.

One room for President of Senate,

One room for Speaker of the House.

One room for Engrossing Committee of Senate.

One room for Enrolling Committee of Senate.

One room for Engrossing Committee of House.

One room for Enrolling Committee of the House, and not less than 10 other appropriate committee rooms for Senate and House respectively.

Governor's reception and other apartments, 4 rooms.

Secretary of State, 4 rooms.

Auditor of State, 4 rooms.
Treasurer of State, 4 rooms.
Attorney-General, 3 rooms.
Superintendent of Public Instruction, 4 rooms.
State Board of Land Commissioners, 4 rooms.
Adjutant-General, 3 rooms.
State Library room, not less than 2,400 superficial feet.
State Librarian, 1 room.
Supreme Court room of appropriate dimensions.
One room for Supreme Court Library, for not less than 40,000 volumes.
Ten private rooms for Judges, Clerk and Marshal of Court.
State Engineer, 3 rooms.
State Geological Department, 2 rooms.
Agricultural Department, 3 rooms.
Department of Statistics, 3 rooms.

The laws of acoustics must be carefully observed and the entire building made as nearly as possible fire proof.

Provisions must be made for elevators, water closets, etc. The said Capitol building must contain such number of fire proof vaults as may be necessary for the preservation of the books and papers of the various departments of the State Government. Provisions must be made for draining, heating, lighting and ventilating said building in the most approved manner. One wing of said building is to be immediately constructed, containing not less than 9,000 superficial feet, or equivalent to a building 90x100 feet, and the person whose plans are accepted will be required to furnish working drawings for said wing; and as a compensation for said plans, specifications of entire building and working drawings of said wing, said person will be allowed one thousand dollars, and one and one-half per cent of the contract price of said wing. The plan which is accepted will be required in triplicate.

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The drawings must be sent to the "Board of Capitol Managers, Denver, Colorado," and be endorsed "Plans for State Capitol Building," and must come under a nom de plume, the real name and address to be sent to the Board of Managers in a sealed envelope, marked "private," which will not be opened until after the award is made.

The material used in the entire building must be of the best quality, subject to the approval of the Board. The Board reserves the right to reject any and all plans.

For further information apply to Board of Managers. By order of the Board of Managers,

JAMES B. GRANT,

Chairman.

GEORGE T. CLARK, Secretary, P. O. Box 2,291.

Under and according to the advertisement there were submitted to the Board on the 9th day of May, 1883,

under various *noms de plume*, nine sets of plans for a Capitol building. In most every instance these plans were accompanied with a communication from architects saying that the time given in the advertisement (sixty days) was too short to make perfect plans, and also that the consideration was too small for such work ; this may account in a measure for the small number of plans submitted.

The Board met daily after the reception of the plans to consider their several merits, and upon the 19th day of May passed a resolution to visit the several Capitol buildings in the Northwestern States, in order to more fully post themselves in regard to the material used, construction and cost of similar buildings.

The Board left Denver on the 22d day of May, and returned on the 4th day of June, 1883, visiting the following State Capitols: Des Moines, Iowa ; Madison, Wisconsin ; Lansing, Michigan ; Indianapolis, Indiana ; Springfield, Illinois, and Topeka, Kansas.

From personal examination and inspection of the several buildings, from plans, specifications, reports, documents and other evidence submitted to the Board, and testimony of Capitol commissioners, architects, contractors, superintendents in charge, and from others in authority, the Board received and acquired a vast amount of valuable information of great importance to the interests of the State in connection with the erection of a Capitol building. The Board, after careful consideration of the information received and the provisions of the act under which they must proceed (if at all), do not feel like taking the responsibility until certain modifications are made in the act of the General Assembly; among which are some of the following reasons :

In section two of the act there are two requirements which are impracticable to carry out. It is required to build in the wing which is first to be put up, a hall for the House of Representatives, containing not less than 9,000 square feet. This is larger, we believe, than any hall for a House of Representatives in any State

house in the United States, it being 30 per cent. larger than in the Capitol of Texas, which will be, when completed, the largest State Capitol building in the Union; 34 per cent. larger than the Capitol of Iowa, 64 per cent. larger than in Kansas, 71 per cent. larger than the one at Lansing, Michigan, 95 per cent. larger than at Madison, Wisconsin, and 102 per cent. larger than the one contemplated at Indianapolis, Indiana.

In the same section of the act the cost of the wing is fixed not to exceed \$200,000, and to be constructed so as to form a part of a symmetrical building. To adhere strictly to the requirements of the act it will be impossible to build a wing of proportionate size for the sum fixed by law. We have grave doubts of the practicability of uniting the central portion of the building, which by far carries a greater weight on its foundations. Experience in joining large buildings in this way has not been very satisfactory, to-wit: to unite one massive structure to another which has been gradually settling. One of the inquiries made by architects, builders and engineers of practical experience (during the visit of the Board) was to ascertain what had been the experience of others in regard to this matter. In every instance we were answered: Do not undertake to build a Capitol building in vertical sections. Build all of the foundations as near as possible at the same time, was the universal answer. Considering the time required to put the building under contract, we do not feel that we can complete the first wing within the time specified in the law and give to the State a structure that will, in every respect, prove substantial and desirable.

The brick for the walls have yet to be made. The stone, which is a very important part of the material used in the construction, may be lying to-day in some unopened quarry. Both brick and stone, like the lumber, need seasoning.

The Board, in their judgment, do not feel like adopting any of the plans submitted until modifications are made in the law, so that a proper and suitable building may be erected; further, the Board feel that they would

not be doing their duty to the taxpayers by proceeding to adopt a plan and building the proposed wing without calling attention to the same, as they do not wish to assume a responsibility which they deem would not be satisfactory to the people of the State.

Therefore we ask of your Excellency to call an extra session of the General Assembly in order that this whole subject may be submitted for their consideration, that such action may be taken as will best subserve the interests of the State.

Very respectfully,

THE BOARD OF CAPITOL MANAGERS.

The Board of Managers met on June 20, 1883, and the following communication was received and read:

STATE OF COLORADO, GOVERNOR'S OFFICE, }
DENVER, June 19, 1884. }

To the Members of the Board of Capitol Managers:

GENTLEMEN: In reply to your communication of recent date, in which you state that in order to proceed with the erection of the Capitol building it will be necessary to call the Legislature together for the purpose of modifying and amending the bill under which you are now acting, I have to say that under the circumstances I do not deem it advisable to issue a call for an extra session of the Legislature. The occasion is certainly not an extraordinary one; none of the vital interests of the people are affected in the least. It is simply a question whether we will begin the erection of a State Capitol in the fall of 1883 or in the spring of 1885. The present law under which you are acting was passed with too much haste on the part of the Legislature. The Legislature had not time to consider the matter.

With the experience which you have gained in regard to Capitol buildings, and with your knowledge of

the financial condition of the State, I hardly believe that you are prepared to advise the immediate beginning of a million dollar Capitol building. With a more careful study of the subject, the Legislature, I am satisfied, would now regard the matter in a very different light from that in which they looked at it last winter. Under the present bill we start out to build a million dollar Capitol with \$80,000 in cash, and an appeal to the people for permission to borrow \$300,000 additional, which appeal might be refused. The Constitution permits the levying of a tax for Capitol building purposes, which on the present assessed valuation of property in the State does not exceed \$50,000 per annum.

It will therefore require about twelve years to raise the remaining \$620,000, so that the building would be dragging along in process of construction for ten or twelve years, and we learn from the experience of other States that the salaries of superintendents, supervising architect, commissioners' clerks, etc., would not be less than \$15,000 per annum, during that period. Clearly then, economy suggests that when the building is once under way, it be pushed to completion as rapidly as possible. Under the circumstances I think it best to leave the matter to the next Legislature. They may deem it advisable to utilize the money now on hand in building a temporary structure at a cost, say of one hundred thousand dollars, leaving the construction of a permanent Capitol—of a Capitol which will be commensurate in magnitude and beauty, with the prosperity and wealth of the future Colorado—to a later period when we shall have accumulated a large surplus fund for that purpose.

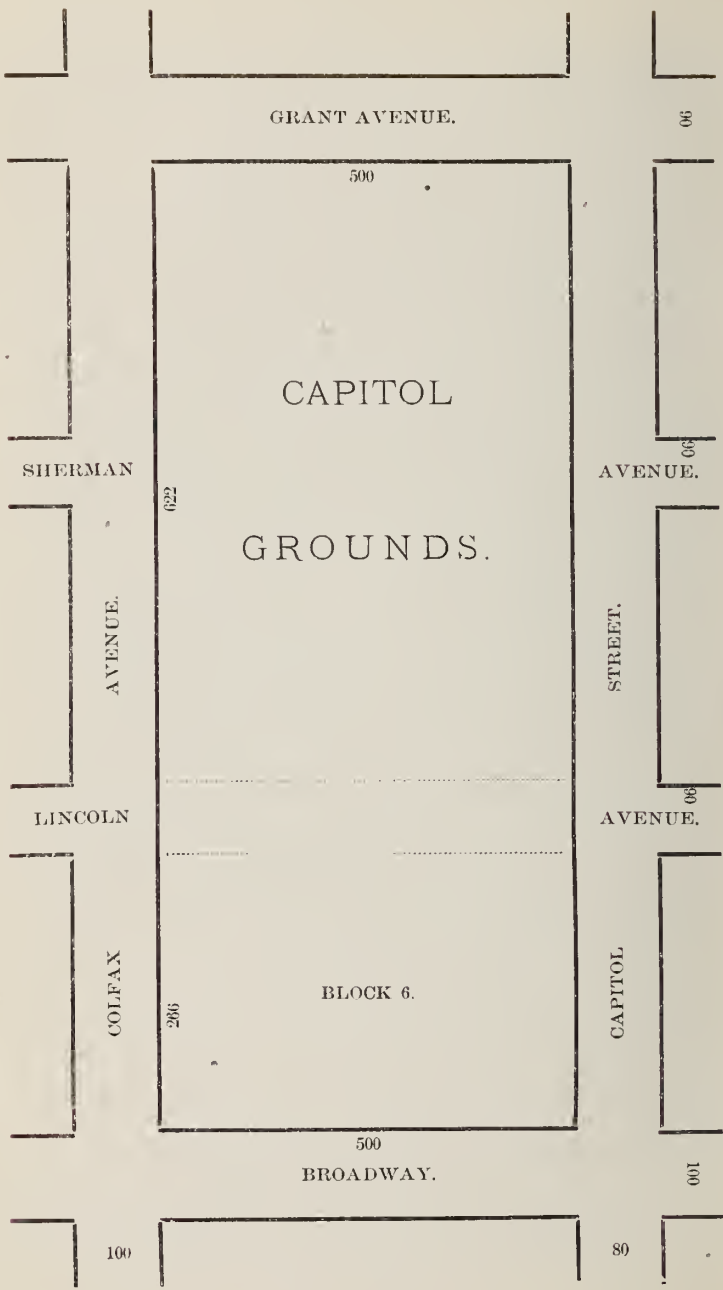
Very respectfully yours,

J. B. GRANT,

Governor.

The Board, after a full discussion of the situation and a thorough examination of all the plans submitted for a Capitol building, taking into consideration the refusal of the Governor to call an extra session of the

General Assembly to remedy the defects in the law, decided that it was impossible for them to construct the wing named in said act for the sum of money appropriated, or complete it in the time fixed ; that it was not good policy to build such a building, wing at a time, but to construct it as a whole from the foundation—that it would be far more economical and give far better satisfaction to the people of the State ; that the size of the hall of the House of Representatives required in the act was entirely unnecessary and uncalled for. Further, more time was required by the Board to examine plans and specifications, and also material for construction. Therefore it was resolved to reject all plans submitted and do nothing further towards the construction of the building, but await the meeting of the Legislature to perfect such an act as would more fully meet the wants of the people.



Under an act of the General Assembly of the State of Colorado, entitled "An Act to acquire title by purchase of a certain block of land in the City of Denver, and to sell certain real property donated to the State of Colorado for Capitol building purposes," the Board of Capitol Managers were empowered and directed to purchase said block of ground mentioned, adjoining the lands donated by H. C. Brown, upon which the Capitol building is to be erected; and were further empowered and directed to dispose of all other real property (other than that to be used for Capitol building and grounds), which had been heretofore donated to the State or Territory of Colorado for Capitol building purposes, and to apply the proceeds thereof to the payment of any sum of money ordered to be paid for the said block of ground.

On the 10th day of May, A. D. 1883, the Attorney-General of the State reported that he had fully examined the title to block six in Cheesman and Kassler's addition to the City of Denver, and had filed with the Auditor of State a certificate of same and warranty deeds to the State, from Messrs. W. S. Cheesman and Geo. W. Kassler.

By resolution of the Board the proposition of sale to the State by Messrs. Cheesman and Kassler of block six in their addition to the City of Denver, was accepted under section two of the act of the General Assembly, and the same was certified to the Auditor of State with the request to draw his warrant upon the State Treasurer for the sum of one hundred thousand dollars in payment of said block of ground.

An abstract of title was ordered made of all the property heretofore donated to the State of Colorado, and the following lots and parcels of land found to have been donated for the purpose of building a State Capitol. This does not include the ten acres donated by H. C. Brown, upon which the Capitol building is to be erected.

DONATIONS OF LOTS AND LANDS.

By Samuel E. and Mary E. Browne:

One acre, described as follows: Commencing at the southeast corner of lot two of the northwest quarter of

section two, township four, south of range sixty-eight west, and running thence west four hundred and ninety-five feet, thence west eighty-eight feet, thence south, parallel with said first line, four hundred and ninety-five feet, thence east eighty-eight feet to the place of beginning, now known as Brown's addition to the City of Denver.

By A. H. Clements:

Lots one to sixteen, in block three hundred and twenty, in Clements' addition to the City of Denver, 125x25.

By John Evans and Simeon Whitely:

West half of block twenty-four in Whitely's addition to the City of Denver, being part of east half of north-east quarter of section three, township four, range sixty-eight west; twenty lots, 25x125.

By Henry M. Porter:

Block seventy-eight, in Brown, Smith and Porter's addition to the City of Denver, being a part of the east half of northeast quarter, section three, township four, range sixty-eight west; forty lots, 25x125.

By Jno. W. Smith:

Block number eighty-one, in Brown, Smith and Porter's addition to the City of Denver, being part of the east half of northeast quarter of section three, township four, range sixty-eight west; forty lots, 25x125.

By Daniel Witter:

Lots numbered twenty-six to thirty-five, inclusive, in block number fifty-six, in Witter's addition to the City of Denver, being a part of the west half of the south-west quarter of section three, township four, range sixty-eight west; ten lots 25x125.

By Richard E. Whitsett:

Lots numbered thirty-six to fifty-five, in block number fifty-six, in Witter's addition to the City of Denver, being a part of the west half of the north-west quarter of section three, township four, range sixty-eight west.

The conveyances were made to the Territory of Colorado for the purpose of building or erecting a State Capitol, and generally were in the following form :

“ This deed is upon the further consideration that said party of the second part (Territory of Colorado) may use the land herein described for the purpose of erecting Capitol buildings upon a piece of land deeded by Henry C. Brown to Territory of Colorado, January 11, 1868, and for no other purpose.”

Under section 3 of the act empowering the Board of Managers to purchase block six of Cheesman and Kassler, they were also authorized to dispose of all real property donated and deposit with the State Treasurer the proceeds, and to the credit of the fund from which payment had been made for said block.

After consultation with the Attorney-General of the State and other prominent attorneys, it was found that there was no positive or legal authority vested in the Board to dispose of said property or enter into possession thereof; further it was found that when said real property was disposed of the fund could not be placed in the Treasury for purchase of the block of land, but must be used for the erection of the State Capitol, and for no other purpose.

After a full examination of the titles to said real property donated for the purpose of building of a State Capitol, it was decided to call to the assistance of the Attorney-General two prominent legal gentlemen who were well versed in Legislative enactments and also in titles to real property in this State; therefor the Board authorized the employment of Judge V. D. Markham and Hon. Hugh Butler, whose reports will be found below :

To the Board of Managers of the Capitol Building :

The following described piece of land, to-wit, commencing at the south-east corner of lot two of the north-west quarter of section two, township four, south range sixty-eight west, and running thence north four

hundred and ninety-five feet, thence west eighty-eight feet, thence south parallel with said first line four hundred and ninety-five feet, thence east eighty-eight feet, to the place of beginning, was conveyed to the Territory of Colorado by Samuel E. Browne and Mary E. Browne, on the 11th day of January, A. D. 1868. The deed calls for a strip of land four hundred and ninety-five feet long by eighty-eight feet in width.

We have examined the title to the said piece of land, and upon such examination we find, and give as our opinion, that the State of Colorado has a good title to all of said strip of land, except forty-nine and one-half feet off the northern part of said strip. In other words, the State of Colorado has a good title to four hundred and forty-five and a half feet, instead of four hundred and ninety-five feet, called for in the deed to the Territory of Colorado. The remaining forty-nine and a half feet were not owned by either of the grantors, and neither of them had any interest in the same, and so as to that part of the strip of land they could not convey, and consequently the Territory *did not* acquire any title.

We will further add that, in our opinion, any reasonable delay in erecting the Capitol buildings for further legislation on the subject, will not impair the title of the State to this land.

