

HISTORY
OF
BALTIMORE CITY
AND
COUNTY

FROM THE EARLIEST PERIOD TO THE PRESENT DAY:

INCLUDING

BIOGRAPHICAL SKETCHES

OF THEIR

REPRESENTATIVE MEN.

BY

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I L L U S T R A T E D.

PHILADELPHIA:
LOUIS H. EVERTS.

1881.

railroad communication was interrupted by bridges and culverts being washed away.

1852.—July 13. The overflow of Harford Run, occasioned by heavy rains, did very great damage in the northeastern section of the city; the bridge at Broadway and Gay, as well as the Bond Street bridge, were washed away, and coming in contact with a cluster of one hundred new houses along the line and in the immediate neighborhood of Dallas and Gay Streets, six of the buildings were crushed and destroyed.

1856.—August 13. A tornado visited the city, inflicting damage of not less than \$100,000. Four buildings being constructed by Michael Roach, at the corner of Madison and Calvert Streets, were totally destroyed, the roofs of many houses were torn off, and telegraph-poles and trees blown down.

1858.—June 12. A flood of almost equal extent and damage as that of 1837 occurred. Harrison Street, Saratoga Street, and the east side of Centre Market Space were inundated. Charles Street bridge was carried away. Sarah Hopkins and Cornelia Brown, servants of Mrs. Frederick Dogan, and Frances Jones at Woodberry Factory, were drowned. Very great damage was done all along the streams in the vicinity.

1860.—May 11. Jones' Falls overflowed its banks and extended its waters over a wide area, reaching Harrison Street, Centre Market Space, Holliday Street from Old City Hall to Bath Street, and Saratoga and Bath Streets up to Davis Street, and Lombard, Second, and Pratt to Frederick, and Gay from Frederick Street to the bridge, the depth of the water varying from three to six feet.

1868.—July 24. The water-spout that this day visited all the region round about Baltimore was productive of more disastrous consequences than ever followed a flood in this State. While all the streams were greatly swollen and overflowed their banks, it was along the valleys of Jones' Falls and the Patapsco River that the immense damage was done. The down-pouring rain was accompanied with an easterly wind, and thus both flood and tide united. The waters of the Basin and river dammed up the outflow of the Falls, which was thus forced to discharge its storm-wave over the adjacent land on either bank. The great flood of 1837 was exceeded in the volume of water which poured in torrents down the streets. The rise of water began at the outlet of the Falls, and the overflow was first at the east side of Centre Market Space and Swann and Hawk Streets; in less than an hour afterwards Harrison, Holliday, Frederick, and Saratoga Streets were inundated, and the cellars of two thousand houses in that locality were filled with water, and the first floors invaded. Soon the ceilings of rooms never touched by any previous flood were reached. A Gay Street car, overtaken by the flood, was abandoned by driver and conductor, and was carried along by the current, endangering the lives of four persons, two of whom, E.

J. Emery, of the *American*, and A. Meriche, were rescued at the corner of Harrison and Fayette Streets by being drawn up an awning-post. The two other passengers, whose names are unknown, were lost. In front of Laroque's drug-store, corner of Harrison and Baltimore Streets, the water rose to the top of the lamp-post. Chrington's distillery was entirely destroyed. With the exception of the Eager Street bridge, every bridge across the Falls in the city was either destroyed or so badly damaged as to be useless except for foot passage. In consequence of apprehended destitution among the numerous families thus made homeless, the mayor and City Council appropriated fifty thousand dollars to be distributed in relief to the suffering thousands, and private charity added a further sum of twenty-nine thousand dollars. The amount of suffering caused by this flood may be partially estimated when it is stated that one thousand and thirty-four families, composed of eight thousand and eighty-three persons, were relieved, in sums varying from ten to two hundred and fifty dollars.

1876.—February 1. A polar hurricane visited the city, unroofing more than three hundred houses.

