

Smithsonian inst.

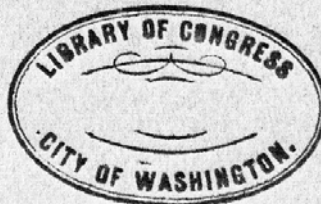
SMITHSONIAN

MISCELLANEOUS COLLECTIONS.

VOL. XVIII.



"EVERY MAN IS A VALUABLE MEMBER OF SOCIETY WHO BY HIS OBSERVATIONS, RESEARCHES,
AND EXPERIMENTS PROCURES KNOWLEDGE FOR MEN."—SMITHSON.



WASHINGTON:
PUBLISHED BY THE SMITHSONIAN INSTITUTION.

1880.

SMITHSONIAN MISCELLANEOUS COLLECTIONS.

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Smithsonian institution

THE
SMITHSONIAN INSTITUTION:

JOURNALS

OF THE

BOARD OF REGENTS, REPORTS OF COMMITTEES,
STATISTICS, ETC.

EDITED BY

WILLIAM J. RHEES.



WASHINGTON:

PUBLISHED BY THE SMITHSONIAN INSTITUTION.

1879.

State, should they desire information as regards my ability to perform any engagements I may enter into. Please address me at this place if you wish me to go on to the city of Washington.

Very respectfully, your obedient servant,

SAM'L M. LEIPER.

To the BUILDING COMMITTEE OF THE SMITHSONIAN INSTITUTION.

Laid on the table.

The chairman submitted, from Dr. David Dale Owen, the following report on the Baltimore county quarries :

To the Building Committee of the Smithsonian Institution :

GENTLEMEN : In conformity with your instructions, I have examined a number of quarries in the vicinity of Baltimore, and also one at the Point of Rocks, with a view to ascertain the extent and quality of the building material they furnish, and report as follows :

Extensive quarries of white crystalline marble commence about twelve and a half to thirteen miles from Baltimore, near a small village called Texas, or Clarksville, on the line of the Susquehanna railroad.

The first quarry visited is that owned by Fell and Robinson, who are largely engaged in lime burning. It lies on the west side of, and only a few paces from, the main track of the railroad. The surface layers are, by barometrical measurement, forty feet above the level of Cold Spring creek, a small stream running through this quarry ; and ledges of marble extend down to the banks of that stream and form its bed ; varying, however, at different heights, somewhat in texture and appearance.

The purest variety in this quarry is of a coarse and highly crystalline structure, varying in tint from a pure white to a faint shade of bluish or grayish white, as may be seen by inspection of the various specimens. It is known to the quarrymen under the name of "*alum limestone*."

The course of this purer variety is northwest and southeast, with an average width of 150 feet, and extending 525 feet back to Fell and Robinson's west boundary line. Taking the average depth of this quarry at 18 feet, its solid contents may, therefore, be estimated at $18 \times 150 \times 525 = 1,417,500$ cubic feet, or 56,700 perches, in this single quarry.

North of this white crystalline marble, the rock gradually assumes a shade of blue or gray, as may be observed by inspecting specimen No. 4.

The upper layers at Fell and Robinson's quarry are banded with light gray veins. Below this are at least three feet of pure, highly crystalline, white limestone. Judging from specimens detached from the inferior projecting layers, there is evidently a great body of the same kind of rock beneath, with probably some banded beds, similar to the upper beds previously described.

On the east side of the railroad and close to it, some four hundred or five hundred yards from Robinson and Fell's quarry, Griscom and Borrough have opened quarries. The rock here is of the same character as that in Robinson and Fell's quarry, and equally good ; see specimens Nos. 2 and 2a. Some nests in this quarry are of a closer grain than the main beds ; see specimen No. 2ab.

The ledges of this rock, wherever it projects through the soil, and has been exposed probably for ages, have a dark appearance on the surface, apparently from incrustations of lichen ; but when broken, the discoloration is seen to be superficial, not extending at all into the substance of the rock ; see No. 5b.