July 15, 1883.

Very respectfully,

MARKHAM & PATTERSON,

By V. D. MARKHAM.

These lots may be sold at any time when it may be deemed advisable to do so.

MARKHAM & PATTERSON,

By V. D. MARKHAM.

To the Board of Managers of the Capitol Building:

We have examined the title of lots one to sixteen, both included, in block three hundred and twenty,

in Clement's addition, East Denver, in the County of Arapahoe and State of Colorado. These sixteen lots were conveyed by Alfred H. Clements, by his attorney-in-fact, C. B. Clements, to the Territory of Colorado, by deed bearing date the 11th day of January, A. D. 1868. The deed is made upon condition that the lots are to be disposed of, and the proceeds applied to the erection of Capitol buildings on the lands deeded to the Territory by Henry C. Brown for that purpose. In this deed by Clements to the Territory of Colorado, these sixteen lots are described and designated as being in Clement's addition, East Denver. At that date, to-wit, 11th January, A. D. 1868, no map of any such addition had been filed. But the same land, afterwards included and embraced in the map of Clement's addition, had been for a long time prior to the 11th day of January, 1868, laid off and mapped by what was generally known as the "Boyd survey," as a part of the City of Denver, and with the same streets and alleys running uniformly and continuously through the whole. And by reference to the records of Arapahoe County we find that a very large number of lots, on the land included in the Clement's addition, had been sold and conveyed by Clements to various persons prior to the said 11th day of January, A. D. 1868, but no map of the Clement's addition, separate and distinct from the "Boyd survey," was filed until the 13th day of January, 1870. The map of Clement's addition, so filed on the 13th of January, 1870, does not agree with the original map, according to the "Boyd survey," and the streets and alleys on the one map do not correspond with the streets and alleys on the other map. On the contrary, the streets and alleys on the map of Clement's addition intersect and cross the blocks and lots as laid out by the "Boyd survey," in such a manner that if the streets and alleys should be permanently established as laid out on the map of Clement's addition, the sixteen lots conveyed to the Territory of Colorado by Clements, would be of *small value*. In that case no lot of the sixteen would have a street frontage, and every lot of the sixteen, except two, would be crossed or cut either by a street or alley.

Which of these two surveys or maps will be permanently recognized and established it is *very difficult* to say from a legal standpoint. This matter has been, and still is, in our courts. One of these courts is slightly inclined to hold that the map of Clement's addition will control the streets and alleys. Another of these courts holds the reverse, as far as it has decided the matter. *We are strongly of the opinion* that the "Boyd survey and map" should control the streets and alleys. We deem it unnecessary to give our reasons for this opinion at present.

The deed from Clements to the Territory of Colorado conveyed a good title to the Territory, subject only to the condition of the erection of the Capitol building, as before stated. Nothing has transpired since that time to divest this title of the Territory or State of Colorado. But many conveyances and proceedings have been made and had, which tend to and do *cloud* the title of the State to these lots, or to the land embraced in the lots as originally laid off by the "Boyd survey," and conveyed to the Territory of Colorado. Most of this confusion arises from the fact that the two surveys and maps, of which we have already written in detail, are so conflicting and contradictory. To illustrate: Block two hundred and ninety-nine, according to the map of Clement's addition, covers a large part of block three hundred and twenty of the "Boyd survey," and block two hundred and ninety-nine and one street, "according to the Clement's map," covers one half of said block three hundred and twenty of the "Boyd survey."

The following are the adverse claimants, as they appear of record, to parts or portions of said sixteen lots:

First—John V. Swift, by deed March 1, A. D. 1877, claims lot seventeen in block three hundred and twenty, according to map of Clements' addition, which covers a part of the ground conveyed by Clements to the Territory of Colorado.

Second—J. H. Lester claims, by deed of March 9, 1882, lot thirty in block three hundred and twenty,

according to map of Clements' addition, which includes a part of the same land conveyed by Clements to the Territory of Colorado.

Third—Jane C. Brown claims, by deed of May 19, A. D. 1879, lots thirty-one and thirty-two, in block three hundred and twenty, according to map of Clements' addition, which includes a part of the land conveyed by Clements to the Territory of Colorado.

Fourth—Henry C. Brown claims, by deed, lot twenty-one in block two hundred and ninety-nine, according to map of Clements' addition, subject to redemption from tax sale in 1872, which includes a part of the land conveyed by Clements to the Territory of Colorado.

Fifth—Harriett Myers claims, by deed, lots twenty-two and twenty-three, in block two hundred and ninety-nine, according to map of Clements' addition, which includes a part of the land conveyed by Clements to the Territory of Colorado.

Sixth—Henry C. Brown claims, by deed, lot twenty-four, in block two hundred and ninety-nine, according to map of Clements' addition, which lot includes a part of the land conveyed by Clements to the Territory of Colorado. Brown's claim subject, however, to two *tax* deeds to E. J. Binford, and one tax certificate to M. S. McCullough.

Seventh—Henry C. Brown claims, by deed, lots twenty-five and twenty-six, in block two hundred and ninety-nine, according to map of Clements' addition, which include a part of the land conveyed to the Territory of Colorado by Clements, subject to a tax certificate to W. C. Roby.

Eighth—Martha Hudson claims, by deed, lot twenty-seven, in block two hundred and ninety-nine, according to map of Clements' addition, which includes a part of the land conveyed by Clements to the Territory of Colorado.

Ninth—Henry C. Brown claims, by deed, subject to two tax certificates, lot twenty-eight, in block two hun-

dred and ninety-nine, according to map of Clements' addition, which includes a part of the land conveyed by Clements to the Territory of Colorado.

Tenth—Alfred H. Clements, Richard T. Clements and Henry C. Brown have a *shadow, and only a shadow*, of title to all the lots.

We do not think the tax deeds or certificates impair the title of the State to these lots.

We have specifically enumerated all of the defects and irregularities which cloud the title of these lots. These clouds upon the title should be removed by deeds of conveyance, if possible, and if not possible, then by other proper proceedings.

Any unavoidable delay in the erection of the Capitol building, such as awaiting further legislation on the subject, would not prejudice the rights or title of the State to these lots. This property, or the interest of the State therein, may be sold at any time when it may be deemed advisable to do so, provided the proceeds arising from such sale are appropriated to the erection of the Capitol building upon the land conveyed to the Territory of Colorado by Henry C. Brown for that purpose, July 27, 1883.

Very respectfully,

[MARKHAM & PATTERSON,

By V. D. MARKHAM.

To the Board of Managers of the Capitol Building :

We have examined the title to the west half of block twenty-four, in Whitely's addition to the City of Denver. This half block was conveyed to the Territory of Colorado on the 11th day of January, A. D. 1868. It is described in the deed to the Territory of Colorado as being in Whitely's addition to the City of Denver. There never was any such addition to the City of Denver as "Whitely's." But it is evident, from outside facts, it should be "Evans' addition" to the City of Denver.

This property can be readily identified as in block twenty-four in Evans' addition to the City of Denver. The lots in said half block so conveyed to the Territory of Colorado are numbered from twenty-one to forty. A quit claim or other deed should at once be procured by the State from John Evans for himself, and as attorney-in-fact for Simeon Whitely, locating these lots in Evans' addition to the City of Denver. This correction would give to the State a clear title to these lots. Without this correction, the lots can hardly be made available to the State for any purpose. The abstract of this property shows an unpaid sidewalk tax of \$85.83.

These lots, when the location has been properly made by deed, as above stated, may be sold at any time when it is deemed advisable to do so, but the proceeds must be used about the Capitol building on the land deeded to the Territory by Henry C. Brown. Any reasonable delay in the erection of the Capitol building—awaiting further legislation on the subject, or for any other purpose—will not impair the title of the State to these lots.

Respectfully,

MARKHAM & PATTERSON.

By V. D. MARKHAM.

July 15, 1883.

To the Board of Managers of the Capitol Building :

We have examined the title to block seventy-eight in Brown, Smith and Porter's addition to the City of Denver. This block was conveyed to the Territory of Colorado by Henry M. Porter by deed bearing date the 11th day of January, A. D. 1868. There is no such block in Brown, Smith and Porter's addition; but there is a block seventy-eight in Porter's addition to Denver City. We learn from the records that Henry M. Porter never had any interest in the land which was laid off as Brown, Smith and Porter's addition to Denver, but that he did own the whole of the land laid off as Porter's addition. Both maps were filed subsequent to the dee

from Porter to the Territory of Colorado, so that there is a mistake in describing this block as being in Brown, Smith and Porter's addition. It should be located in Porter's addition to Denver City. To this end a quitclaim or other deed should be procured at once from Henry M. Porter correcting this error. This is absolutely essential. Without this correction it would be difficult or impossible for the State to realize anything on this property. This deed from Porter to the Territory of Colorado is upon the express condition that the land conveyed shall be used for the purpose of erecting a Capitol building upon the land deeded by H. C. Brown for that purpose. This, however, evidently means that the proceeds shall be so used.

Any reasonable delay in the erection of the Capitol building—awaiting further legislation on the subject, or for any other purpose—will not impair the title of the State to this block. If the error is corrected which is suggested above, the State would then have a good title to said block.

These lots may be sold at any time when it is deemed advisable so to do, provided the proceeds are appropriated to the purpose of erecting the Capitol building on the land conveyed by Henry C. Brown to the Territory for that purpose.

Respectfully,

MARKHAM & PATTERSON,

By V. D. MARKHAM.

July 25, 1883.

To the Board of Managers of the Capitol Building :

We have examined the title to block 81 in Brown, Smith and Porter's addition to Denver. On the 21st day of January, A. D. 1868, John W. Smith executed a deed conveying block 81 in Brown, Smith and Porter's addition to Denver to the Territory of Colorado for the purpose of erecting a Capitol building upon a piece of land deeded by H. C. Brown to the Territory of Colorado.

But no such map as "Brown, Smith and Porter's addition to Denver" was filed until February 12th, A. D. 1880. No person by the name of either Brown or Porter had any record title to any part or portion of the land laid off and mapped as "Brown, Smith and Porter's addition." One Henry M. Porter obtained a patent for this land from the United States December 1, 1865. On November 23rd, A. D. 1865, Henry M. Porter executed a quit-claim deed of the same land to John W. Smith. On May 18th, A. D. 1876, Porter executed another quit-claim deed of the same land to John W. Smith, and since those dates no person by any name, except that of John W. Smith, has owned the said land according to the showing of the records of Arapahoe County. On the 12th day of February, A. D. 1880, John W. Smith filed a map conveying this piece of land owned exclusively by him, and on the map designated this land as "Brown, Smith and Porter's" addition to Denver. It is somewhat unaccountable that the numbering of the blocks on the map of this addition begins with number 80, and this when there are but ten blocks in the whole addition. Yet, notwithstanding these apparent irregularities, if there was no other land answering the description of the land conveyed, or which may be made to answer the description of the land conveyed to the Territory of Colorado by John W. Smith, there could be no reason, in our opinion, why the title of the State to said block 81 would not be good. But we have been furnished with an abstract of block 81 in J. W. Smith's addition to Denver, with instructions to examine the title to this block also, and report our opinion on the same, and further to report whether this block 81 in J. W. Smith's addition, or block 81 in Brown, Smith and Porter's addition is the particular block conveyed to the Territory of Colorado by John W. Smith. As to this matter, we have to say but little information can be gathered directly from the records in the Recorder's office of Arapahoe County, so that our opinion on this point will have to be based mainly on facts and evidence outside of the records. It could scarcely be expected of us to search for and hunt up these outside facts as a party should and would do when preparing his own case for trial in court; this work is outside of our duty; yet we

have taken the time and the pains, as far as we possibly could, to investigate these facts and to apply them to this particular case; and from these facts, as far as we have been able to collect the same, we are led to the conclusion that block 81 in J. W. Smith's addition to Denver is the block which J. W. Smith intended to convey and did convey to the Territory of Colorado.

Some of the facts and circumstances upon which we base this conclusion are the following: At the time John W. Smith executed the deed for block 81 to the Territory of Colorado, to-wit on the 21st January, 1868, John W. Smith, Henry M. Porter and Henry C. Brown owned individually lands lying adjacent and contiguous, and these lands so belonging to these three individuals formed a square. Out of these lands it was proposed by the several owners thereof to make an addition to the City of Denver, which addition was to be called "Brown, Smith and Porter's addition to Denver." In fact we think there is evidence to show that at the very time J. W. Smith made his deed to the Territory for block 81 in "Brown, Smith and Porter's addition to Denver," a map of "Brown, Smith and Porter's" addition, embracing the lands now included in J. W. Smith's addition, Porter's addition and Henry C. Brown's second addition was in existence; and further, that upon the map of such proposed addition the blocks and lots were numbered as they are at present on the individual additions of Brown, Smith and Porter, and among these blocks is block 81. This view of the case is strengthened much by the fact that at or about the same time that Smith made his said deed to the Territory, Henry M. Porter also made a deed of block 78 in "Brown, Smith and Porter's addition" to the Territory of Colorado. This block 78, so conveyed by Porter to the Territory of Colorado, and described in the deed as being in Brown, Smith and Porter's addition, is now block 78 in Porter's addition. But the cause of all this confusion is, the map of Brown, Smith and Porter's addition was never filed. What has been the destiny of that map, or why it was never filed, we are not informed. Suffice it to say that these same adjacent and contiguous lands, which were embraced in the

“Brown, Smith and Porter’s addition,” and which were so mapped at the time of Smith’s deed to the Territory, were afterwards laid out and mapped as three separate and distinct additions to Denver, and these three maps were so filed: One on the lands of Henry M. Porter, as Porter’s addition; another on the lands of H. C. Brown, as Brown’s second addition; and the third on the lands of J. W. Smith, as J. W. Smith’s addition. On the map of J. W. Smith’s addition as so laid out and filed, is also block 81, being the same block 81 as appeared on the old or original map of “Brown, Smith and Porter’s addition.” The map of J. W. Smith’s addition was filed August 6, 1868, or about six months after Smith’s deed to the Territory of Colorado. Again and more significant still are the following facts:

The land which constitutes what is now laid off and mapped, and the map filed as “Brown, Smith and Porter’s addition” to Denver, has for a period of about eighteen years belonged to J. W. Smith individually and exclusively, and during all that time no other person has owned or had any interest in said land or any part of it. It was the land of J. W. Smith—and of no one else—at the time it was mapped out as “Brown, Smith and Porter’s addition.” J. W. Smith had this land mapped as such addition. No other person had any interest in it. The map purports to be dated October 5, A. D. 1867, and it was just as easy to put one date on the map as another. But the dates of the acknowledgement and filing of the map, as these dates had to be fixed by some officer qualified under the law so to do, tell a different tale. Hence it is we find the date of the acknowledgement to be the 10th day of February, 1880, and of the filing the 12th day of the same month. Again, the numbering of the blocks in this “Brown, Smith and Porter’s addition” begins at block 80, although there are only ten blocks in the addition. The disguise is too thin to deceive even a child. Again, J. W. Smith continued to pay all taxes on block 81 in “Brown, Smith and Porter’s” addition from 1868 up to 1880. Why did he do this if he had conveyed this block to the Territory of Colorado? To say the least, it would be a manifesta-

tion of patriotism and State pride on the part of J. W. Smith rarely ever manifested in this or any other country. So that we are prepared to say, if the record title to block 81 in J. W. Smith's addition to Denver still remained in J. W. Smith, the State could successfully assert its claim to said block. But how stands the title to the lots in this block? Upon an examination of the record title to the forty lots in this block, we find the following:

August 6, 1870, John W. Smith conveys by warranty deed to E. L. Gallatin, ten of these lots numbered from seven to sixteen.

September 27, 1879, John W. Smith conveyed by warranty deed to E. L. Gallatin, two of these lots—five and six.

February 3, 1880, John W. Smith conveyed by warranty deed to Robert W. Knowles, four of these lots—seventeen, eighteen, nineteen and twenty.

January 31, 1881, E. L. Gallatin conveyed by warranty deed to S. Hugh Hastings, lots five and six.

February 28, 1883, E. L. Gallatin conveyed to Robert Allen by warranty deed, lots fourteen, fifteen and sixteen.

June 17, 1882, John W. Smith conveyed by quit-claim deed to S. A. Rice, twenty-four of these lots—one to four and twenty-one to forty.

June 21, 1882, S. A. Rice conveyed by quit-claim deed to Chas. A. Smith, twelve of these lots—one to four and twenty-one to twenty-eight.

We have given above the title to all the lots in block 81 in J. W. Smith's addition to Denver, as the said title appears of record in the Recorder's office of the County of Arapahoe. Whether the State can successfully assert its claims to all or any of said lots is now more a matter of evidence than of law. If the parties who at present hold the record title to these lots, or their grantors, purchased the same in good faith for valuable consideration, without notice of the rights of the State of

Colorado, then such party or parties so having such record title will be protected and the State cannot recover. Of course it cannot be expected of us to collect or hunt up in detail the evidence on this point. But we will state that from such facts and evidence as we have been able to gather, sixteen of these lots—that is from five to twenty—appear to be held by purchasers in good faith for valuable consideration and without notice of the rights of the State of Colorado, and if so held by these parties, then the State cannot recover against them. Of these sixteen lots, E. L. Gallatin has title to seven, numbered from seven to thirteen; Robert Allen has title to three, numbered from fourteen to sixteen; S. Hugh Hastings has title to two, numbered from five to six; R. W. Knowles has title to four, numbered from seventeen to twenty.