Baltimore Water-works.—In the early years of its history Baltimore abounded in many natural springs of pure and excellent water, which for a long period were the only sources of supply, and which contributed largely to the health, convenience, and beauty of the town. As time passed on, however, and the community began to increase, many of these springs disappeared¹ or became contaminated, and it

¹ The chief of these was the the CITY SPRING, which in the early days of the city furnished a sweet and abundant store of water of a pleasant temperature at all seasons of the year. It was composed of several springs collected together, which flowed from beneath the brow of the precipice that overhung Jones' Falls when that stream retained its original course, passing over what is now Calvert Street, between Lexington and Pleasant Streets. In the early history of the town vessels of considerable burden, intended for sea, were built and launched on tide-water at the place now occupied by the City Spring, and near the original bed of the Falls, at the southeast corner of Lexington and Calvert Streets, was a small wharf, to which boats from the shipping came for powder during the Revolutionary war. In 1810, when Calvert Street was graded, the lot now occupied by the City Spring, then called the Northern Fountain, was purchased by the city, and under the direction of Peter Hoffman and Jesse Hollingsworth the grounds were laid out and buildings erected from the designs of John Davis, architect, at a cost of twenty-seven thousand dollars for the entire property. They erected for the keeper a granite house of Gothic design, having in front a large niche for the Armistead Monument, which was removed by the city with the keeper's lodge in 1864. At the time of the laying out of the City Spring lot, and for a long time afterwards, Calvert and other adjacent streets contained the residences of the *élite* of Baltimore, and the spring being kept in fine order, it was considered one of the ornaments of the town, and was a favorite resort of the gallants and damsels of yo olden times. The temple-shaped dome which covers the spring is the same in design as that originally erected, but the fountain is now supplied with hydrant water, the old spring having become unfit for use. The Eastern and Western Fountains, which also aided to supply the city with water, were laid out in 1819, at about the same cost each as the Calvert City Springs, by John Milliman, architect. The Eastern Fountain still exists, forming a large square on the corner of Eden and Pratt Streets. The Western Fountain was on the northwest corner of Charles and Camden Streets, and the improvements were similar in character to those of the Calvert Street spring. At one time the water from this spring flowed

was found necessary to supplement those that remained by means of pumps and wells.

The first attempt to establish a regular water company, however, was not made until 1787, and seems to have met with so little favor that it was almost immediately abandoned. In 1792 the effort was renewed, and on the 23d of December, in that year, an act was passed by the Legislature authorizing the Maryland Insurance Company, under the name of the "Baltimore Water Company," "to supply the town with water by pipes from a sufficient reservoir or source." Nothing appears to have been done under the act, and this second attempt, like the first, seems to have failed from lack of public patronage. Even after the incorporation of the city in 1796, the citizens appear to have been so insensible to the requirements of their new-born dignity that they still considered existing sources of supply all-sufficient for their needs. The City Council at its first session recognized the fact that "a due supply of water is a convenience and of the utmost importance in times of fire to the inhabitants;" but the ordinance, which was passed on the 26th of April, 1797, in pursuance of this declaration, was simply for the appropriation of one thousand dollars "to erect and regulate pumps in the streets, lanes, and alleys" of Baltimore. Two years later, however, the subject was again discussed, and Messrs. Robert Smith, Zebulon Hollingsworth, T. Hollingsworth, Edward Johnson, and W. MacCreery were appointed "to view the springs and streams in the neighborhood of Baltimore, and to report on the practicability of conveying the same into the city." Their report was made on the 13th of February, 1799, and was as follows:

"A full and complete supply for the three great purposes of domestic consumption, cleaning the city, and extinguishing fires cannot be obtained but by introducing into the city the waters of either Gwinn's Falls, Jones' Falls, or Herring Run. From either of these sources there would be more water under our control than could be reasonably used in the city. The redundancy might be conveyed with great advantage to the heads of the different docks to purify the waters therein, and for the accommodation of vessels of every kind.¹

from the bank, at the very edge of the Basin, and Clopper, the original owner, supplied vessels with water from it. Upon the extension of Light Street and wharf, the water which was not used at the spring was conducted in pipes to the wharf at Light Street. The spring, however, was destroyed many years ago, and its site is now entirely occupied by buildings. Centre Fountain was situated in front of the Marsh or Centre Market, and is still remembered by our older citizens. It was a small, square monument of white marble, with an ornamental heading, and threw its two jets of water from dolphins' mouths into stone basins on either side. The spring originated from several small threads of water, on the southeast side of the hill then known as "Howard's Park," near St. Paul and Centre Streets. It was purchased by the Water Company, and used to supply "Waterloo Row," on Calvert Street, near the city mill; and finally the city purchased it, and by means of iron pipes conveyed the water to the fountain at Marsh Market. It retained until a very late period the best reputation of all the fountains for its purity, but it, too, passed away when the present Maryland Institute took the place of the old market-house. The site of Perkins' Spring, on George Street and Myrtle Avenue, was for many years only a waste lot, but in the last few years it has been transformed into a beautiful park, small in extent, but one of the most elegant and attractive in the city.