The dip of the beds seems to be generally to the southwest, at an angle of perhaps 20° to 25° .

There is no difficulty in draining these quarries, since there is twenty to forty feet of rock entirely above the level of water drainage.

The top layers are sometimes in detached and more or less rounded masses ; owing, no doubt, to the corrosive influence of water containing carbonic acid, or some organic acid, percolating through the superficial soil, corroding and dissolving the accessible edges of the calcareous layers.

Over the upper beds lies usually ferruginous earth of deep red color, forming a remarkable contrast to the snow-white marble beneath ; indeed, this appearance on the surface might, perhaps, often serve as a guide to the detection of the white marbles of this region.

Symington's quarry lies in the same vicinity, about three hundred to four hundred yards from the main track. The owner of this, as well as the other quarries here,

intend to have *switches* (that is, lateral branch railroads) running into their quarries.

The rock here is of a rather finer crystalline structure than that of the preceding, with a slight cast of blue; see specimens Nos. 3 and 3a. A solid bed is exposed, of nearly uniform texture, about nine feet thick. Blocks weighing several tons are now lying in the quarry. At the top of the quarry there are some beds with gray mica disseminated; such must, of course, be rejected. The dip is here as at the other quarries.

Thirteen and a half miles from Baltimore and half a mile east of the railroad, and about one mile northeast of the previously described localities, is a quarry on land owned by Chisilla Owens. The rock here is also a white and highly crystalline marble, of a good color, similar to that in the vicinity of Texas; but the quarry is not yet opened; the surface indications are, however, very favorable for a body of good "alum limestone." For sample of this material, see specimen No. 6.

In the vicinity of the same railroad, a little further to the north, in the neighborhood of Cockeysville, fourteen to fifteen miles from Baltimore, are several other marble quarries.

The first visited was on land owned by Messrs. Taylor, and situated about a quarter of a mile west of the railroad. The rock exposed here differs from that of the Texas quarries, in being rather closer grained and the surface layers more granular; see specimen No. 5. At this locality a block was got out upwards of seventeen feet long, which was presented to the Building Committee of the Washington Monument at Baltimore; out of this block the statue on the summit was sculptured.

Loose blocks of similar character to that in the quarry are seen all over the surface of the adjacent hills.

The lower beds are not exposed in Mrs. Taylor's quarry.

Four hundred to five hundred yards nearer the railroad, a better cemented and rather more compact marble crops out to the surface; but no quarry is opened here to enable one to form a correct judgment as to the extent, thickness, or uniformity of the beds. Still, from the persistency of the same material throughout this region, one may predict, with tolerable certainty, that there is here, deeper seated, a great mass of valuable material.

Part of the marble employed in the construction of the Washington Monument at Baltimore was obtained at this quarry of Mrs. Taylor's, and part of it from Scott's quarries, five miles further to the North. The latter is said to be of an inferior quality. Of this I had no opportunity of judging personally, as I did not visit the quarry, thinking it was too far out of the way.

Three quarters of a mile from the railroad, and a mile and a half or two miles northeast from Texas, is another quarry, on Mrs. Taylor's property. This quarry has been wrought for fifteen years, and supplied Baltimore with a great deal of marble. The upper layers, (see specimen No. 5b,) at this place, are, from some peculiarity, either of texture or chemical composition, much disposed to crumble to calcareous sand, which has been employed to advantage as a mineral manure on land. The inferior beds are of a sounder material, and lie more regularly than usual, but the rock is not of as pure a color, being banded with gray stripes; see specimen 5c. Dip very slight to the south.

One hundred yards south of this is another quarry, on Chisilla Owen's property. This rock is of a beautiful texture and good color, as may be seen by specimens No. 5d and No. 7. It lies in tolerably distinct strata, and nearly horizontal, but it is traversed by minute cross-fissures, which detract much from the value of the material, inasmuch as large, solid blocks cannot be got out, at least from the exposed layers; a sounder material may, perhaps, be obtained lower down.