But the condition of the remaining twenty-four lots is somewhat different. The record title to twelve of these lots from one to four, and from twenty-one to twenty-eight—is in Charles A. Smith, and the record title to the other twelve—that is from twenty-nine to forty—is in S. A. Rice. Both of these parties acquired what title they have by quit-claim deed; Rice directly from John W. Smith, and Chas. A. Smith by quit-claim deed from S. A. Rice four days after John W. Smith conveyed to Rice. It is a matter of fact that said Chas. A. Smith is a son of said John W. Smith; and it is another matter of fact that said S. A. Rice is the son-in-law of said John W. Smith. We mention these facts only as suspicious circumstances. Yet the same rule applies to Charles A. Smith and S. A. Rice, which applies to the other parties holding the record title to the other lots. But if Charles A. Smith or S. A. Rice—at the time that Rice took the conveyance from John W. Smith—had notice of the rights of the State, or could have had such notice by the use of reasonable diligence, then they or either one of them having such notice, or who could have had such notice by the use of reasonable diligence, cannot successfully resist the claim of the State.

Now as to which of the two blocks—that is block 81 in Brown, Smith and Porter's addition as now mapped, or block 81 in J. W. Smith's addition

as now mapped—was conveyed to the Territory of Colorado by the deed of John W. Smith, dated 21st of January, 1868. This is to be ascertained, if possible, from the intention of the grantor, J. W. Smith, at the time of the execution of that deed, and this intention is to be ascertained from all relevant or attendant facts and circumstances, whether of record or not, which throw any light upon this intention. For if it was the intention of John W. Smith to convey to the Territory of Colorado the piece of land now known as block 81 in "J. W. Smith's addition to Denver," then block 81 in what is now known as "Brown, Smith and Porter's addition," cannot be substituted for block 81 in "J. W. Smith's addition" without the consent of the parties; that is, J. W. Smith, the grantor, and the State of Colorado, the grantee. It appears to us from all the light we have on the subject—and we have looked to all sources at our command to obtain light on the subject—that John W. Smith, by his deed of 21st of January, 1868, did intend to convey, and the Territory of Colorado did intend to receive that piece of land now known as block 81 in "J. W. Smith's addition to Denver City;" and that neither one of those parties, at the time of the making of said deed, could have had in contemplation the piece of land now known as block 81 in "Brown, Smith and Porter's addition." If we are correct in this opinion of the law, based on such facts as we have been able to gather, then the State has no claim to that piece of land known as block 81 in Brown, Smith and Porter's addition.

In conclusion, we have only to add that the State of Colorado should without delay assert its right to so much or such parts of block 81 in J. W. Smith's addition to Denver, as the evidence, when fully collected in behalf of the State, may justify. The result will depend, as we have before stated, upon the facts or evidence which can be produced in behalf of the State.

Very respectfully,

MARKHAM & PATTERSON.

By V. D. MARKHAM.

August 3, 1883.

To the Board of Managers of the Capitol Building :

We have made every effort to examine the title to lots numbered from twenty-six to thirty-five, in block numbered fifty-six, in Witter's addition to Denver City. On the 21st day of January, A. D. 1868, Daniel Witter made a deed which purported to convey said lots to the Territory of Colorado. We have made a most careful search and examination, and have to report that there are no such lots, and consequently the State of Colorado has no title to any such premises.

Very respectfully,

MARKHAM & PATTERSON,

By V. D. MARKHAM.

July 19, 1883.

To the Board of Managers of the Capitol Building :

We have examined, or rather made every effort to examine, the title to lots numbered from thirty-six to fifty-five, both included in block fifty-five, in Witter's addition to the City of Denver. On the 21st day of January, A. D. 1868, Richard E. Whitsett made a deed, which purported to convey said lots to the Territory of Colorado. We have to report, after a most careful search and examination, that said lots can neither be abstracted nor located. We may say, in fact, there are no such lots, and consequently the State has no title to any such property.

Very respectfully,

MARKHAM & PATTERSON,

By V. D. MARKHAM.

July 19, 1883.

DENVER, COLORADO, October 17, 1883.

*Hon. James B. Grant, Governor of the State of Colorado,
and ex-Officio Chairman of the Board of Managers of
the Capitol Building :*

SIR: I have examined a number of copies of abstracts furnished me by Mr. Geo. T. Clark, Secretary of the Board of which you are Chairman, concerning various lots and parcels of land claimed by the State of Colorado.

The first abstract relates to a piece of ground eighty-eight feet in width by four hundred and ninety-five feet in depth, in lot two of the north-west quarter of section two, township four south, range sixty-eight west. The property was conveyed by Samuel E. Browne and wife to the Territory of Colorado, on the 11th day of January, 1868; at that time the title was in Mrs. Browne, and the conveyance seems to be regular and sufficient. The abstract contains a good many other conveyances, but after a careful and somewhat tedious examination, I find that they do not affect the ground mentioned, and the title in the State seems to be reasonably clear, subject to a question hereinafter discussed.

The second abstract relates to block eighty-one, in Brown, Smith & Porter's addition to the City of Denver.

On the 21st of January, 1868, John W. Smith was the owner of the south-west quarter of north-west quarter of section two, and of the east half of the north-east quarter of section three, township four south, range sixty-eight west, both tracts having been conveyed to him by Henry M. Porter, and on that day he made a deed, conveying to the Territory of Colorado the block eighty-one before mentioned. The property was not otherwise described in the deed; there was nothing in the deed or in the County records to designate block eighty-one as part of any section or subdivision according to the public survey. For all that then appeared of record, Brown, Smith & Porter's addition might have been carved out of any section of land adjoining or near Denver, on any of its sides.

Upon its face the deed would appear to be void for want of certainty in the description of the property intended to be conveyed. On the 12th of February, 1880, a map was filed in the County Recorder's office by Smith, designating the forty acres before mentioned, to-wit: the south-west quarter of the north-west quarter of section two, as Brown, Smith & Porter's addition, the map bearing date October 5, 1867.

On the 6th day of August, 1868, Smith filed a map dated June 1, 1868, laying out the east half of the north-east quarter of section three, as J. W. Smith's addition. This addition contained a block numbered eighty-one. Previous to 1868 there was an addition adjoining the ones mentioned, called Brown's addition, and the blocks in J. W. Smith's and Porter's addition seem to have been numbered with reference to it. This circumstance suggests the query whether, at the time of the conveyance to the Territory, all those subdivisions of section three were known as Brown, Smith & Porter's addition, and whether the description in the deed referred to, block eighty-one in what is now known as J. W. Smith's addition to Denver. At the time of the conveyance Smith also owned the other forty acres in section two, which have since been platted and laid out as Brown, Smith & Porter's addition.

The first question, therefore, is, viewing the facts as they existed in January, 1868, what was the apparent intention of the grantor, Smith, as to the location and identity of the property that he intended to convey to the Territory? It must be assumed, of course, that he meant something by this conveyance, and if he did, it was to convey a piece of ground adjacent or near to the selected Capitol site, having an area equal to a block of ground.

It is a question of fact, and must be determined by a reference to all the facts and circumstances existing at the time, and which were presumably in the contemplation of the parties.

The first fact to which we can refer as a basis, is, that on the 6th day of August, 1868, a few months after the con-

veyance, the J. W. Smith addition was laid out, containing a block numbered eighty-one. There was in existence at that time an addition called Brown's addition, and at the same time the adjoining piece of ground was owned by Henry M. Porter, and on the 23d of June, 1874, Porter made and filed his map, calling the same Porter's addition to Denver. The three subdivisions grouped together were, perhaps, popularly called and intended to be called, Brown, Smith & Porter's addition. The blocks in Smith's and Porter's additions were numbered with reference to Brown's addition, which is another circumstance in corroboration of the apparent intention to convey what is now known as block eighty-one, in J. W. Smith's addition. Unless this view be taken it may be forcibly said that the deed was void because of uncertainty, but a construction making the deed a nullity cannot be adopted if another one more or equally reasonable can be maintained.

In a strictly legal sense, there was no such division or subdivision as Brown, Smith & Porter's addition until February 12, 1880, twelve years after Smith's deed to the Territory. True, the map purported to have been dated on the 5th of October, 1867, but there is nothing in support of its truth or correctness. It amounts to a declaration, only, on the part of Mr. Smith, made more than twelve years after the act he seeks to affect, in his own interest, and cannot be received or considered in his favor.

Of course, as I said before, the question is one of fact, and like all such questions, is one of more or less uncertainty, but from all appearances it would seem quite reasonable that the intention was to convey the block eighty-one which is contained in the J. W. Smith addition.

Assuming, therefore, for the present, that the foregoing view is the correct one, I come now to the title of the State as affected by subsequent conveyances made by Smith. On the 6th of August, 1870, he conveyed ten of the lots to Edward L. Gallatin, by warranty deed. He thereby either repudiated or ignored his deed to the

Territory; and in 1877 he made an assignment of all his property, including the remainder of block eighty-one. Afterwards the assignee reconveyed, and then he made a couple of trust deeds, one to W. S. Cheeseman and one to Samuel Leach, and in September, 1879, he conveyed two other lots of the same block to said Gallatin, the trust deeds on the same having been released.

Had the deed to the Territory been perfect in the first instance, and had there been an unqualified acceptance by the grantee, there would be no question, but it must be conceded that there was and is a question in regard to it. If Smith, at the time of the second conveyance, was the apparent owner of block eighty-one in J. W. Smith's addition, and Mr. Gallatin had no knowledge or notice to the contrary, and he purchased in good faith for a valuable consideration, he would probably occupy the position of an innocent purchaser, and be entitled to protection as such. This also involves a question of fact, which it is impossible for me or any other attorney to determine. But assuming that Mr. Gallatin was a purchaser, for value, in good faith, the question is, what was he bound to know, and how was he affected by such knowledge? This brings us to the condition of affairs existing at that time, and during the interval between the 21st day of January, 1868, and the 6th day of August, 1870. Prior to the 9th day of December, 1867, the Capitol of the Territory was situated at Golden City, but on that day an act of the Legislative Assembly of the Territory, removing the Capitol to Denver, was approved. The act of removal contemplated and provided for the conveyance to the Territory of a Capitol site, consisting of not less than ten acres; and the statute in terms declared that "if the site so selected shall be conveyed to the Territory of Colorado, by the person or persons so holding title thereto, without charge to said Territory, and so as to vest the title to the same absolutely and in fee simple in said Territory, the site, so selected, shall be and remain the property of said Territory, for the purpose of erecting a Capitol and other public buildings thereon."

Three persons were appointed as Commissioners to select the site; they might select more, but not less than ten acres. Their duty was confined to the selection of a site. They were not required, nor were they authorized to solicit or receive donations of land or other property, in addition to the Capitol site, nor did the statute apparently contemplate anything more.

If the block in question was not a part of the Capitol site selected by the Commissioners, the conveyance or tender of conveyance was an offering only.

A gift is held to be a contract, and a title by gift or donation is a title by purchase.

The gift or donation does not become effectual unless accepted. In such cases, where the gift is supposed to be for the benefit of the donee, slight evidence is required, but nevertheless, some evidence of that kind is necessary. Now, at the time of the conveyance by Smith, there was no official who was authorized to accept, and there was no provision of law in force providing that a conveyance of land by a citizen not sought for or expected, would vest title in the Territory. If there was no acceptance by or on behalf of the Territory, the conveyance was a standing offer which might be accepted before withdrawal, and withdrawn before accepted.

There was no further legislative action by the Territorial Legislature until the session of 1872, when the first statute was passed providing for the erection of a Capitol building, and for the sale of all lots theretofore, "contributed and deeded to the Territory." See Session Laws of 1872, page 66.

This was undoubtedly an acceptance. But before this Smith conveyed a part of the lots to Gallatin, and by his conduct in other respects reassumed his proprietary right over the property, and it may be said that he withdrew his standing offer before its acceptance. Another question to be considered is the fact of possession.

The Territory, so far as I know, never took possession, at least before the conveyance to Gallatin.

The taking of formal possession is not essential, but it is a frequent and always an important incident of a conveyance.

Title to real property is evidenced in either of two ways—and sometimes, and in fact generally, by both—viz.: possession under claim of ownership, and by record evidence on the books of the Recorder of the proper county. A purchaser is charged with notice of both facts. If he finds a party in possession of real property under claim of ownership, he is bound to make due and proper inquiries as to the title, and a failure so to do, or a mistake as to his conclusion, would be his misfortune. If the property be vacant, there can be no such duty. But in every case he must examine the records of the county; and in this case of vacant lands, or lots, that is his only duty, unless he has knowledge of some other fact affecting the title. Now, therefore, let us consider the position of Mr. Gallatin at the time of his purchase, as we have assumed it to be: that is, that he was an innocent purchaser, for value, and knew what every prudent man would be presumed to ascertain by a fair examination of the record title and no more.

He would see first that the J. W. Smith addition was formed out of the north-east quarter of the north-east quarter of section three; that a patent had been issued to Henry M. Porter; that Porter had conveyed to Smith; and that on the 6th day of August, 1868, Smith had made and filed his map and plat of the J. W. Smith addition. There was nothing on the map or plat to show that block eighty-one had been sold or conveyed before that date, but from the map it would seem that Smith claimed to be at that time the owner of the whole addition. From such examination Gallatin might conclude that Smith was the unquestioned owner, and had full power to convey. He might, and perhaps he would not observe the former deed, by Smith, for block eighty-one in Brown, Smith & Porter's addition. If he did not, it would be difficult to charge him with notice; and if he did he might say that he supposed and took it for granted that it referred to a block in some other addition, and if he were an innocent purchaser, as I have suggested, he

could justly invoke that principle of the law which is the outgrowth of public policy, which protects innocent purchasers against secret trusts and latent defects.

If he was not an innocent purchaser, he was entitled to no such protection, and his rights were no greater or better than his grantor Smith's. As I remarked before, it is impossible for me to decide whether he was an innocent purchaser or not. The title to the other lots remained in Smith (occasionally evidenced by trust deeds) until 1882, when he conveyed to Mr. Rice (who is his son-in-law, I understand), and soon after the latter conveyed to Chas. H. Smith, son of the original grantor, in whose name the outstanding title now rests. It further appears from the certificate of Messrs. Anthony & Landon attached to the abstract, that J. W. Smith paid taxes on the lots now in his son's name for a series of years as late as the year 1882. This is an assumption and declaration of ownership by him, and taken in connection with the fact that he conveyed to his son-in-law, and the latter to his son, would warrant, unless explained or rebutted, the conclusion that they were instruments for some purpose and not grants. If the son and son-in-law were not innocent purchasers within the scope and meaning of the principle before stated, the title of the State, if it was good in the first instance, can still be asserted.

On the whole, however, I am strongly inclined to the opinion that at the time of the conveyance in 1868, there was no sufficient acceptance by the Territory, and that the acts of Smith before the statute of 1872 amounted to a withdrawal and revocation of the grant.

The question is not free from doubt, but in the light of the facts before me, my impression, I regret to say, is against the right of the State.

On the other hand, if Smith claims, and if it should be decided that the block intended to be conveyed was block eighty-one in Brown, Smith & Porter's addition, there has been probably a sufficient acceptance, and that block would thus be the property of the State.

There is also some question as to the sixteen lots in block three hundred and twenty in Clements' addition. The land out of which the addition was carved was patented to Clements in 1865, and the deed made to the Territory in January 1868.

The property was described as lots numbered from one to sixteen inclusive, in block three hundred and twenty in Clements' addition to the City of Denver. There was at that time no such addition. It may have been, and doubtless was in contemplation at that time, to subject the land to that purpose. The map was not filed for record until January 1870.

If the grantor at the time of the conveyance to the Territory contemplated and intended to lay out his land into an addition, and described the property as certain lots in block three hundred and twenty of such proposed addition, it was perfectly competent for him to do so, and if he carried out his original purpose by laying out the proposed addition, the deed, in my judgment, would take effect, and attach to the corresponding lots at the time of the filing of the map. In this case there was an acceptance before any adverse right accrued.

Clements, until long after 1872, never assumed to revoke his deed, or make any other conveyance. In 1878 the property was levied upon under a judgment, as the property of Clements, and afterwards sold under such judgment to John W. Horner, and by him afterwards conveyed to V. D. Markham. The purchaser at the sheriff's sale and his grantees were chargeable with full notice, and if Clements had before that time parted with his title, they acquired nothing by the Sheriff's deed. I am strongly inclined to the opinion that the title of the State can be maintained to these lots. The lots were sold for taxes, but redeemed by the Territory in 1874. The sale, if the property belonged to the Territory, was wholly void, and the redemption was wholly unnecessary, but it served to show unmistakably that as early as 1874 the Territory claimed to be the owner of the lots, and this fact has an important bearing on the question of notice to the alleged subsequent purchasers.

The title to the lots in Porter's and Evans' addition seems to be regular and satisfactory.

There is but one other question to be considered, and that applies to all the properties before mentioned. All of the deeds contain a provision or reservation to the effect that the ground shall be used for the purposes of a Capitol building. The language is not the same in all, but they are nearly all the same in effect.

It may be contended, and I understand it has been urged, that a compliance with the condition in a reasonable time is essential, and that the long delay in the construction of the proposed Capitol buildings has caused a forfeiture. The first part of the proposition may be safely admitted, but the latter part by no means necessarily follows. What is a reasonable time depends upon the circumstances of the particular case, and it is a mixed question of law and fact.

I don't think that there is much cause to fear an adverse decision on that question should the point be raised.

I might give a number of reasons for that opinion, but it would add, I think, unnecessarily to the length of this communication.

In conclusion, I would suggest that possession be taken in some way of all the vacant lots. It is true that the act creating and the other adding to the power of the Board is silent upon that question, and limits its duty to selling or disposing of the lots, but this I think includes as a necessary and proper incident the right to protect and preserve the possession.

Respectfully submitted,

HUGH BUTLER.

From the opinions expressed in the foregoing communications, it seemed to be the duty of the Board to proceed to take possession of the lots and lands donated to the Territory, but before taking any steps in that direction a communication was addressed to the Attorney

General, Judge V. D. Markham, and Hon. Hugh Butler, requesting their opinion as to the necessary proceedings to be taken by the Board to test the validity of the title of the State to the lands donated. The following was the answer to said communication :

DENVER, COLORADO, May 4, 1884.

To the Honorable Board of Managers of the Capitol Building :

GENTLEMEN : At a meeting of the Board of Capitol Managers of the Capitol Building, held some time ago, we were requested to give our opinion as to the authority of the Board to commence suit or institute legal proceedings for the purpose of testing the validity of the title of the State to certain lots and parcels of ground donated to the State for Capitol building purposes. We have examined the several statutes which have been passed by our Legislature with reference to the powers and duties of the Board. These powers and duties are specific, and nowhere in these statutes do we find that the Board has any authority to institute any such suits or proceedings. The Governor of the State may direct such suits to be brought, but the Board of Managers of the Capitol Building *cannot*. We all agree in this opinion.

Very respectfully,

D. F. URMY,

Attorney General.

V. D. MARKHAM,

HUGH BUTLER.

The property donated to the State for Capitol building purposes is very valuable, and the disposal of it will materially aid in the construction of the building, and we respectfully request of the General Assembly to pass such an act as will enable the Board to enter into possession of said real property and dispose of the same for the purposes for which it was intended and donated.

In regard to the title to H. C. Brown's donation of ten acres of land, upon which the Capitol building is to be erected, and the status of the suit which he (Brown) has instituted against the State to recover the donation to himself, we herewith hand you below an answer from the Attorney General of the State in response to a communication of the Board upon that subject :

STATE OF COLORADO,
OFFICE OF THE ATTORNEY GENERAL, }
DENVER, November 14, 1884. }

To the Board of Capitol Managers of the Capitol Building :

GENTLEMEN: In reply to your letter of this date, respecting the present status of the suit of H. C. Brown vs. James B. Grant et al, I may say the said suit is now pending in the Supreme Court of the United States, on appeal from the Circuit Court of the United States, which rendered judgment on the demurrer of defendants, dismissing the bill of Brown, the complainant. Upon a very full and thorough examination of the case from every possible position, I have no hesitancy in giving it as my opinion that the judgment of the Circuit Court will be affirmed by the Supreme Court, which will dispose of the matter finally. The Legislature can take no steps that will hasten a termination of the litigation. I desire further time on the other questions asked.

Respectfully submitted,

D. F. URMY,

Attorney General.

Under an Act of the General Assembly of the State of Colorado, entitled "An Act to provide for the improvement of ten acres of land belonging to the State of Colorado, within the City of Denver," approved February 11, 1881, the sum of five thousand dollars was appropriated to be expended under the direction of the Secretary of State for grading the ground mentioned, for fencing of same, for setting out of trees, for plowing and sowing said grounds in grass, for use of water on said grounds, for

laying of water pipes, purchase of hose, etc, erection of temporary frame building, for overseer, for purchase of tools, repairs, and other incidental expenses on said ground. At a meeting of the Board March 8, 1883, they directed a survey of the ten acres of ground donated by H. C. Brown, and employed W. H. Graves, an engineer, to make said survey and map of same; also requested the City Engineer to give the established grades of the streets surrounding said block or parcel of ground. Mr. Graves performed the service required and made a contour map of the grounds, and the City Engineer added the established grades of the streets. Mr. Graves also made a landscape map of the grounds for the Secretary of State, and under his direction the grading of the grounds was done, all of which will more fully appear in the report of the Secretary of State to the General Assembly.

As all funds appropriated were exhausted by the Secretary of State in the engineering and grading of said grounds, nothing was done towards the fencing, supply of water, planting of trees, or sowing of grass, etc.

The Board calls the attention of the General Assembly to this state of affairs and requests the necessary legislation to enable them to obtain the necessary supply of water for the irrigation of the grounds and trees, and to furnish to the contractors on the Capitol building water for building purposes; further, that they may be authorized to plant such a number of hardy trees on said Capitol grounds as they may deem necessary to beautify and ornament the same, to plow and sow said grounds in grass, and to fence and protect the same, to the end that when said Capitol building shall have been completed, the surroundings shall be in conformity and keeping with the structure.

RESOURCES.

The Board have to report the following sources from which funds can be obtained for the erection of a Capitol building. Taking the time required to build a substantial structure, that will be a credit to the State, it will be seen that the expenditures will not be a burden upon the people. (In round numbers).

Cash in Treasury December 1, 1884 . . .	\$134,000 00
Internal Improvement Fund—sale and lease of lands, cash	139,000 00
Public Building Fund—sale and lease of lands, cash.	20,000 00
From sale of lands donated by citizens of Denver	100,000 00
From bonds authorized	300,000 00
From one-half mill tax for years 1884, 1885, 1886, 1887, 1888, 1889, 1890	407,000 00
	\$1,100,000 00

By the General Assembly appropriating from the Internal Improvement Fund, and the Public Building Fund, the sums that are to the credit of these funds in the State Treasury, to the "Capitol Building Fund," these with the taxes for the years 1884 and 1885, and cash to the credit of the Capitol Building Fund, will supply all the moneys required by the Board up to the meeting of the General Assembly of 1887. There will be no necessity for the issuance of the \$300,000 bonds authorized by law to aid in the erection of the Capitol building (if this is done) until after the meeting of the next General Assembly. The Board respectfully requests a careful consideration of this subject to the end that there may be saved to the State a large amount in interest and expenses, which would be incurred if bonds were issued at an earlier date.

If proper legislation is made, authorizing the Board to enter into possession of the lands and lots donated, and for the disposition of the same for the benefit of the "Capitol Building Fund," it is a question if any bonds will be required to be disposed of before the year 1888, and then only a portion thereof.

In reply to a communication addressed to the Attorney General of the State in regard to the Internal Improvement Fund and the Public Building Fund, he says:

STATE OF COLORADO,
OFFICE OF THE ATTORNEY GENERAL, }
DENVER, November 28, 1884. }

To the Board of Capitol Managers:

GENTLEMEN: I am in receipt of yours of the 14th instant, requesting my opinion in writing as to whether the Public Building and Internal Improvement Funds may by the General Assembly be appropriated for the purpose of building a State Capitol. After examination of the questions involved, I am clearly of the opinion that the General Assembly may, in its discretion, appropriate the Internal Improvement Fund for such purpose. We find precedent for such course in the State of Iowa, while in Kansas and Missouri the same fund has been placed in the School Fund. The Legislature, in my judgement, has control of the Fund.

The Public Building Fund arises from the sale and lease of lands donated to the State for the purpose of erecting State buildings, and can, therefore, be properly used for no other purpose.

Respectfully submitted,

D. F. URMY,
Attorney General.

SECRETARY'S REPORT.

To the Board of Capitol Managers :

GENTLEMEN: Herewith I present a report of the expenditures, on account of the Capitol building and lands donated, from the organization of the Board to date. All bills were allowed by the Board, and certified to the State Auditor, who drew his warrant on the State Treasurer for amount stated in each voucher, and in favor of the owner thereof.

Respectfully,

GEO. T. CLARK,

DENVER, Dec. 1, 1884.

Secretary.

LIST OF VOUCHERS.

Date.	No.	To Whom Paid.	What For.	Am't.
1888.				
April 2	1	Geo. T. Clark.....	Salary of Secretary.....	194 41
" 10	2	W. H. Graves	Survey of grounds	65 00
" 10	3	McPhee & McGinnity.....	Stakes for grounds.....	5 30
" 10	4	R. M. News, Denver	Advertisement, stone.....	11 50
" 10	5	Tribune, "	" "	11 50
" 10	6	Republican, "	" "	15 00
" 10	7	Times, "	" "	16 50
" 10	8	Geo. T. Clark	Postage Stamps.....	6 50
" 30	9	Geo. T. Clark.....	Salary of Secretary.....	166 66
May 10	10	News-Democrat, Gunnison...	Advertisement, stone.....	17 00
" 10	11	Times, Buena Vista	" "	12 40
" 10	12	Courier, Georgetown	" "	8 00
" 10	13	Express, Fort Collins	" "	5 90
" 10	14	Republican, Denver	" to architects	80 00
" 10	15	Stone & Co.....	Stationery	14 55
" 19	16	Greenlee & Co.....	Cutting samples, stone.....	95 50
" 19	17	W. H. Graves.....	Supt cutting stone.....	24 00
" 19	18	Transfer Company.....	Hauling stone.....	13 82
" 19	19	Conrad McCage	Janitor	10 00
" 19	20	Tribune, Greeley.....	Advertisem't, to architects	43 45
" 19	21	Chronicle, Leadville.....	" "	80 00
June 6	22	Geo. T. Clark	Secretary salary, May	166 66
" 6	23	Globe-Democrat, St. Louis...	Advertisem't, to architects	350 50
" 6	24	Times, Chicago.....	" "	225 00
" 6	25	Chieftain, Pueblo.....	" "	71 75
" 6	26	C. F. Burrell.....	Rent room, to show plans.....	33 33
" 6	27	Geo T. Clark.....	Expens-s, Board east.....	622 90
July 1	28	Geo. T. Clark.....	Salary Secretary, June.....	166 66
" 31	29	Geo. T. Clark.....	" " July.....	166 66
Oct. 8	30	Transfer Company.....	Hauling stone.....	12 50
" 8	31	William Toovey.....	Handling stone.....	5 00
" 8	32	Markham & Patterson.....	Legal services.....	725 00
" 8	33	Anthony & Landon.....	Abstract of titles.....	130 50
" 8	34	W. C. Lothrop	" "	11 30
" 8	35	H. C. Lowrie.....	Survey and grades.....	35 00
" 18	36	Hugh Butler.....	Legal services.....	250 00
1884.				
May 5	37	E. S. Nettleton	Testing stone.....	5 75
" 5	38	Geo. T. Clark	Salary of Secretary.....	28 00
Nov. 28	39	Geo. T. Clark.....	" "	105 00
				\$4,068 50

SUMMARY.

Legal services and abstract of titles	\$1,116 80
Advertising for stone and to architects.....	948 50
Traveling expenses of Board (east)	622 90
Salary of Secretary	994 05
Testing and hauling of stone	156 57
Survey and grade of grounds	105 30
Office expenses	64 38
<hr/>	
\$4,068 50	

ACCOUNT WITH AUDITOR OF STATE.

Vouchers certified, April, 1883	\$ 492 37
“ “ May, “	491 62
“ “ June, “	1,470 14
“ “ July, “	333 32
“ “ October “	1,169 30
“ “ May, 1884	33 75
“ “ Nov. “	105 00
	<hr/>
	\$4,008 50

All of which is respectfully submitted.

JAMES B. GRANT,

Chairman.

JNO. L. ROUTH,

ALFRED BUTTERS,

W. W. WEBSTER,

E. S. NETTLETON,

DENNIS SULLIVAN,

GEO. W. KASSLER,

Board of Capitol Managers.

A C T S.

OF THE

GENERAL ASSEMBLY

OF THE

STATE OF COLORADO,

RELATING TO THE CONSTRUCTION OF A

CAPITOL BUILDING.

AN ACT

TO PROVIDE FOR THE IMPROVEMENT OF TEN ACRES OF
LAND, BELONGING TO THE STATE OF COLORADO,
WITHIN THE LIMITS OF THE CITY OF DENVER.

Whereas, By his deed bearing date the 11th day of January, 1868, recorded in book 15, page 570, in the records of Arapahoe County, State of Colorado, Henry C. Brown did convey the following described property, to-wit: Ten acres of land in the north-west quarter of the north east quarter of section three, township four, range sixty-eight west; and

Whereas, A certain suit or action at law between the State of Colorado and the said Henry C. Brown, involving the title to said above described land, is now pending in the Supreme Court of the State of Colorado, which suit will not be determined prior to the adjournment of the present session of the General Assembly; and

Whereas, It is important that the fencing, grading, beautifying and adornment of said land (if the title should be found in the State of Colorado) be not delayed until the next session of the General Assembly; therefore,

Be it enacted by the General Assembly of the State of Colorado :

SECTION 1. That the sum of five thousand dollars be and the same is hereby appropriated out of any moneys in the State Treasury, not otherwise appropriated, for the following purposes: For grading the land mentioned in the foregoing preamble to the grade established by the City of Denver; for fencing said land with a substantial four board fence, with cedar posts, and painting said fence; for setting out a sufficient number of maple and elm trees around and on said land; for plowing and sowing said land in grass; for use of water on said land for

two years; provide and laying water pipes, hose, etc., for use on said land; for erecting on said grounds a temporary two-room frame house, for use of overseer of said land; for salary of overseer of said land for two years, or until the first of January, 1882 (1883); for purchase of tools, repairs and other incidental expenses upon said land.

SEC. 2. Upon the decision of the Supreme Court in said above mentioned action, determining the title of said land to be in the State of Colorado, and upon the written certificate of the Attorney General of the State of Colorado that the said title is so vested in the said State of Colorado and is unimpeachable, then the Secretary of State is hereby required to cause said improvements to be made on said land as soon as practicable, and upon the presentation of proper vouchers, signed by the Secretary of State, and approved by the Governor, the Auditor is hereby authorized to draw his warrant upon the Treasurer for the payment of the whole or any part of said sum.

SEC. 3. Provided, however, should said decision not determine said title to be in the State of Colorado, and should the opinion of the Attorney General be that the said title is not so vested, then the sum of money hereby appropriated shall revert to the credit of the General Revenue Fund of the State.

SEC. 4. Whereas, it is the opinion of the General Assembly that an emergency exists; therefore, this act shall take effect from and after its passage.

Approved February 11, 1881.

AN ACT

TO AMEND AN ACT ENTITLED "AN ACT TO PROVIDE FOR THE ASSESSMENT AND COLLECTION OF REVENUE, AND TO REPEAL CERTAIN ACTS IN RELATION THERETO," APPROVED MARCH 20, 1877.

Be it enacted by the General Assembly of the State of Colorado :

SECTION 1. That section forty-four (44) of said act be and the same is hereby amended so as to read as follows, to-wit: On or before the first day of September in each year the (State) Auditor shall transmit to the Clerk of each county a statement of the changes, if any, which have been made in the assessments, and the rate of State tax which is to be levied and collected within his county; which, however, shall not exceed three mills on the dollar of the valuation; and when the Board fixes no different rate, or, if for any reason the Board fail to sit, or the County Clerk should fail to receive the statement of the rate of tax ordered by them, that rate shall be deemed to be levied; and the Clerk of each county, in making up the tax list required by this act, shall compute and carry out in the proper column a State tax at the rate aforesaid; *Provided, however*, that for the years 1881 and 1882 the rate of taxation shall be for State purposes four mills on the dollar, and for the purpose of establishing a fund for a Capitol building one-half of one mill on the dollar, unless the State Board of Equalization shall fix a lower rate. Any Clerk failing herein may be fined in any sum not less than five hundred nor more than three thousand dollars, to be recovered by action of debt, in the name of the people of the State of Colorado, in any court of competent jurisdiction.

Approved February 18, 1881.

AN ACT

TO PROVIDE FOR THE ERECTION OF A STATE CAPITOL BUILDING AT THE CITY OF DENVER, AND CREATING A BOARD OF DIRECTION AND SUPERVISION, AND APPROPRIATING FUNDS THEREFOR.

Be it enacted by the General Assembly of the State of Colorado :

SECTION 1. That the sum of one hundred and fifty thousand dollars shall be and the same is hereby appropriated out of any moneys in the special fund created for that purpose, for the construction and erection of a wing to what is now or may hereafter be the Capitol building of the State of Colorado, in the City of Denver. And said sum, together with such other sums of money appropriated for that purpose by the provisions of this Act, or any other Act of the General Assembly of the State of Colorado, shall be expended under the control and supervision and by the direction of a Board of Managers of the Capitol building, as hereinafter provided. The said Board shall consist of seven members. The Governor of the State shall be a member of and the Chairman of said Board, and the remaining six members of said Board shall be John L. Routt, Dennis Sullivan, George W. Kassler, Alfred Butters, E. S. Nettleton and W. W. Webster. Said Board shall discharge the duties created and imposed upon it by this Act, without compensation: *Provided*, each member of said Board, except the Governor, shall receive four dollars per day for each day necessarily employed in his duties, and actual traveling expenses. And said Board shall have authority to employ a clerk to keep a record of their acts and proceedings, and pay him such compensation as said Board shall deem reasonable. The money necessary to pay the said Board and the said Clerk shall be taken from the appropriation created and made by this and other Acts for the erection of said Capitol building, and *provided further*, that said Board shall have the power to fill all vacancies that shall arise

in said Board, and a majority of said Board shall constitute a quorum and be empowered to act in all matters pertaining to the duties of said Board.