A little northwest of this is Baker and Conly's quarry, near Beaver Dam creek. This quarry is well opened, presenting a perpendicular face of fifteen feet or upwards; four and a half to five feet in this quarry, as far as opened, is tolerably good marble, (see specimen No. 8;) but the upper beds are of inferior quality, being contaminated by a thin interlamination of mica in the interstices of the stratification.

Nests of sulphuret of iron also occur here, which would render necessary a very careful selection. There are, at present, in this quarry several blocks that would fill a room of ordinary size.

Between this quarry and Chisilla Owen's quarry, on Beaver Dam creek, and about two hundred to three hundred yards from the last described, Mr. Baker has quarried out a considerable quantity of white marble of very superior quality. Unfortunately, the ledges of rock here are but little above the level of Beaver Dam; it is said, however, that when this quarry was worked, it was easily kept drained by a one-horse pump. The fact of good marble occurring at this low level on Beaver Dam, renders

it more than probable that good marble will be found in the adjacent quarries just mentioned at a considerable lower level than where they are now worked.

On the northwest branch of Beaver Dam, between fifteen and sixteen miles from Baltimore, and rather more than a mile from the railroad, are Mr. Worthington's marble quarries, and saw-mill for cutting it into dimension stone.

The rock in this vicinity is mostly composed of small aggregated crystals, of less size and finer texture than the "alum-marble."

The old quarry was first visited. It is situated on a hillside, fifteen feet, by the barometer, above the drainage level of the northwest branch of Beaver Dam. The top rock here is not pure, nor even bedded; but beneath, at the above level, commences a marble of snowy whiteness, passing into one with a blue tinge; see specimens 10*w* and 10*bl*. This marble spauls with ease and precision, nearly as well on the edge as the bed, and is free to work in every way. This is also the case with the marble taken from Baker's lower quarry; and indeed all the finer marbles have the same property, unless they are laminated and schistose. The marble here admits of being split out of considerable length, twenty or even forty feet. The face, however, when thus split, is more or less irregular, varying four to six inches or more from a true level surface.

On the other hand, the facility of spauling enables it to be brought to the desired dimensions with comparatively little labor. The blue-tinged variety quarried here is but little inferior in appearance to the virgin white. Both varieties, though they do not admit of receiving a high polish, like the best quality of Carrara marble, can nevertheless be wrought into very fine ornamental work, with a beautifully sharp arris, as may be seen by the specimen with raised lettering, and that cut into a capital carved by Mr. Parkie, of Baltimore.

The lower beds are not exposed on the quarry face, but outcropping ledges can be seen in various places around the slopes of the rising ground; also in the bed of the creek, and everywhere in the bottom, where ditches have been dug two or three feet deep; all indicating that a region of country of three quarters of a mile square is underlain by rock of similar character.

Mr. Worthington has opened a new quarry on a hill about half a mile southwest, and by barometrical measurement 40.8 feet above the level of the northwest branch of Beaver Dam creek, at the stone saw-mill. This quarry is about three quarters of a mile on the east side of the railroad. The upper masses are alone at present exposed.

They are rather more disposed to crumble than the best quality of the old quarry rock, but it is far superior to the upper beds at that locality, and there is every reason to believe that the best quality of rock is not yet reached; indeed, probe-holes have been already sunk three feet into the floor of the present quarry, which show that there are solid ledges of white marble of the same texture beneath.

The hill on which the new quarry is situated is estimated, at the lowest calculation, two hundred yards square; and it may be excavated for twenty-five feet in depth without being incommoded with water.

Within the last five years, at least twenty-five thousand cubic feet of dimension stone have been taken out of these two quarries.

An experienced stonecutter of Baltimore, who has worked a great deal of fine-grained marble, thinks there may be some difficulty in procuring dimension-stone of that quality of greater thickness than twenty inches. The same individual is of opinion that Baker's lower quarry might furnish a material of uniform color, of greater thickness. He has worked both the fine and the coarse crystallized marbles of Baltimore county; and his experience is, that the fine-grained marble dulls the tool more than the "alum stone," and is more difficult to saw, because, as he expressed it, the fine-grained rock contains most flint. He is, moreover, of opinion that the fine-grained is rather more apt to stain. There is a difference of opinion, however, on these matters. An accurate chemical analysis would throw light on this subject. There is also a difference of opinion as to the presence and proportion of magnesia in the different samples of these rocks. Some contend that the coarse crystalline marbles contain most magnesia, and that none of these Baltimore marbles have less than five per cent. of that alkaline earth. These are points which can be alone settled by minute chemical researches. Such analysis would also throw much light on their comparative durability; since, in the opinion of recent writers on this subject, the greater the proportion of *accidental* magnesia, the more liable the rock is to disintegrate until it reaches a quantity equivalent in proportion to the lime, and then unites with it to form a true dolomite or magnesian limestone; a very durable building material, and the same which was selected, after careful research, for the exterior of the new Houses of Parliament in England.

As already remarked, iron pyrites (bi-sulphuret of iron) occurs occasionally in these marbles, in nests, both at Worthington's and Baker's quarries; see specimen 10 *p*. This mineral is much prone to undergo chemical changes by the action of the oxygen of the atmosphere; the sulphur passes into the state of sulphuric acid, the iron into oxide of iron, forming copperas or bi-sulphate of iron, a salt easily soluble in water, which is gradually removed; leaving, of course, a cavity in which water may lodge and freeze, whilst at the same time the oxidation of the iron spreads a disagreeable ferruginous yellow stain around the spot. For this reason great care should be taken, in selecting marble, to reject all masses contaminated with this mineral.

The only locality in the neighborhood of Worthington's quarries where a marble of the structure of the "alum stone" was observed, is in the immediate vicinity of his dwelling house; here, for a short distance, a white marble of that texture occupies the surface. Three hundred to four hundred yards beyond, on Prospect Hill, at a height of two hundred and twenty-one feet above the bed of the northwest branch of Beaver Dam creek, a highly ferruginous mica slate, charged with garnets, reaches the surface: this seems to be the boundary of that formation on the east. This garnetiferous micaceous schist may possibly serve to define the limits of the white marble formations, and may, perhaps, be the means of detecting these metamorphic marbles elsewhere.

One mile north of Texas, close to the railroad, is a quarry owned by Chisilla Owens, and now worked by Mr. Cooper. The rock here is well bedded, and may be quarried with ease; but the beds are, for the most part, thin, and there is an interlamination of mica. Here the dip is to the northeast, in an opposite direction from what it is in the Texas quarries. There is a bed of white crystalline marble ("alum stone") in this quarry, of about two to two and a half feet thick; whether it extends of uniform appearance and thickness through the hill, is not clearly seen in the present state of the quarries. The blocks lying in the quarry are of very regular dimensions, and the surface comparatively even, but they are not large, and many of the beds are interlaminated with mica; see specimen No. 11.

In the vicinity of Texas is a quarry owned by Judge Nesbitt, which has afforded some good white marble of a rather finer grain than that of most of the quarries in this vicinity; see specimen No. 12. I had not an opportunity of examining this quarry in person.

South of Fell and Robinson's quarry at Texas, on land owned by Mr. Cockey, there is some fine, white, close-grained crystalline marble. It lies, however, low—not more than eight or ten feet above the bed of Cold Stream creek. The quarry is not open, so that one cannot judge of the bed. Mr. Cockey says the same kind of rock has been found half a mile west. This is the only proof of its being extensive.