SEC. 2. Within thirty days after the taking effect of this Act, it shall be the duty of said Board to advertise for sixty days in six newspapers of the largest circulation in the respective places named, four of which shall be published in the State of Colorado, one in the City of Denver, one in Pueblo, and one in Greeley, Colorado, and one in Leadville, Colorado, one in the City of Chicago, Illinois, and one in the City of St. Louis, Missouri, calling for plans and specifications for a State Capitol building, and said notice shall also contain a statement that the State will not be responsible to any person furnishing any plans and specifications so called for, except the one which shall be accepted. One wing of which Capitol building to be immediately constructed, as hereinafter provided. Said wing not to exceed in cost two hundred thousand dollars, and to be built in conjunction with, and so built that it may be used in connection with the entire Capitol building to be thereafter constructed, and so constructed as to form a part of what may finally be a symmetrical Capitol building for the State of Colorado; and said first wing to be so erected and constructed as to contain rooms convenient for offices or committee rooms on the first floor, and on the second floor a hall for the House of Representatives; said hall to contain an area of not less than 9,000 square feet, together with appropriate galleries. And the building shall contain all the gas piping, plumbing, drain pipes, ventilating shafts, or ducts and flues necessary and convenient for lighting, ventilating and heating the same in the most approved method. And the contracts for the Capitol building shall provide for fire-proof vaults sufficiently large and numerous to contain and efficiently preserve all the archives and papers of the different departments and the State Government that may be located in the said building, and which shall be surrounded and protected by masonry in the most approved manner.

SEC. 3. Within twenty days after the day named in the advertisement, it shall be the duty of the

said Board, in conjunction with a competent builder and architect, who shall not be interested in the letting of said contract--said builder and architect to be appointed by the Board—to adopt that one of the plans so submitted which shall, in their judgment, be calculated to best supply the wants and meet the requirements of the State; and they shall have the right to reject any or all of the plans submitted.

SEC. 4. The said Board shall allow as compensation for the plan adopted, one and one-half per cent, on the contract price of said wing of said building to be constructed; but said architect shall, for the compensation aforesaid, make the general plan, specification, working and detailed drawings as herein provided. The Board shall certify the contract price to the Auditor, who shall thereupon draw his warrant on the said special fund for three-fourths of one per cent. of the contract price in favor of the architect, the other three-fourths to be paid within one year after the delivery of the said plans, drawings and specifications. *Provided*, that the said architect shall receive in addition to the above per centum, one thousand dollars for the entire plans and specifications for said Capitol building, without the detailed drawing for the other wings. *Provided further*, that no plan shall be adopted that will be for a building when completed that will cost more than one million of dollars, and the building herein provided for when completed shall not cost more than one million of dollars.

SEC. 5. The Board shall, within thirty days after the adoption of the plans and specifications as above provided, advertise in six newspapers of the largest circulation in the respective places named, one of which shall be published in Denver; one in Pueblo; one in Greeley; one in Leadville; one in the city of Chicago, Illinois; and one in the city of St. Louis, Missouri, for sixty days, for bids for the erection and completion of a building to constitute one wing of the Capitol building of the State as aforesaid, in accordance with the plans and specifications adopted. The said plans and specifications shall be kept in the office of the chairman of the said Board of

Managers, and he is hereby made custodian of the same, and it shall be his duty to see that they are carefully preserved, and shall remain the property of the State. On the day specified in the advertisement for examination of the bids, the contract shall be awarded to the lowest and best responsible bidder, for the State. The Board shall require a good and sufficient bond or other good security in the sum of twenty thousand dollars to accompany each bid; such bond or other security shall be made payable to the State on condition that if the party making the bid shall be awarded the contract, he will, within twenty days after the award, execute the bond provided for in section nine of this act, and in default of such bond or other security being filed with the Board before the bids are opened, the bid shall not be considered. The Board shall reserve and have the right to reject any and all bids if in the opinion of a majority of the Board it shall be for the best interest of the State so to do.

SEC. 6. In the event that all the bids shall be rejected, the Board shall immediately advertise again, same as before, except the time shall be for thirty days instead of sixty days. At the time mentioned in said advertisement the contract shall be let to the lowest and best responsible bidder for the State, unless all the bids shall again be rejected; in which event the Board shall forthwith advertise again in the same manner as in this section provided, and shall continue so to advertise until the contract shall be awarded.

SEC. 7. Immediately upon the awarding of the contract, the Board shall appoint a competent, practical builder and architect as superintendent of construction, whose duty it shall be to see that the plans and specifications adopted by the Board are faithfully carried out by the contractor in the construction of said Capitol building; and it is hereby specially made the duty of the superintendent to see that the material used in the construction of and work done upon the said building shall in all respects conform in letter and spirit to the plans and specifications. It shall be the duty of the said superintendent to make and return to the Board monthly statements, showing the amount and progress of the work

done on said building, and such other information in regard to his duties as the Board may direct or require. Such statement shall be made in writing and sworn to by the superintendent. The superintendent, before entering upon the discharge of his duties, shall execute a bond to the State of Colorado, with good and sufficient sureties, in the sum of twenty-five thousand dollars, to be approved by the Governor, and to be conditioned for the faithful performance of his duties as specified in this act. The superintendent shall be allowed by the Board as compensation for his services, two per cent. on the contract price of the work done under his supervision, which amounts shall be certified to by the Board. And on such certificate the auditor shall issue a warrant on the treasurer, payable out of the special fund for said amount, as the work progresses. The said superintendent shall give his constant personal attention to the work as it progresses, and shall also accompany the said Board in all their visits of inspection, and give such information and explanation as may be required by the said Board at any time.

SEC. 8. The Capitol building shall be fire proof, and the walls of said building shall be constructed of stone, or stone and brick, as the Board of Managers may direct; the face of said walls to be of stone, and all pillars, arches and ornamental work shall be of such kind and quality of stone as the Board may decide after inspecting the plan that shall be adopted.

SEC. 9. The contractor, before entering upon the execution of the contract, shall execute a bond to the State of Colorado in the penal sum of not less than one hundred thousand dollars, with good and sufficient sureties, to be approved by the Board of Managers, and conditioned for the full and entire completion of the said wing of the Capitol building and its connection with the balance of the Capitol building as herein provided, so that it may be used in connection therewith from the time of its completion, and for the faithful performance of the contract in all respects. Said bond shall be given within twenty days after the awarding of the contract, or in default thereof, the contract shall be awarded to

the next lowest and best responsible bidder, or the Board may re advertise for bids, if, in the opinion of a majority of the Board it shall be for the best interests of the State. And the defaulting parties shall pay to the State all damages which it may sustain by reason of such defaulting parties having failed to execute the bond and perform the contract.

SEC. 10. The contract shall provide for the completion of said wing of said Capitol building by the first day of December, 1884. During the progress of the construction and erection of said building, the superintendent shall make out and file with the Board, on or before the first day of each and every month, his estimates of the work done and material furnished by the contractor. And the Board shall, after an examination of such estimates, certify to the auditor the amount found due the contractor upon the estimates. Upon such certificate being presented to the auditor, he shall draw his warrant on the said special fund, or Capitol building fund, in favor of the contractor, for eighty per cent. of the amount so certified to by the Board, and when the said contract and building is completed, and final estimates made, the Board shall certify this fact to the auditor, and he shall then draw his warrant for the balance on the contract, *Provided* that the whole amount paid out under the provisions of this act, including the cost of advertising, plans, architect, builder, superintendent, and every other expenditure under and by the provisions of this act, shall not exceed in the aggregate the sum of two hundred thousand dollars. *And, provided, further,* that each person or firm to whom any such payment shall be made shall accept the same as payment in full of any and all contracts made, or liabilities incurred, by or in behalf of the State under any of the provisions of this act, and shall execute a release, in writing, of all claims and demands against the State on account of any and all services rendered or material furnished on account of said building or under the provisions of this act.

SEC. 11. It shall be the duty of said Board of Managers, on the first Monday of every month while the work progresses to inspect the work on said building and

to inquire into the manner in which the contracts are being executed, and if they shall find any portion of the work done, or material furnished under said contract, of a character less valuable than stipulated for in said contract, they shall immediately give notice to the contractor that said work or material, as the case may be, will not be received; and unless such contractor immediately signifies his intention of procuring the proper material or of reconstructing the work, as the case may be, and shall proceed immediately to do so, or in case he shall so signify and shall fail to furnish such new material, or perform such new work within a reasonable time to be fixed by said Board, said Board shall make known to him that his contract is rescinded and at an end, and such contracts shall be re-let as originally provided for in this Act; *Provided, however*, if the said contractor shall have furnished any material or done any work on said building such as was contracted for, the said Board shall have the right, if in their judgment it is equitable and just, to allow the party its value, and may issue their certificate on the Auditor for the amount; and *provided further*, that no part of the work shall be deemed accepted until the final acceptance on completion of the wing to be built.

SEC. 12. It shall be the duty of said Board of Managers to report to the General Assembly of the State at the next regular meeting thereof, the manner in which they have discharged their duties, the character and condition of the work done, the money expended, the various persons contracted with, the amount and character of the contracts, the date of the several bonds taken together with the names of the obligors, the contracts which may have been forfeited in whole or in part, and all other information relative to the erection of said building. Also an estimate of the amount required to complete the State Capitol building.

SEC. 13. It shall be the duty of the superintendent to make his report to the Governor on or before the first day of the next regular session of the General Assembly of the manner in which the work has been executed,

noting in said report what contractors, if any, have failed to perform their contracts in whole or in part, and what injury or loss has resulted from such failure.

SEC. 14. In the opinion of the General Assembly an emergency exists, therefore this Act shall take effect and be in force from and after its passage.

WM. H. MEYER,
President of the Senate.

ELISHA W. DAVIS,
Speaker of the House of Representatives.

Approved February 11, 1883.

JAMES B. GRANT,
Governor.

STATE OF COLORADO,

Office of the Secretary of State.

UNITED STATES OF AMERICA, }
STATE OF COLORADO, } ss.

I, Melvin Edwards, Secretary of State, of the State of Colorado, do hereby certify that the annexed is a full, true and complete transcript of Senate Bill No. 165, being an Act entitled "An act to provide for the erection of a State Capitol building at the City of Denver," etc., etc., approved February 11, A. D. 1883, which was filed in this office the twelfth day of February, A. D. 1883, at 9 o'clock a. m., and admitted to record.

[SEAL.] IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the great seal of the State of Colorado, at the City of Denver, this 23d day of February, A. D. 1883.

MELVIN EDWARDS,
Secretary of State.

AN ACT:

TO PROVIDE FOR THE CREATION OF A BONDED INDEBTEDNESS ON BEHALF OF THE STATE, TO THE AMOUNT OF THREE HUNDRED THOUSAND DOLLARS, TO AID IN THE CONSTRUCTION OF A CAPITOL BUILDING IN THE CITY OF DENVER, AND FOR THE SUBMISSION OF THE QUESTION TO A VOTE OF THE QUALIFIED ELECTORS OF THE STATE.

Be it enacted by the General Assembly of the State of Colorado :

SECTION 1. That there shall be submitted to the vote of the qualified electors of the State of Colorado, at the next general election, occurring in November, 1883, for their ratification or rejection, the proposition to create a bonded indebtedness on behalf of the State, to the amount of three hundred thousand dollars, under the provisions of sections three, four and five of Article XI. of the State Constitution. The bonds representing such indebtedness to be due and payable in fifteen (15) years from the date of issue, and to bear interest at a rate not exceeding six (6) per cent per annum; the said bonds to be sold for not less than their par value, and the proceeds thereof to be used in the erection of a State Capitol building in the City of Denver, in such manner as may be provided by the Acts of the Legislative Assembly.

SEC. 2. It shall be the duty of the Secretary of State at least thirty (30) days previous to the general election aforementioned, to make out and cause to be delivered to the County Clerk of each county of the State a notice, in writing, stating that at such general election the before mentioned question is to be submitted to the vote of the duly qualified electors of the State, for their ratification or rejection, as required by the Constitution; and the County Clerk of each county shall thereupon give notice, in writing, of such election, by causing the same to be published in a newspaper having general cir-

ulation in the county, and sending of a copy of such notice, by mail, to the judges of election in each precinct, to be posted at the place of voting at least fifteen days before the date of said election; and no person shall vote at such election upon the question of creating a bonded indebtedness, as set forth in section one (1) of this Act, unless he shall have the necessary qualifications of an elector as provided by law.

SEC. 3. All persons voting on the question as before provided, shall vote by separate ballot, which shall be deposited in a box to be used for that purpose only, and on which ballot shall be printed the words: "For the creation of a bonded indebtedness of three hundred thousand dollars, to aid in the erection of a State Capitol building;" or, "Against the creation of a bonded indebtedness of three hundred thousand dollars, to aid in the erection of a State Capitol building." The votes so cast on the question of the creation of the said bonded indebtedness shall be canvassed, and the result determined in the same manner as provided by the laws of this State for the canvass and return of votes for representatives in Congress.

SEC. 4. There is hereby created for the purpose of this Act a Board, to be known as the Board of Commissioners of the State Debt, which shall consist of the Governor of the State, the Secretary of State, the State Treasurer and State Auditor. If a majority of the votes lawfully cast upon the question of the creation of a bonded indebtedness, as set forth in the preceding sections, shall be in favor of the creation of such indebtedness, then the Board of Commissioners as aforesaid shall proceed, as soon as practicable, to carry out the provisions of this Act by the issue of coupon bonds of the State of Colorado as hereinafter set forth. The bonds issued shall be comprised in one series of three hundred bonds, numbered from No. 1 to No. 300, both numbers inclusive, which shall be of the denomination of one thousand dollars each, and the rate of interest thereon, which shall be determined upon by the said Board, shall not exceed six (6) per cent. per annum, to be evidenced by coupons attached to said bonds, and to be

paid semi-annually at the office of the State Treasurer, in the City of Denver, or at such bank or banking house in the City of New York as the said Board may designate, at the option of the holders thereof. The principal of said bonds shall be due and payable in fifteen years from date of issue, at the office of the State Treasurer. All the bonds issued under this Act shall be registered in the office of the State Auditor, and his certificate of such registry, and the seal of his office shall be affixed to each bond, which certificate and seal shall be evidence of their legal issue; and the total amount of such issue shall be three hundred thousand dollars.

SEC. 5. The bonds issued under this act shall be known as "Capital Building Bonds," and shall be signed by the Governor of the State, countersigned by the State Treasurer, and attested by the Secretary of State who shall affix the Great Seal of the State to each bond. They shall be numbered and registered in a book kept for that purpose by the State Treasurer in the order in which they are issued. Each bond shall state upon its face the amount for which the same is issued, to whom issued, for what purpose issued, the date of its issuance, and the title of this Act under which the issue is made; and the text of the said Act shall be printed on the reverse side of each bond.

SEC. 6. Whenever the bonds are issued as provided in this Act, it shall be the duty of the State Board of Equalization to levy and assess a special tax on all the taxable property in the State, sufficient in amount to fully discharge the half yearly interest accruing on the said bonds, which tax, when collected shall be paid into the State Treasury to the credit of the "Interest Fund," and for the ultimate redemption of the said bonds they shall levy annually, after nine years from the date of their issuance, such tax upon all the taxable property in the State, as shall create a yearly fund equal to twenty (20) per cent. of the whole amount of the bonds issued, which fund shall be called the "Capitol Building Bond Sinking Fund," and all taxes for interest on and for the redemption of such bonds, shall be levied and collected as other State taxes, and shall be paid into the State

Treasury in cash, only. The proceeds thereof shall be kept by the State Treasurer as special and distinct funds under their respective heads, to be used in payment of interest on and for the redemption of such bonds only, or for their purchase as hereinafter provided, and for no other purpose, whatever: *Provided*, That whenever any surplus remains to the credit of the "Interest Fund," after the full payment of the interest maturing in any year, the said Board of Commissioners shall cause such surplus to be transferred to the credit of the "Capitol Bond Sinking Fund." All moneys belonging to the said sinking fund may be invested by the said Board in registered bonds of the United States, or they may be applied by the said Board to the purchase, on behalf of the State, of such of the Capitol building bonds as may be obtainable, as in the judgment of the said Board may best serve the interest of the State. The said Board shall, whenever called upon, report to the General Assembly the condition of the said sinking fund, the amount of the same and how invested.

SEC. 7. For the payment of the coupons representing the first year's interest accruing on the bonds to be issued under this Act, the State Treasurer is hereby authorized and directed to apply any moneys at that time in his hands, belonging to the "Capitol Building Fund;" such moneys so used to be restored by him to the said fund, by transfer from the Interest Fund, as soon as a sufficient amount is received into the said Interest Fund from the collection of interest tax, as provided in section six of this Act.