On the whole, it appears that there is a region of country extending for about two miles from north to south, and three-quarters to a mile from east to west, occupied by this marble, extending from the level of the water courses to forty-five feet above the same, and constituting the whole of the hills within this tract of country; not all of the purest white, but varying from a snow-white to a light blue. It may be estimated that about one-third is of tolerable purity, and either of the crystalline texture or of the fine-grained crystalline structure, approaching in quality to the Carrara.

Nor can this be considered the limit of the formation. Scott's quarry, five miles beyond these, in the vicinity of the railroad, supplied a portion of the material for the Washington monument at Baltimore, and other quarries of white marble were pointed out to me from Prospect Hill, several miles off.

It cannot be doubted that these quarries are capable of supplying an unlimited amount of fine building material, either of the fine-grained marble or of the "alum stone." Whether the former could be obtained for the entire Smithsonian building, of a uniform color, free from gray spots and veins, is less certain; though Worthington confidently asserts, if he be permitted to supply white and faint blue indiscriminately, similar to specimens Nos. 10 *w* and 10 *bl*, he can furnish far more than the building requires, without blemish.

From all I have seen and heard, I incline to believe that the fine-grained marble will be somewhat more expensive to cut than the "alum stone;" but, on the other hand, if the ornaments have bold projections, and much undercutting, the coarser "alum stone" is unsuitable; it chips off more readily, and is less tough than the finer-grained varieties.

The "alum stone," as far as I can learn, works much like the Westchester marble; and if in the latter all the necessary Norman ornaments can be cut, so can they also, most probably, in the former.

After the inspection of the Baltimore marble quarries, I proceeded, according to instructions, to the Point of Rocks, to examine Mr. McGlauchren's quarries.

I found them situated on Hook's run, two and a half to three miles west of the Point of Rocks, or about seventy-three miles from Baltimore, embraced in highly disturbed, contorted, and deranged chloritic and talcose schists, and distant only about three miles from the brecciated Potomac marble formation.

Nothing but hand specimens, and a few surface rock for making lime, have been as yet procured here, so that there is but little opportunity of judging the extent of the formation. The surface indications are not favorable, neither as regards uniformity of texture and composition, nor yet extent of beds.

The chloritic schists dip here at a high angle to the south. The out-crop of the white calcareous rock in question lies at the base of a hill on Hook's run, about twenty to twenty-five feet high, and pitches at an angle of some forty-five degrees into the base of the hill, which is here on a level with the bed of Hook's run, at the same time inclining to the west, so that it is inaccessible except at great expense of labor.

There is a somewhat better exposure of the Hook's run marble at a little higher level, on a hill a few hundred yards to the south; and here the best specimens were procured; see No. 15. Part of the ledge is composed of white calcareous layers, which are said to be susceptible of a polish. The rock at both places has a ragged, irregular, and uneven fracture, and is so interspersed with white and green talc, that it cannot be considered of much value as a building-material. It is possible that beneath this a purer and better rock might be reached; but the surface indications do not even favor that conclusion. Unless the bed should be brought to the surface by an upward turn of the contorted strata on the south side of this range of hills, there is no possibility of getting at it. Mr. McGlauchren intends to try, if possible, to open a quarry, with a view to ascertain more satisfactorily the extent and quality of this material.

On the whole, in its present situation, this marble seems worthless for the present purpose.

During the examination of structures and monuments of Baltimore marble, both in Green Mount cemetery and in the city of Baltimore, with a view to ascertain the durability and facility of working this material, I was so much struck with the beauty of some of the granite vaults and fronts of buildings that I determined to visit the quarries from whence this material was procured, more especially as the owner, Mr. Green, informed me that he was confident he could furnish it at a cheaper rate than the white marble could possibly be supplied, and as it was only two miles out of my way in returning from the Point of Rocks.

Accordingly, I stopped at Wookstock, 16 miles beyond the Relay House, and inspected carefully the Waterville branch and the Fox rock quarries in this vicinity; both of which are well opened, and afford a good opportunity of judging the quality and extent of this formation.