SEC. 8. When any of the bonds issued under this Act are purchased or redeemed, it shall be the duty of the said Board of Commissioners to cancel the same, so that they can be plainly identified, and cause a record of such cancellation to be made on the bond registry books of the State Treasurer and State Auditor.

SEC. 9. The said Board of Commissioners shall be authorized to prescribe the form of the bonds to be issued under this Act, and the coupons thereto; and when said issue is made as hereinbefore provided, the said Board

shall be authorized to dispose of the same for cash, and deposit the proceeds thereof with the State Treasurer, to the credit of the Capitol Building Fund, to be used in aid of the erection of a Capitol building for the State of Colorado, in the City of Denver, in such manner as may be provided by the Acts of the Legislative Assembly: *Provided*, That none of the said bonds shall be sold at less than their par value.

SEC. 10. This Act shall not be revised, amended or repealed until the total amount of the indebtedness herein provided for is fully paid and discharged.

Approved February 11, 1883.

REPORT

—OF THE—

COMMITTEE ON BUILDING STONE

—TO THE—

Board of Capitol Managers

—OF THE—

STATE OF COLORADO.

JULY 3, 1884.

EMBRACING THE REPORT AND TABLES OF THE

DENVER SOCIETY OF CIVIL ENGINEERS

—AND OF—

PROF. REGIS CHAUVENET,

President State School of Mines.

PUBLISHED BY ORDER OF THE BOARD OF CAPITOL MANAGERS.

DENVER, COLORADO:
TIMES PRINTING COMPANY, STATE PRINTERS.
1884.

REPORT
OF THE
Committee on Building Stone.

DENVER, COLORADO, July 3, 1884.

To the Board of Managers of the Capitol Building:

GENTLEMEN :

Your committee to whom was assigned the work of making an examination and report of the Building Stones of Colorado, specimens of which have been sent to your Board from the quarries within the State, beg leave to submit the Report of the Denver Society of Civil Engineers and of Prof. Regis Chauvenet, President of the State School of Mines.

The former made the mechanical test, including strength, specific gravity and ratio of absorption. The latter made the chemical examination, including the chemical analysis, freezing and ignition tests; also, the ratio of absorption and specific gravity tests, which were made to check those made by the Society of Engineers, all of which will appear in their respective reports.

The samples of stone submitted to the Board embraced two from each quarry; one set being dressed in various forms to show the finish that might be required in the construction of the building. These, which were not to contain less than three cubic feet each, were, after thorough examination by the Board, placed in the National Mining and Industrial Exposition building, where they now are.

The other samples, six inch cubes, were cut up into two inch cubes, two of which were used for determining

the crushing resistance. The fragments of the broken cubes and one unbroken cube were sent to the State School of Mines for the tests afterwards made by Prof. Chauvenet. The specimens were all numbered, and the parties making the tests were ignorant of the localities of the quarries, except as to Nos. 10, 11, 50 and 60.

The following table gives the location of the quarries and the corresponding specimen numbers:

No. of Specimen.	LOCATION OF QUARRY.	Line of Railway.
1.	Brownsville, Clear Creek Co.	Colorado Central.
2.	Pine Creek, Chaffee Co.	D. & R. G.
3.	Platte Canon, Jefferson Co.	D. & S. P.
4.	Hancock, Chaffee Co.	" "
6.	Nathrop, Chaffee Co.	D. & R. G.
7.	Calumet, Chaffee Co.	" "
8.	Chaffee City, Chaffee Co.	" "
9.	Calumet, Chaffee Co.	" "
10.	Sanger quarry, Joliet, Illinois	Union Pacific.
11.	Rockville quarry, Rockville, Mo.	A., T. & S. F.
12.	Armejo, Conejos Co.	D. & R. G.
13.	Berthoud, Larimer Co.	Colorado Central.
14.	Goodnight, Pueblo Co.	D. & R. G.
15.	Beaver Creek, Fremont Co.	" "
16.	Oak Creek, " "	" "
17.	Coal Creek, " "	" "
18.	Trinidad, Las Animas Co.	A., T. & S. F.
19.	Brandford, Fremont Co.	D. & R. G.
20.	Feeney, Manitou, El Paso Co.	" "
21.	Tackahoe, Pueblo Co.	" "
22.	Stout, Larimer Co.	Greeley, S. L. & P.
23.	W. H. Case quarry, near Boulder	Colorado Central.
24.	Morrison, Jefferson Co.	D. & S. P.
25.	" " "	" "
26.	" " "	" "
27.	" " "	" "
28.	" " "	" "
29.	" " "	" "
30.	" " "	" "
31.	" " "	" "
32.	" " "	" "
33.	" " "	" "

- 34. Unknown.
- 35. Dillon, Summit Co. D. & S. P.
- 36. El Moro, Las Animas Co. D. & R. G.
- 37. Eureka.
- 38. Garfield quarry, Douglas Co. D. & R. G.
- 39. Curry quarry, Douglas Co. " "
- 40. Unknown.
- 41. Morrison, Jefferson Co. D. & S. P.
- 50. Buckhorn quarry, Larimer Co. Colorado Central.
- 60. Stout quarry, Larimer Co. Greeley, S. L. & P.

I desire here to acknowledge the valuable assistance given to the Board by Prof. P. H. Van Diest, President of the Denver Society of Civil Engineers, and Prof. Regis Chauvenet, President of the School of Mines, also by Mr. N. W. Sample, Superintendent of motive power of the Denver and Rio Grande Railway shops, for the use of the Company's hydraulic press and gauges. Without the co-operation of the Society and these gentlemen we would have been compelled to send elsewhere for the valuable information contained in this report.

Respectfully,

E. S. NETTLETON,

Committee.

REPORT OF THE COMMITTEE
OF THE
Denver Society of Civil Engineers.

DENVER, COLORADO, July 3, 1884.

To the Committee of the Colorado Board of Capitol Managers :

GENTLEMEN :

Before submitting to your consideration the results of the different tests made on the samples of building stone entrusted to us for experiment and determinations, it appears necessary, for the better understanding of the evidence of our observations, to give a general idea of the character and properties of different building stones and of the influences which affect their durability.

Solidity and durability are the most essential properties of a good building stone. The ancients taught us to pay scrupulous attention to the choice of building material. Despite their poor facilities for transportation, distance was not considered by them a sufficient reason for rejecting those stones which were recognized as capable of withstanding the effects of time. In ancient edifices and monuments which still exist, such as the monument of Carnac, in France; the famous Stone Henge, in England; the Booroo Boodor, in Java, and others elsewhere, durability was the main object sought for. Architecture and decoration require, however, still other properties. Not only are those stones rejected which crumble by exposure or crack by frost, but a fine and uniform grain is desirable; the stones must be easily cut, resist the blow of the hammer and endure heat with-

out cracking; in short, they should possess all the properties requisite to give to buildings a permanent solidity and a pleasing and imposing aspect.

Limestones, granites, sandstones and lavas are the principal stones used in architecture. A great variety of these stones exist in localities easily accessible from Denver.

Limestone effervesces with acids, changes into quicklime by calcination, and is readily cut and polished. These last named properties, together with the fact that limestone occurs generally in thick layers, easily separated, have always brought it into great demand.

Most of the principal buildings in Paris, Marseilles and Lyons are constructed of this material.

Limestone does not resist the destructive action of rain, frost and great heat as well as granite, lavas and many sandstones.

When quarried, it is generally softer than after exposure to air for some time. This is due to the moisture which it contains in the quarry and which it loses only on long exposure. It should, therefore, not be dressed for building purposes until it has lost this moisture or quarry water; otherwise it is liable to crack by frost. Many limestones contain fossils; this does not affect the cohesion of the mass, but causes the color to change soon to a sombre grey on account of the many cavities, which allow the accumulation of dust and the growth of lichens.

Granite, well dressed and especially when polished, is unquestionably the most durable, the brightest colored and the nearest perfect of all building stones. It is composed of quartz, feldspar and mica, firmly aggregated and simultaneously crystalized. The fine grained varieties are extremely hard and indestructible, and can receive a very high polish. Not being stratified, granite is quarried with difficulty, and on account of its hardness is very expensive to cut and dress. Rondelet, a French architect, who has made a special study of building material, estimates that granite is ten times harder to saw than limestone.

The principal buildings and the fortresses of Rio Janeiro are built of a grey granite.

Of the different products of volcanos two kinds can be used for building purposes, the semi-porous (not scori-fied) lava and the volcanic tufa. These have generally a low specific gravity and are on that account desirable for arches, vaults, etc.

Basalt, a variety of compact lava, is too hard to be cut and dressed. The semi-porous lavas are more easily worked, and both on account of their composition (which is analogous with puzzolano and hydraulic cements), and their numerous cavities, they unite firmly and form a solid structure with mortar. Lavas are very useful in irregular or partly dressed blocks to serve as foundations.

Tufa is a volcanic ash or sand, firmly held together by an argillaceous, calcareous or ferruginous cement. It occurs generally in layers or beds, and is readily quarried. It is extensively used in Italy.

Sandstone consists of grains of sand held together by some cement. It occurs in layers or strata of varying thickness and hardness. It is sometimes coarse and sometimes fine grained and is easily quarried. It is dressed with little expense, though not so readily as limestone, and cannot be polished. Dark-colored limestones are found to be generally harder than the light-colored ones, but the reverse is true of sandstones. The light-colored sandstones possess generally the greatest hardness and solidity, have fewer cracks and fissures, and are finer grained and less friable than the red and brown sandstones. Sandstone is the principal building stone of Germany and Spain.

The testing of building stones is naturally divided in experiments on their solidity and on their durability.

To ascertain the solidity of a stone the weight per cubic foot must be known, and its strength, or in other words, the resistance it can oppose to crushing pressure.

General Q. A. Gillmore found that the crushing force required for granites was 8,000 to 24,000 pounds per square inch, for good limestones 3,000 to 20,000 pounds per square inch, for superior sandstones 4,000 to 12,000 pounds per square inch.

Rondelet gives similar figures for good building material in Europe. For basalt he found the compressive

strength 30,000 pounds per square inch; for prime brick 1,000 to 1,800 pounds; common brick 500 to 600 pounds, and good mortar 400 pounds.

Doctor Brix tested a great many building stones for the cathedral in Cologne, also several sandstones used for buildings in Berlin. Amongst other stones he found that a tufa of the Brahl valley crushed under a weight of 750 pounds per square inch. A trachyte of the Drachenfels withstood a pressure of 2,750 pounds; sandstone of Rothenberg, 2,380 pounds; from Seehausen, 1,430 pounds; from Woenslebe, 1,200 pounds per square inch. These sandstones are all used for building in Berlin.

Looking over the annexed Exhibit A, it will be observed that all the Colorado sandstones tested by us are, in this respect, superior to those from the above named places. It must be remarked that some of the stones tested by Brix resisted a greater pressure for some time, but after being kept under the same pressure for several days began to show cracks. It is thus wise to select stones which can withstand, without crushing, from eight to ten times the total pressure they are required to support in the buildings in which they are used.

Rondelet gives examples of great weights supported by the building stones in certain prominent structures. The columns of St. Peter, in Rome, support a weight of 224 pounds per square inch; those of St. Paul, in London, 280 pounds, and those of the Pantheon, in Paris, 426 pounds.

The durability of building stone depends on the degree of resistance it can oppose to the influences of temperature, air and moisture. The destructive action of these influences is called the "weathering." The weather acts both physically and chemically, the former by rain and frost, the latter by the solvent action of atmospheric water and the oxidizing action of the oxygen of the atmosphere.

By these actions the stone loses its component parts, changing its consistence, form and color.

Weathering begins at the surface and goes sometimes quite deep, aided by small fissures and cracks in the stones. Its first stage can be often recognized by change of color or bleaching. Limestones and many sandstones, colored dark by carbon and bitumen, bleach because the carbon matter slowly disappears in the form of carbondioxide. This carbonic acid accelerates the dissolution of the building stone. Hence organic matter is an objectionable constituent of building stone. Stones containing hydrated ferric oxide and ferrous oxide, the first giving a yellowish color, and the other a more bluish or greenish color to the stones, turn, by the effect of the oxygen, evenly or in spots to a dirty red color. The action of the oxygen of the atmosphere is only destructive to those stones which contain ferrous oxide or organic matter. The property of some compounds to absorb nitrogen and carbonic acid from the atmosphere, changing their chemical stability, is destructive to those stones which contain these compounds. Magnesian carbonate has this property to a higher degree than calcium carbonate, and hydrated ferric oxide still greater. Therefore limestones containing much magnesia are less durable than pure calcareous limestones, and of stones which contain hydrated ferric oxide a more or less speedy disintegration must be expected.

Granites, syenites and other feldspathic stones are subject to disintegration by the chemical decomposition of the feldspar; it is principally the orthoclase feldspar, which changes into kaolin by the action of the rain water and the carbonic acid dissolved therein.

Some granites are more subject to this disintegrating process than others; some weathering rapidly, while others resist the action of the atmosphere and water for ages. In general the fine grained granites, in which the particles of quartz and feldspar are evenly divided and dispersed are the best for building purposes. When quartz is in excess the granites are too hard to be dressed; when feldspar is in excess, and in large crystals, speedy disintegration is to be feared; and when mica is in excess the stone has a tendency to exfoliate. The proportion and the size of the component parts are seldom constant over a great extent in granite beds. This limits the quarry-

ing and makes it often difficult to produce great quantities of building stones of exactly the same quality and color. The best guides to selecting good stones in a granite region are furnished by nature herself in the big boulders cliffs, which indicate the kind of composition of its constituents that withstood the effects of atmosphere and erosion the best.

The physical action of water on stones is one of wearing. The rainwater softens many a sandstone, and wind hurling rain drops against the sides, particles are loosened and crumble off. If the stone, when wet, is exposed to a temperature below freezing point, the expansion of the freezing water will wedge the particles of the stone apart.

Thus, the greater the amount of moisture absorbed by a stone, and the smaller the pores of the same, the greater will be the disintegrating effect of frost on the stone. Some stratified rocks contain a considerable amount of clay, and this substance absorbing more or less moisture than the other constituents, exfoliation by frost will follow. Clay is therefore a dangerous ingredient of building material.

Forty specimens of building stones were tested; with two exceptions they are all from quarries in Colorado. The exceptions are No. 10, the well-known Joliet stone, and No. 11, from Rockville, Mo., both excellent building stones.

These stones were subjected to all the different tests, together with the other specimens, because the comparison of the results of the tests made by us with the results of experiments on these stones made elsewhere, gave a fair criterion of the degree of accuracy of the tests made on the Colorado stones.

It may be here mentioned that the results of our tests on these stones agree very well indeed with the results obtained by Gen. Q. A. Gilmore, W. P. Butler and Gustave Hinricks.

The specific gravity and the rate of absorption of all the stones was determined.

The relative resistance to the action of frost and the loss by ignition was determined of all, except numbers 21, 29, 30, 31 and 41.

All except the four specimens of granite were chemically analyzed.

Experiments on the compressive strength were made on all, except Nos. 50 and 60. These specimens were sent in long after the crushing tests took place.

The crushing tests were made with the hydraulic press in the Rio Grande shops. The result of these experiments is given in Exhibit A.

The specimens used for that purpose were all made of an uniform size of 2-inch cubes. As a medium for communicating the pressure, disks of soft pine wood were used.

The mode of testing the stones on their resistance to the action of frost is described in the annexed report of Prof. Regis Chauvenet, of the State School of Mines, who made elaborate and careful analyses of most of the forty samples of building stones.

Prof. J. A. Sewall, of the State University, made also analyses of several specimens. The result of his analyses of stones, not analyzed by Prof. Chauvenet are given in Exhibit B.

To facilitate comparison of the different specimens in regard to their relative degree of excellence, Exhibit C is prepared.

In the column "Strength" is indicated a resistance to crushing pressure from—

15,000—20,000 lbs. per square inch with I.				
10,000—15,000	"	"	"	II.
5,000—10,000	"	"	"	III.
3,000— 5,000	"	"	"	IV.
0— 3,000	"	"	"	V.

In the column "Absorbs" is indicated the ratio of absorption.

From 0	—	2½	per cent with . . .	I.
"	2½—	5	" " " . . .	II.
"	5—	7½	" " " . . .	III.
"	7½—	10	" " " . . .	IV.

In the column "Freezing" is indicated the degree of disintegration by freezing.

From 0	—	0.05	per cent with . . .	I.
"	0.05—	0.1	" " " . . .	II.
"	0.1—	0.5	" " " . . .	III.
"	0.5—	1	" " " . . .	IV.

In the column "Ignition" is indicated the loss by exposing the stones to heat, giving loss as carbonic acid and water.

From 0.	—	1.00	per cent., with	I.
"	1.	—	2.5	" " II.
"	2.5	—	5	" " III.
"	5.00—	8.00	" " "	IV.

For sandstones, is in the column "Alkalies" indicated the amount of potassa and soda.

From 0.—	2	per cent, with	I.
"	2.—	5	" " II.
"	5.—	7	" " III.
"	7.—	10	" " IV.

For sandstones is also indicated in the column "Iron Oxides," the amount of hydrated ferric and ferrous oxide:

From 0	—	1	per cent., with	I.
"	1	—	2½	" " II.
"	2½—	5	" " "	III.
Over .5			" " "	IV.