For about a mile square at this locality is an outburst of quartzose granite of magnificent quality, both as regards beauty of appearance, compactness of structure, and uniformity of color, texture, and composition. I have never seen anything superior in this country; indeed, I doubt whether it can be excelled in any country. The proportion of feldspar and mica is very small. The former is only in minute specks, the latter is small black scales, whilst the great bulk of the rock is a vitreous quartz.

In consequence of the mica being only in small regular disseminated flakes, it imparts to the rock an agreeable light gray, well adapted, in my judgment, to the Norman style of architecture.

In consequence of the composition and texture of this granite, it must possess a durability not to be surpassed by any building-material. For the same reason, it must be difficult and expensive to cut; but in consequence of the precision with which it splits, not only in the lines of cleavage, but even across the grain, it may possibly be furnished in competition with marble.

To give some idea of the remarkable facility with which the granite in question cleaves, I may state the following facts, which came under my observation: A slab twenty feet long and one foot square was split longitudinally into two, nearly as accurately as if it had been sawed.

Again, I observed two slabs—one measuring thirteen feet long, four feet six inches broad, and two feet thick; the other eleven feet long, six feet broad, and two feet thick—which were split in two, so as to form slabs of the same dimensions in length and breadth, but only one foot thick; and so perfect were the faces of cleavage, that they did not deviate one inch from a true level surface.

So confident are the quarrymen of the certainty of splitting this granite in any required direction, when even of no greater thickness than nine inches or a foot, that they will, for the sake of having weight and substance in the block to retain it in its position while under the hammer and chisel, first dress the two outside faces, and trust to splitting the slab or block into two.

Fully to appreciate the quality of this granite, the quarries themselves must be visited, and the huge block in mass inspected as they are removed from their original bed. There, one may see a perpendicular face of nineteen feet presented to view, extending twenty, thirty, and even forty or fifty feet, without a seam or flaw, or the slightest variation in hue. A mass of forty or fifty tons weight may often be seen severed from the parent rock, by the simple but efficient means of small iron wedges.

On some slabs, by close inspection with the magnifying glass, a few minute specks of iron pyrites may be seen; but none were observed visible to the naked eye.

Mr. Green thinks nearly one-third of the freight may be saved by bringing the rock to its proper dimensions at the quarry.

This granite does not spall freely; but, in consequence of the facility with which it splits, but little spauling is required.

From the bottom of the Waterville branch quarry to the summit of the outburst is forty feet, by barometrical measurement.

The Fox rock quarry is thirty-six feet from top to bottom, where now excavated. It might be worked some fifteen or twenty feet lower before being incommoded by water. Mortar adheres with such force to this granite, that, when fairly set, it requires as much force to separate the substance of the granite as to detach the mortar from the face.

On the whole, the inspection of these granite quarries has impressed me with the belief that no locality can furnish a superior quality of granite, and that it cannot be surpassed for strength and durability by any building material in the world.

The stonecutters' bill in granite will, I fear, run up very high on account of its great hardness; but, if the expense be not an objection, I do not think that there will be any practical difficulty in rendering in granite ornamental work so little elaborate as that of the Norman style.

An objection to the use of granite for the Smithsonian building deserves serious consideration. It is, that, in this material, the effect of light and shade is, in a great measure, lost; while every projecting ornament in marble is marked by a distinct shadow. How far this may injure the general effect under the plan adopted, the committee will judge. Results of considerable practical importance may be obtained by an accurate chemical analysis, chiefly with reference to the proportion of silica, alumina, magnesia, and iron, affecting the durability, discoloration, and expense of working. Time, however, did not permit this investigation.

All of which is respectfully submitted.

DAVID DALE OWEN.

WASHINGTON, March 11, 1847.

List of Specimens referred to in the foregoing Report.