The stones which resist the greatest pressure, are the least subject to the action of frost, absorb the least amount of water, are in that way indicated with the lowest figures in each column.

The stones having the lowest aggregate of all the figures in the different columns will thus, in a measure, have a superiority over stones indicated with a greater aggregate. This gives only an approximate method of

comparing. Color, grain, etc., have influence on the selection of stones for building purposes, all other qualities being equal.

From all evidence before us, we summarize the classification of the Colorado building stones under consideration, in their order of excellence, as follows:

Limestones—

First, No. 7.
Second, No. 9.

Granites—

First, No. 1.
Second, Nos. 3, 2, 4.

Sandstones—

First, Nos. 23, 35.
Second, Nos. 22, 34, 24, 50, 29, 28, 60.
Third, Nos. 18, 12, 15, 40, 32, 36, 26.
Fourth, Nos. 27, 37, 13, 25, 17, 19, 20, 16, 14.

Lavas—

Nos. 6, 38, 39.

We cannot end this report without making two suggestions. In the first place we would recommend a visit to the quarries whence the specimens came, which attract the most attention for their excellence, in order to ascertain if the bed from which these specimens were taken has sufficient extent to produce all the stone necessary for a structure of so vast dimensions as the capitol building will have.

Often it happens that stones coming out of the same quarry have different properties in regard to weathering. The color may also differ considerably at different parts of the quarry.

A thorough study of the outcrops and of pieces which have been exposed to the influence of rain, snow and frost during many seasons, is essential.

Second, we would recommend when a selection is made, that the stone blocks be quarried long before they are dressed and placed in the building. Lime and sandstones require seasoning as well as lumber.

When these stones, principally those having small pores, are dressed before they are slowly freed of their quarry water in the shade, and are thus exposed to the hot sun, the moisture in the stone will suddenly expand and cause the stone to shale off and form fine cracks near the surface.

Frost will have the same disintegrating effect on otherwise excellent and durable stones. When stones are once thoroughly dry, the best means of preservation is to prevent the intrusion of water by closing the pores on the exposed surface.

The pores of granites and limestones can be best closed by giving these stones a polish. Sandstones will be preserved and can be polished when their surfaces are treated with a solution, filling the pores with a silicate of alumina, as for instance is done in the quarries of Saxonia, in Neundorf, near Pirna.

Such preservatives not only prevent moisture entering the stone, but prevent dust settling in the pores and also the formation of lichens, which not only give an ugly appearance to the stone but accelerate the disintegration.

DENVER SOCIETY OF CIVIL ENGINEERS,

By P. H. VAN DIEST, }
E. S. NETTLETON, } *Committee.*
JOHN PIERCE, }
ROBT. B. STANTON, }
J. A. SEWALL, }

EXHIBIT A.

No. of Specimen.	DESCRIPTION.	Dimensions of Specimen, Inches.	Position Given by Crushing Test.	Strength of Specimen.	Strength Per Square Inch.	Specific Gravity.	Weight of One Cubic Foot Stone.	Ratio of Absorption Per Cent.	REMARKS.
GRANITES.									
1	Grey color, very fine and evenly divided, particles of black mica, glossy feldspar.	2x1.94	.....	74,146	19,110	2.71	168.48	0.17	Broke suddenly in wedges.
2	Mica as in No 1, but more feldspar, not so evenly divided.	2x2	.....	56,558	14,137	2.67	164.74	0.31	Broke in small wedges.
3	Flesh colored, coarse grain.	2x1.98	.....	65,345	16,501	2.65	164.11	0.19	Broke suddenly, middle part powdering.
4	Grey, feldspar in excess, mica coarser than in 1 and 2.	2x2	.....	47,752	11,938	2.71	167.86	0.26	Powdered.
LIMESTONES.									
7	Dolomite, banded, blue streaks on white; very compact; fine grain.	2x2	Bed.	62,832	15,798	2.87	179.09	0.07	Crushed at once to plates.
9	Marble, color white, slightly scamed.	2x1.97	Bed.	54,035	13,715	2.86	177.84	0.09	Idem.
10	Joliet limestone, lls., color dull grey; fine grain.	2x2	Bed.	63,683	15,771	2.75	165.36	1.36	Crushed at once.
11	.....	2x1.98	Edge.	54,789	13,836	.....	.....	.....	Flakes sprung off first, then crushed to pieces.
SANDSTONES.									
11	Rockville, Mo., grey.	2x1.97	Bed.	23,875	6, 60	2.53	137.28	5.77	Cracked first, then crushed to powder.
12	Grey, with yellow tinge.	2x2	Bed.	31,164	7,420	2.50	139.77	4.42	Broke in three wedge shaped pieces.
13	Light red.	2.05x2.05	Edge.	24,630	6,157	.....	.....	.....	Idem.
14	Porous, friable, yellowish white.	2.08x2.08	Edge.	29,656	6,849	2.49	139.77	4.44	Broke in teeth form.
15	Light grey, firm texture, fine grain, shows specks of iron oxide.	2.03x2.03	.....	Did hardly raise needle of gauge.	.....	2.39	179.92	6.94	Broke suddenly before reading was possible, soft stone.
16	Yellow, fine grain.	2x2	Bed.	21,614	5,403	2.45	134.78	5.28	Crushed to very small pieces.
17	.....	2x2	Edge.	18,598	4,619	.....	.....	.....	Idem.
18	Yellowish grey, inclining to brown.	1.96x1.96	Bed.	11,958	2,903	2.41	119.81	9.69	Broke in teeth.
19	Pure light grey, fine grain.	2x2	Edge.	10,555	2,639	.....	.....	.....	Idem.
20	.....	1.90x1.96	Edge.	12,063	3,141	2.44	130.42	6.05	.....
21	.....	1.96x1.96	Bed.	39,710	10,337	2.64	181.01	3.12	Clean break in few wedge shaped pieces.
22	.....	1.98x1.98	Edge.	35,186	8,975	.....	.....	.....	Idem.

EXHIBIT A.—Continued.

No. of Specimen.	DESCRIPTION.	Dimensions of Specimen, Inches.	Position Given by Test.	Strength of Specimen.	Strength Per Square Inch.	Specific Gravity.	Weight of One Cubic Foot Stone.	Ratio of Absorption, Per Cent.	REMARKS.
19	Brown, fine grain	2.07x1.97	Bed.	17,593	4,333	2.49	126.05	8.99	
20	Dull white, fine in grain	2x2.03	Edge.	17,090	4,300				Broke off on one side, probably by uneven pressure.
21	White, coarse grain	2.02x2.2	Bed.	13,069	3,204	2.51	134.16	6.46	Clean break.
22	White, fine grain	1.98x1.98	Edge.	16,085	4,093				Crushed to fine sand.
23	Light pink, firm, very compact in structure	2x2	Bed.	14,577	3,644	2.43	126.41	6.33	Broke very suddenly to pieces.
24	Fine grain, porous	1.98x1.98	Edge.	5,768	12,916	2.56	153.50	1.54	Idem.
25	Light red	1.98x1.98	Bed.	55,794	14,197	2.49	151.01	1.13	Idem.
26	Dark red, very compact	1.98x1.98	Edge.	66,601	16,838				Idem.
27	Red, coarse granules of quartz inclosed	1.98x1.98	Edge.	47,752	12,186	2.46	138.16	6.00	Average of two tests.
28	Pinkish white, very friable	2.07x2.07	Bed.	30,793	7,179	2.46	136.53	4.64	Much smashed and powdered.
29	Mottled grey, streaks of blackish clay	2.07x2.07	Edge.	27,646	6,452	2.46	136.53	4.64	Idem.
30	Grey mottled, clayey	2x2	Bed.	21,363	5,341	2.61	138.50	6.77	Not very good test.
31	Dull white	2.03x2.03	Edge.	53,266	12,198				Broke in many teeth formed pieces.
32	Mottled with spots of a yellow and a dark mineral	2.01x2.01	Edge.	45,239	11,198	2.64	160.37	0.85	Idem.
33	Light grey, porous	2.07x2.07	Bed.	42,212	9,385				Powdered.
34	Light grey, porous	2.11x1.95	Edge.	40,966	9,957	2.41	135.41	4.64	Smashed to pieces.
35	Light grey, porous	2.06x2.06	Bed.	31,416	7,493	2.41	135.41	4.64	Idem.
36	Light grey, porous	1.98x2.06	Bed.	37,699	8,616	2.51	142.31	2.42	
37	Grey mottled, clayey	2.03x2.03	Edge.	33,929	8,316				
38	Dull white	2.03x2.03	Bed.	27,646	6,769	2.47	135.58	5.31	
39	Dull white	1.98x1.98	Bed.	27,646	7,032	2.47	137.32	3.96	
40	Dull white	2x2	Edge.	27,646	6,911				
41	Dull white	2.01x2.01	Bed.	20,066	4,876	2.50	135.41	6.95	Crushed to fine sand.
42	Pinkish tinge, fine grain	2.02x2.02	Edge.	21,876	5,832				Not so badly pulverized.
43	Pinkish tinge, fine grain	2.03x2.03	Bed.	66,821	44,764	2.54	150.38	1.99	Spung to pieces with a loud report.
44	Mottled with spots of a yellow and a dark mineral	2.05x2.05	Edge.	55,292	13,164				
45	Mottled with spots of a yellow and a dark mineral	2.01x2.01	Edge.	52,779	13,064	2.50	150.38	1.52	
46	Light grey, porous	2x2	Bed.	47,752	11,819				
47	Light grey, porous	1.98x1.98	Edge.	17,341	4,535	2.46	132.29	5.89	
48	Light grey, porous	1.98x1.98	Edge.	13,069	3,334				

SANDSTONES.—Continued.

EXHIBIT A.—Continued.

No. of Specimen.	DESCRIPTION.	Dimensions of Specimen, Inches.	Position Given by Crushing Test.	Strength of Specimen.	Strength Per Square Inch.	Specific Gravity.	Weight of One Cubic Foot Stone.	Ratio of Absorption, Per Cent.	REMARKS.
SANDSTONES.—Continued.									
37	Yellowish white, friable	2.02x2.02	Bed.	16,887	4,765	2.40	127.30	7.03	
40	Light brownish red, firm	2.02x2.02	Bed.	42,725	10,476	2.46	136.66	4.89	Clear break.
41	Red, conglomerate of little quartz pebbles and iron oxide cement	2x2	Bed.	17,090	4,272	2.67	140.85	1.35	
41	Iron oxide cement	2x2	Edge.	15,582	3,895	2.67	140.85	1.35	
LAVAS.									
6	Ash grey	2x2	..	29,656	7,414	2.45	141.65	3.18	Cracked before crushing.
38	Pink color	2x2	1st	32,416	8,104	2.14	109.20	9.70	
38	Pink color	2x2	2d	33,929	8,316	2.14	109.20	9.70	
39	Grey color	2.02x2.02	1st	43,983	10,675	2.23	119.18	7.36	
39	Grey color	2.02x2.02	2d	46,244	11,800	2.23	119.18	7.36	
Test Made on Cement.									
	Colorado Clear Cement (Denver Works)			15,079	4,245	2.67	140.85	1.35	

EXHIBIT B.

No. 21.		No. 16.	
Silica	85.4	Ferric oxide	4.46 per cent.
Ferric oxide	trace		
Alumina	14.56	No. 17.	
	<u>99.96</u>	Ferrous oxide	2.47 per cent.
No. 29.			
Silica	82.00	No. 18.	
Alumina	17.70	Ferrous oxide	2.35 per cent.
	<u>99.70</u>		
No. 30.		No. 19.	
Silica	91.00	Ferrous oxide	3.54 per cent.
Alumina	6.28		
	<u>99.28</u>	No. 25.	
No. 31.		Ferric oxide	3.18 per cent.
Silica	82.00		
Alumina	17.73	No. 36.	
	<u>99.73</u>	Ferrous oxide	2.88
No. 41.			
Silica	84.30	No. 40.	
Ferric oxide	4.70	Ferric oxide	1.31
Alumina	10.90		
	<u>98.90</u>		

EXHIBIT C.

No. of Sample.	Strength.	Absorbs.	Freezing.	Ignition.	Alkalies.	Iron Oxides.	Aggregate.
GRANITES.							
1	I.	I.	I.	.....	.....	.....	.....
2	II.	I.	I.	.....	.....	.....	.....
3	I.	I.	I.	.....	.....	.....	.....
4	II.	I.	I.	.....	.....	.....	.....
LIMESTONES.							
7	I.	I.	I.	I.	.....	.....	.....
9	II.	I.	I.	I.	.....	.....	.....
SANDSTONES.							
12	III.	II.	III.	II.	II.	II.	14
13	III.	II.	III.	IV.	II.	II.	16
14	V.	III.	III.	II.	I.	I.	16
15	IV.	III.	II.	II.	I.	III.	15
16	IV.	IV.	IV.	II.	II.	III.	19
17	IV.	III.	IV.	III.	I.	II.	17
18	II	II.	III.	III.	II.	II.	14
19	IV.	IV.	III.	II.	III.	III.	19
20	IV.	III.	III.	III.	II.	II.	17
22	II.	I.	I.	III.	II.	I.	10
23	I.	I.	I.	I.	I.	II.	7
24	III.	III.	I	I.	I.	I.	10
25	III.	II.	III.	IV.	I.	II.	15
26	II.	I.	III.	III.	II.	III.	14
27	II.	I.	III.	III.	II.	III.	14
28	III.	II.	II.	I.	I.	I.	10
29	III.	II.	III*	II*	I.	I.	12
32	III.	III.	III.	II.	II.	I.	14
34	II.	I.	III.	II.	I.	I.	10
35	IV.	I.	I.	I.	I.	I.	7
36	II.	III.	III.	II.	II.	II.	16
37	IV.	IV.	III.	II.	I.	I.	15
40	II.	II.	III.	II.	I.	II.	12
50	III*.	II.	I.	I.	I.	II.	10
60	III*.	I.	I.	II.	I.	I.	9
LAVAS.							
6	III	II.	I.	I.	.....	.....	.....
38	III.	IV.	III.	I.	.....	.....	.....
39	I.	IV.	III.	II.	.....	.....	.....
Joliet stone, Ills.	I	I.	II.	I.	I.	I.	7
Rockville stone, Mo.	III.	III.	III.	II.	II.	I.	14

*Approximative.

GOLDEN, COLORADO, JUNE 23, 1884.

To the Committee of the Board of Capitol Managers,

GENTLEMEN:

I present herewith analyses and other tests of samples of building stones, forwarded to me by Mr. P. H. Van Diest.

In tabulating the results, the samples are designated simply by the numbers, as, with two exceptions, I know nothing of their respective localities. The exceptions are Nos. 50 and 60, being samples sent by the Union Pacific Railroad Company at the same time as the ones sent by your body. Their localities are given in the tables.

In making the specific gravity tests, pieces of uniform size (2 by 1 by $\frac{1}{2}$ inch) were taken, and, after weighing, were allowed to soak in pure water for some hours before being weighed in water. The results are given in the tables as "Sp. gr."

After this determination, each piece was weighed in air, the surfaces having been wiped dry. The gain in weight indicates the relative porosity, and is given under head "Absorbs," the figures showing the per centage of its own weight which each stone can absorb of water.

By subtracting from the weight of the stone *when saturated with water*, its weight *in water*, we obtain the weight of water equal in bulk to the stone, *considered as a geometric solid only*. It differs from the remainder obtained in determination of "Sp. gr." proper, by the weight of the water contained in the pores of the stone. Dividing the weight of the dry stone by this remainder, we obtain a figure which I designate as "Apparent Sp. gr.," and which indicates the relative weight of a mass of the stone to an equal volume of water. By multiplying "Apparent Sp. gr." by the weight of one cubic foot of water, the weight of one cubic foot of the stone is obtained. This computation has been made for each stone, and the results will be found in place with the other data.

In order to test the effect of frost, a special apparatus was constructed, consisting of a shallow pan with over-

lapping lid, in which the samples were placed, each one having been thoroughly saturated with water. This pan was supported in the center of a large box, capable of holding two hundred pounds of ice, and provided with a stop-cock for drainage. A mixture of ice and salt was packed closely about the pan, and a temperature below freezing was maintained in one experiment for twenty-four hours, in a second one for over forty-eight hours. None of the samples broke under this test, though they were all frozen to the pan in each experiment. Being thawed, dried, and re-weighed, each was found to have suffered a loss in weight, whose per centage is given under the head "Loss by Freezing." The short time occupied hardly enables us to draw any conclusions as to the probable effect of "weathering," nevertheless, the variations are seen to be great, running from a few thousandths of one per cent. up to seven-tenths of one per cent.

In making the analyses, alumina and oxide of iron were not separated, except in a single instance. When one of these only is named, it indicates a very great preponderance of the same, but not to the entire exclusion of the other. When both are named, the one placed first is the largest in amount.

Although it is hardly within the scope of this report to recommend or condemn any special sample, I may say that a stone with a high "absorption" figure should be regarded with suspicion. Whether alkalis are injurious to the durability of a sandstone depends largely upon their state of combination, and no experiments upon this point were made.

Generally, marble, dolomite and compact limestones are more durable even than granite, while sandstones must in this respect take a lower place on the list. Lavas are more durable as they approach a slagged condition.