- No. 1 Robinson and Fell's quarry.
- 1a Robinson and Fell's lower layer, close to Cold Spring creek.
- 2 Griscom and Burrough's quarry.
- 2a Griscom and Burrough's top layer, banded with light gray.
- 2ab Griscom and Burrough's fine grained, in nests.
- 3 Symington's quarry, large crystallized marble.
- 3a Symington's quarry, sample of large blocks.
- 4 Fell and Robinson's quarry, blue variety.
- 5 Mrs. Taylor's quarry.
- 5a Mrs. Taylor's quarry, crumbling layer.
- 5b Mrs. Taylor's quarry, (see specimen with dark color on long exposed surface.)
- 5c Mrs. Taylor's quarry, banded with gray stripes.
- 5d Chisilla Owen's quarry, fissured.
- 6 Chisilla Owen's quarry.
- 7 Worthington's (old) quarry.
- 8 Baker and Conly's quarry.
- 10 Worthington's (new) quarry.
- 10w Worthington's white variety.
- 10bl Worthington's blue variety.
- 11 Cooper's quarry, with veins of mica.

- No. 12 Judge Nesbitt's quarry.
 13 Cockey's quarry, compact white.
 14 Mica slate, with garnets.
 15 Point of Rocks quarry, Mr. McGlauchren's.
 16 Chloritic schist, Point of Rocks.
 17 Granite, Waterville branch quarry, near Woodstock.
 17a Granite, Fox rock quarry, near Woodstock.
 18 Granite, Fox rock quarry, near Woodstock.

Laid on the table.

On motion of Mr. Seaton, it was—

Resolved, That Dr. Owen be requested to analyze the specimens of white marble, especially Mr. Worthington's and Mr. Symington's, and report thereon.

The chairman laid before the committee letters recommending Mr. Richard C. Murray as superintendent.

Laid on the table.

The chairman laid before the committee a letter from Mr. John C. Rives, recommending Mr. Jones, of Washington city, as bricklayer.

Laid on the table.

The chairman laid before the committee a letter from Mr. Isaiah Lukens, of Philadelphia, relative to a town clock.

Laid on the table.

And, on motion, the committee adjourned.

Sixth Meeting, March 13, 1847.

Present, Messrs. Seaton, Owen, and Hough.

On motion of the chairman, it was—

Resolved, That Mr. Peter Gorman be requested to procure, from Bull Run quarry, four perch of light gray freestone, to be delivered on the canal, opposite Eighth street, and be put up under the supervision of the architect—one-half in broken rubble masonry, the other in range work—finished exactly in the manner in which the said architect recommends; that the above styles, if adopted, should respectively be finished, so as to supply a sample wall, to which, if the above material be adopted, reference may be had in the contract.

Mr. Seaton submitted a letter from I. Mudd, offering his services as superintendent; also, a letter from A. B. McFarland, regarding the specimen walls and Seneca freestone; also, from the same, a draught of the quarries in the vicinity of Seneca creek; also, from the mayor of Baltimore, and Mr. Long, architect, of that city, recommending Mr. Richard C. Murray, as superintendent;* also, from Mr. M. W. Carter, of Fredericksburg, recommending Seneca freestone, and offering his services; also from Mr. John T. Bryant, recommending to purchase one of Mr. Lukens's clocks, Philadelphia; which letters, on motion, were laid on the table.

And, on motion, the committee adjourned.

Seventh Meeting, March 15, 1847.

Present, Messrs. Seaton, Hough, and Owen.

Mr. Seaton submitted a letter from Robert Barnard, offering his services as treasurer and accountant.

Laid on the table.

The chairman submitted a letter from Governor Francis Thomas, of Maryland, asking an additional examination of the quarry at Point of Rocks, heretofore examined by Dr. Owen.

Laid on the table.

The chairman submitted from Mr. Samuel Worthington the following offer to supply marble for the Smithsonian building:

BALTIMORE COUNTY, March 13, 1847.