My thanks are due to Dr. Geo. S. Mackenzie, Instructor in Chemistry at the State School of Mines, for a vast amount of careful and accurate work on the analytical portion of the investigation. A majority of the deter-

minations, exclusive of the alkalis, are from his hands.

Much assistance was also rendered by Mr. Chas A. Gehrmanu, student in Quantitative Analysis at the School, whose work (chiefly on the Alkalies) was under the supervision of Prof. M. Moss. To the latter gentleman I am also indebted for the details of the freezing device, and for aid in calculating and revising the results.

With the hope that the present report may assist the Commission in the selection of a suitable material for the Capitol building, I remain,

Respectfully yours,

REGIS CHAUVENET.

ANALYSES.

To facilitate comparison the respective localities are placed behind the numbers.

No. 1.—Grey Granite. Brownsville, Clear Creek County.
Not analysed.

Sp. Gr., 2.71 Apparent Sp. Gr., 2.70
Absorbs 0.17 per ct. Cu. foot weighs 168.48 lbs.
Loss by freezing, . . . 0.009 per cent.

No. 2.—Grey Granite. Pine Creek, Chaffee County. Not analysed.

Sp. Gr., 2.67 Apparent Sp. Gr., 2.64
Absorbs 0.31 per ct. Cu. foot weighs 164.74 lbs.
Loss by freezing, . . . 0.056 per cent.

No. 3.—Red Granite. Platte Canon, Jefferson County.
Not analysed.

Sp. Gr., 2.65 Apparent Sp. Gr., 2.63
Absorbs 0.19 per ct. Cu. foot weighs 164.11 lbs.
Loss by freezing, . . . 0.033 per cent.

No. 4.—Grey Granite. Hancock, Chaffee County. Not analysed.

Sp. Gr., 2.71 Apparent Sp. Gr., 2.69
Absorbs 0.26 per ct. Cu. foot weighs 167.86 lbs.
Loss by freezing, . . . 0.023 per cent.

No. 6.—Lava. Nathrop, Chaffee County. Color, ash grey; shows many small cavities not affecting its general appearance.

Silica	76.56		
Alumina & Ox. Iron	14.25	Sp. Gr.	2.45
Lime	1.17	Apparent Sp. Gr.	2.27
Magnesia	0.42	Absorbs	3.18 p. ct
Potassa	3.78	Cubic ft. weighs	141.65 lbs.
Soda	3.93	Loss by freezing	0.034 p. ct

100.11

No. 7.—Dolomite, Calumet, Chaffee County. Banded, blue streaks on white. Very compact and fine in grain.

Silica	0.66	Sp. Gr.	2.87
Ox. Iron	0.41	Apparent Sp. Gr.	2.87
Lime	31.02	Absorbs	0.07 p. ct
Magnesia	21.04	Cubic ft weighs	179.09 lbs.
Carbonic Acid	46.90	Loss by freezing	0.004 p. ct

100.03

No. 9.—Marble, Calumet, Chaffee County. Color, white; slightly seamed.

Silica	1.57	Sp. Gr.	2.86
Alumina	0.57	Apparent Sp. Gr.	2.85
Lime	33.85	Absorbs	0.09 p. ct
Magnesia	17.88	Cubic ft. weighs	177.84 lbs.
Carbonic Acid	45.96	Loss by freezing	0.022 p. ct

99.83

No. 10.—Limestone, Sanger Quarry, Joliet, Illinois. Fine in grain, but showing small cavities. Color, dull grey.

Silica	15.25		
Alumina	4.68	Sp. Gr.	2.75
Ox. Iron	1.00	Apparent Sp. Gr.	2.65
Lime	25.63	Absorbs	1.36 p. ct
Magnesia	14.42	Cubic ft. weighs	165.36 lbs.
Carbonic Acid	38.90	Loss by freezing	0.065 p. ct

99.88

No. 11.—Sandstone, Rochville Quarry, Rochville, Mo.
Grey, with yellow tinge. Fine grain.

Silica	82.07		
Alumina & Ox. Iron	11.10		
Lime	0.98	Sp. gr.	2.53
Magnesia	0.81	Apparent sp. gr.	2.20
Potassa	1.29	Absorbs	5.77 p. ct
Soda	1.06	Cubic ft. weighs	137.28 lbs.
Loss by ignition . . .	2.48	Loss by freezing	0.229 p. ct
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	99.79		

No. 12.—Sandstone, Armejo, Conejos County. Grey,
similar in grain to No. 11.

Silica	81.01		
Alumina & Ox. Iron	13.02		
Lime	0.65	Sp. Gr.	2.50
Magnesia.	0.56	Apparent Sp. Gr.	2.24
Potassa	1.71	Absorbs	4.42 p. ct
Soda	1.59	Cubic ft. weighs	139.77 lbs.
Loss by ignition . . .	1.62	Loss by freezing	0.243 p. ct
	<hr/>		
	100.16		

No. 13.—Sandstone, Berthoud, Larimer County. Color,
light red. Effervesces with acids. Very
similar to No. 25.

Silica	74.86		
Ox. Iron	4.05	Sp. Gr.	2.49
Lime	10.25	Apparent Sp. Gr.	2.24
Magnesia	1.10	Absorbs	4.44 p. ct
Loss by ignition . . .	7.90	Cubic ft weighs	139.77 lbs.
Alkalies, undetermined		Loss by freezing	0.110 p. ct
	<hr/>		
	98.16		

No. 14.—Sandstone, Goodnight, Pueblo County. Porous,
and very friable. Yellowish white in color.
Very similar to No. 37.

Silica	89.94	Sp. Gr.	2.39
Alumina & Ox. Iron	5.62	Apparent Sp. Gr.	2.05
Lime	1.95	Absorbs	6.94 p. ct
Magnesia	0.19	Cubic ft. weighs	127.92 lbs.
Loss by ignition	2.46	Loss by freezing	0.166 p. ct
	<hr/>		
	100.16		

No. 15.—Sandstone, Beaver Creek, Fremont County.
Color, light grey. Firm texture, fine grain.
Shows fine specks of oxide of iron.

Silica	92.92	Sp. Gr.	2.45
Ox. Iron	4.61	Apparent Sp. Gr.	2.16
Lime	0.90	Absorbs	5.28 p. ct
Magnesia	0.23	Cubic ft. weighs	134.78 lbs.
Loss by ignition	1.41	Loss by freezing	0.062 p. ct
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	100.07		

No. 16.—Sandstone, Oak Creek, Fremont County. Yellow color, fine grain.

Silica	76.02		
Alumina & Ox. Iron	16.42		
Lime	2.10	Sp. Gr.	2.41
Magnesia	0.88	Apparent Sp. Gr.	1.92
Potassa	2.24	Absorbs	9.69 p. ct
Soda	1.04	Cubic ft. weighs	119.81 lbs.
Loss by ignition	1.15	Loss by freezing	0.700 p. ct
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	99.85		

No. 17.—Sandstone, Coal Creek, Fremont County. Yellow-grey, inclining to brown.

Silica	74.20		
Alumina & Ox. Iron	17.02		
Lime	2.68	Sp. Gr.	2.44
Magnesia	1.23	Apparent Sp. Gr.	2.09
Potassa	1.04	Absorbs	6.05 p. ct
Soda	0.65	Cubic ft. weighs	130.42 lbs.
Loss by ignition . . .	2.81	Loss by freezing	0.649 p. ct
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	99.63		

No. 18.—Sandstone, Trinidad, Las Animas County. Pure light grey, fine grain.

Silica	71.00		
Alumina & Ox. Iron	19.39		
Lime	0.98	Sp. Gr.	2.64
Magnesia	0.19	Apparent Sp. Gr.	2.42
Potassa	1.64	Absorbs	3.12 p. ct
Soda	3.80	Cubic ft. weighs	151.01 lbs.
Loss by ignition . . .	2.87	Loss by freezing	0.324 p. ct
	<hr/>		
	99.87		

No. 19.—Sandstone, Brandford, Fremont County. Brown color, probably quite alkaline.

Silica	75.77		
Alumina & Ox. Iron	14.57	Sp. Gr.	2.49
Lime	0.95	Apparent Sp. Gr.	2.02
Magnesia	0.49	Absorbs	8.99 p. ct
Loss by ignition . . .	1.68	Cubic ft. weighs	126.05 lbs.
Alkalies, not determined.		Loss by freezing	0.322 p. ct
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	93.46		

No. 20.—Sandstone, Feeney, Manitou, El Paso County.
Dull white, fine in grain.

Silica	70.75		
Alumina & Ox. Iron .	17.68		
Lime	1.15	Sp. Gr.	2.51
Magnesia	0.76	Apparent Sp. Gr.	2.15
Potassa	2.25	Absorbs	6.46 p. ct
Soda	3.67	Cubic ft. weighs	134.16 lbs.
Loss by ignition . . .	3.34	Loss by freezing	0.190 p. ct
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	99.60		

No. 22.—Sandstone, Stout, Larimer County. Effervesces
with acids, fine grain. Color pinkish-grey.

Silica	84.07		
Alumina & Ox. Iron .	2.95		
Lime	4.36	Sp. Gr.	2.56
Magnesia	0.91	Apparent Sp. Gr.	2.46
Potassa	1.24	Absorbs	1.54 p. ct.
Soda	2.32	Cubic ft. weighs	153.50 lbs.
Loss by ignition . . .	4.21	Loss by freezing	0.050 p. ct
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	100.06		

No. 23.—Sandstone, W. H. Case Quarry, near Boulder.
Light pink, firm, works to fine edges. Very
compact in structure.

Silica	95.37	Sp. Gr.	2.49
Ox. Iron	2.40	Apparent Sp. Gr.	2.42
Lime	0.92	Absorbs	1.13 p. ct.
Magnesia	0.50	Cubic ft. weighs	151.01 lbs.
Loss by ignition . . .	0.55	Loss by freezing	0.007 p. ct
	<hr/>		
	99.74		

No. 24.—Sandstone, Morrison, Jefferson County. Fine grain, rather porous. Color light yellow.

Silica	96.06	Sp. Gr.	2.47
Alumina & Ox. Iron	2.25	Apparent Sp. Gr.	2.15
Lime	0.81	Absorbs	6.00 p. ct.
Magnesia	0.32	Cubic ft. weighs	134.16 lbs.
Loss by ignition	0.60	Loss by freezing	0.022 p. ct.
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	100.04		

No. 25.—Sandstone, Morrison, Jefferson County. Effervesces with acids. Very similar to No. 13, in all respects. Light red color.

Silica	79.20	Sp. Gr.	2.48
Alumina & Ox. Iron	4.23	Apparent Sp. Gr.	2.22
Lime	8.44	Absorbs	4.64 p. ct.
Magnesia	0.93	Cubic ft. weighs	138.53 lbs.
Loss by ignition	6.60	Loss by freezing	0.120 p. ct.
	<hr/>		
	99.40		

No. 26.—Sandstone, Morrison, Jefferson County. Dark red, very compact. Alkalies are in a micaceous mineral included, visible under glass.

Silica	74.02		
Ox. Iron	16.31		
Lime	1.91	Sp. Gr.	2.61
Magnesia	0.60	Apparent Sp. Gr.	2.54
Potassa	3.39	Absorbs	0.77 p. ct.
Soda	0.23	Cubic ft. weighs	158.50 lbs.
Loss by ignition	3.71	Loss by freezing	0.251 p. ct.
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	100.17		

No. 27.—Sandstone, Morrison, Jefferson County. Coarse granules of quartz inclosed. Red.

Silica	68.56		
Ox. Iron & Alumina	20.63		
Lime	1.36	Sp. Gr.	2.64
Magnesia	0.80	Apparent Sp. Gr.	2.57
Potassa	2.21	Absorbs	0.85 p. ct.
Soda	2.25	Cubic ft. weighs	160.37 lbs.
Loss by ignition . . .	3.85	Loss by freezing	0.277 p. ct.
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	99.66		

No. 28.—Sandstone, Morrison, Jefferson County. Nearly white, or pinkish white. Very friable.

Silica	95.70	Sp. Gr.	2.41
Alumina & Ox. Iron .	2.67	Apparent Sp. Gr.	2.17
Lime	0.96	Absorbs	4.64 p. ct.
Magnesia	0.14	Cubic ft. weighs	135.41 lbs.
Loss by ignition . . .	0.68	Loss by freezing	0.083 p. ct.
	<hr/>		
	100.15		

No. 32.—Sandstone, Morrison, Jefferson County. Dull white in color.

Silica	78.65		
Alumina	13.06		
Lime	1.65	Sp. Gr.	2.50
Magnesia	0.58	Apparent Sp. Gr.	2.17
Potassa	3.28	Absorbs	5.95 p. ct.
Soda	0.55	Cubic ft. weighs	135.41 lbs.
Loss by ignition . . .	1.86	Loss by freezing	0.174 p. ct.
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	99.63		

No. 34.—Sandstone, unknown locality. Pinkish tinge, fine grain, compact, with sharp edges in cut stone.

Silica	94.55	Sp. Gr.	2.54
Ox. Iron & Alumina .	1.53	Apparent Sp. Gr.,	2.41
Lime	2.29	Absorbs	1.99 p. ct
Magnesia	0.21	Cubic ft. weight	150.38 lbs.
Loss by ignition . . .	1.35	Loss by freezing .	0.119 p. ct
	<hr/>		
	99.93		

No. 35.—Sandstone, Dillon, Summit County. Firm texture, mottled with small spots of yellow (hydrated) oxide of iron and a darker (nearly black) mineral.

Silica	94.02	Sp. Gr.	2.50
Alumina & Ox. Iron .	3.40	Apparent Sp. Gr.,	2.41
Lime	1.72	Absorbs	1.52 p. ct
Magnesia	0.18	Cubic ft. weighs	150.38 lbs.
Loss by ignition . . .	0.86	Loss by freezing,	0.040 p. ct
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	100.18		

No. 36.—Sandstone, El Moro, Las Animas County. Porous, probably quite alkaine. Color light grey.

Silica	76.29	Sp. Gr.	2.46
Alumina & Ox. Iron .	15.91	Apparent Sp. Gr.,	2.12
Limé	0.91	Absorbs	5.89 p. ct
Magnesia	0.50	Cubic ft. weighs	132.29 lbs.
Loss by ignition . . .	2.07	Loss by freezing,	0.471 p. ct
Alkalies not determined.			
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	95.68		

No. 37.—Sandstone, Eureka. Very friable, yellowish white in color. Very similar in all respects to No. 14.

Silica	90.71	Sp. Gr.	2.40
Alumina & Ox. Iron	5.11	Apparent Sp. Gr.,	2.04
Lime	1.52	Absorbs	7 03 p. ct
Magnesia	0.23	Cubic ft. weighs	127.30 lbs.
Loss by ignition	2.58	Loss by freezing,	0.209 p. ct
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	100.15		

No. 38.—Lava, Garfield Quarry, Douglas County. Pink color; in other respects resembles No. 6.

Silica	73.20	Sp. Gr.	2.14
Alumina & Ox. Iron	16.50	Apparent Sp. Gr.,	1.75
Lime	3.10	Absorbs	9.76 p. ct
Magnesia	1.45	Cubic ft. weighs	109.20 lbs.
Potassa	3.20	Loss by freezing,	0.161 p. ct
Soda	1.42		
Loss by ignition	0.75		
	<hr/>		
	99.62		

No. 39.—Lava, Curry Quarry, Douglas County. Grey color; in other respects resembles No. 38.

Silica	75.26	Sp. Gr.	2.23
Alumina & Ox. Iron,	14.15	Apparent Sp. Gr.,	1.91
Lime	2.02	Absorbs	7.36 p. ct
Magnesia	trace	Cubic ft. weighs	119.18 lbs.
Potassa	4.62	Loss by freezing,	0.200 p. ct
Soda	3.05		
Loss by ignition	1.03		
	<hr/>		
	100.13		

No. 40.—Sandstone, unknown locality. Light brownish red; very firm.

Silica	83.68	Sp. Gr.	2.46
Ox. Iron & Alumina	9.45	Apparent Sp. Gr.,	2.19
Lime	1.42	Absorbs	4.89 p. ct
Magnesia	0.90	Cubic ft. weighs	136.66 lbs.
Potassa	1.22	Loss by freezing,	0.135 p. ct
Soda	0.78		
Loss by ignition	2.01		
	<hr/>		
	99.46		

No. 50.—Sandstone; "Buckhorn Quarry," U. P. R. R.; 'nearly white; highly siliceous.

Silica	96.45	Sp. Gr.	2.45
Ox. Iron	1.90	Apparent Sp. Gr.,	2.22
Lime	1.06	Absorbs	4.27 p. ct
Magnesia	0.64	Cubic ft. weighs	138.53 lbs.
	<hr/>	Loss by freezing,	0.018 p. ct
	100.05		

No. 60.—Sandstone; U. P. R. R. quarry, at Stout; grey color, with flecks of rust.

Silica	95.50	Sp. Gr.	2.49
Ox. Iron	0.78	Apparent Sp. Gr.,	2.35
Lime	0.88	Absorbs	2.35 p. ct
Magnesia	1.45	Cubic ft. weighs	146.64 lbs.
Loss by ignition	1.18	Loss by freezing,	0.015 p. ct
	<hr/>		
	99.79		

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