GENTLEMEN: I will agree to furnish the necessary white marble for the erection of the above institution—say five thousand perch of rubble stone of the size of good

* NOTE.—March 16, letters and application withdrawn.

building stone, carefully broken, and placed upon the cars at Cockeysville—at the rate of one dollar and eighty-seven cents per perch of twenty-five feet; or, at one dollar and twenty cents per ton, as weighed by the railroad.

I will agree, also, to furnish the dimension stone in the block, and no block to contain less than two cubic feet, at the rate of sixty cents per cubic foot, and placed on the cars at the above-mentioned place; or, by the ton, at six dollars per ton, as taken from the quarry; if the stone should be wrought at the quarry, and the carved work completed there, then an addition of fifty cents per ton will be charged on all stone so worked, to be delivered say in the course of three years, or as may be required.

Very respectfully, your obedient servant,

SAM'L WORTHINGTON.

Messrs. ROBERT DALE OWEN, and others,
Building Committee, Smithsonian Institution.

Mr. Hough, from the sub-committee to whom were referred the specifications of the architect, (James Renwick, Jr.,) for the building for said Institution, made the following report:

To the Building Committee of the Smithsonian Institution.

GENTLEMEN: I have carefully examined the specifications of the architect, (James Renwick, Jr., Esq.,) for the building of said Institution, and find them elaborately and minutely drawn, both in reference to detail of the work and permanence and durability of the structure. Few, if any, omissions can be discovered, and but few alterations seem to be required for the permanence and durability of the edifice, or for its better security against destruction by fire.

It has been suggested by one of the committee, that the width and depth of the foundation trenches, and, as a consequence, the foundation walls, might with safety be diminished, the inverted arches and the concrete foundations be entirely dispensed with, and consequently with a considerable saving of expense.

In such a conclusion I cannot, without further information, concur.

Whether its foundation trenches may or may not be diminished in depth, will, in my opinion, depend upon the peculiar formation or strata of the earth, which can only be determined by making the necessary borings or excavations.

If, upon experiment, the strata shall be found to consist of firm indurated clay or gravel of sufficient depth for permanence, the depth may be diminished; otherwise, not.

But in no event could I recommend a diminution of width; nor would I dispense with either the inverted arches or the concrete foundation; deeming both very essential in preventing an unequal settlement and cracking of the walls of the edifice. I consider the concrete much better adapted to permanence of foundation than any ordinary structure of rock alone, and in no respect more expensive; and, in so ponderous a structure, all architects and constructors of experience concur in recommending inverted arches to preserve a uniformity of settling between the openings and solids of the building. I would, however, recommend a reservation in the contract for the construction of the building, of the right to diminish the depth of the foundations, with a pro rata reduction of price, in case the strata or character of the earth shall be found to admit of it in the opinion of the architect. It may be found, also, that the thickness of the walls of some of the towers, and perhaps the walls of the buildings throughout, may with safety be diminished; and I would recommend a like reservation in the contract to meet this contingency also.

The idea of constructing the principal stairs in such an edifice with wood, does not, in my estimation, well comport with public opinion, either as to permanence, durability, and appearance, or with the character of the age in which the edifice is to be erected.

I recommend, therefore, without hesitation, if the funds will possibly admit of it, that the principal stairs of both the north and south central entrances to the principal building be constructed of stone, as high, at least, as the museum floor.

I also recommend that the wood tessellated floor of the museum be dispensed with, and that, instead thereof, there be a single floor of 1½-inch yellow pine plank, with the intention of covering it with stone or composition flagging at a future day; or, what I would deem preferable, dispense with the wood floor altogether at first, and raise the deafening above so as to cover the floor-beams, upon which lay a floor of stone flagging. This it is believed may be done at a small expense over the wood Mosaic, be greatly more secure against fire, and require much less expense in cleaning and repairs.

I would also recommend as a security against fire in case of the burning of the