¹ It will be seen from this that the plan of "flushing the Basin" is not a new idea.

"Your committee are enabled to state that the water-table of the dwelling-house of William Cooke is seventy-six feet above the level of the water of the Basin; that the water of Gwinn's Falls, in the head-race of Ellicott's Mill, at the distance of two miles from the city, is ninety-six feet above the same level; that the water of Jones' Falls, in the head-race of the mill of Thomas & Samuel Hollingsworth, at the distance of two miles from the city, is eighty feet above the same level, and that the water of Herring Run, at the distance of three and a half miles from the city, is one hundred and fifty feet above the same level.

"From the elevation of these three great bodies of water, it is apparent that either of them can be conveyed into the city and distributed to all the different parts thereof, and if necessary may be introduced into the upper departments of most of the houses. These waters, from their great height and abundance, may be applied not only to the cleansing of all the streets and alleys, to the furnishing of baths in the different apartments, and for all other domestic purposes, but may be used in the most efficacious manner in extinguishing fires, without the aid of buckets, and in some instances without the aid of an engine. For by a proper application of the hose the water may be conveyed not only to the engine without the aid of buckets, but to the different parts of the house, by means of the hose only, without the assistance of the engine, as the water will ever rise in the hose to its level in the canal whence it is first introduced into the pipes.

"If, therefore, the water of Gwinn's Falls should be used, it would rise in the hose or in the pipes about ninety-six feet above the level of the water in the Basin; if Jones' Falls, about eighty feet; if Herring Run, about one hundred and fifty feet.

"Your committee entertain the persuasion that all their fellow-citizens are duly sensible not only of the propriety of this important work, but of the urgent necessity of its being accomplished without delay."

Impressed by the views of the committee, the City Council passed an ordinance authorizing a lottery to raise a sum of money to defray the expenses of the proposed undertaking, and appointed Joseph Biays, Christopher Johnson, and William Clemm managers of the lottery. On the same day an ordinance was approved appointing the mayor and William Patterson, Archibald Campbell, George Salmon, William Cooke, William Smith, John Eager Howard, and John O'Donnell commissioners to convey into the city by pipes the waters of either Gwynn's Falls, Jones' Falls, or Herring Run, and to borrow money for the purpose. Surveys, plans, and specifications were made, but owing to the pestilence of 1800 nothing was done until December 19th of that year, when an act was passed by the Legislature "to enable the mayor and City Council of Baltimore to introduce water into the said city." Although this act gave to the corporation full and ample powers to effect this important object, yet it seems to have been beyond the pecuniary means of the city to accomplish it. Notwithstanding the journals of the city warmly urged the usefulness and necessity of such a measure during the years 1801 and 1802, nothing was done until the meeting of the Council in February, 1803, when mayor James Calhoun in his annual message again called the attention of that body to the subject. In pursuance of his recommendations an ordinance was passed on March 24th appointing William Cooke, James McHenry, Thomas McElderry, John O'Donnell, Robert Stewart, Thomas Tenant, James A. Buchanan, William Jessop, John E. Howard, Walter Simpson, Christopher Johnson, and William Patterson commissioners, and clothing them with ample power and authority for the purpose. In the execution of the trust confided to them

the commissioners collected the numerous springs which formed the source of Carroll's Run, and were proceeding to conduct it into the city by pipes, when they were stopped by an injunction issued at the instance of some of the property-holders through whose land the water lines were intended to pass. The matter was again revived in the mayor's annual message to the City Council in February, 1804, in which he referred to the subject as follows:

"I do not recollect any subjects of much importance not already decided on except that of introducing a permanent and copious supply of water into the city, which is certainly an object of much magnitude, and very interesting to the citizens, but every attempt heretofore has failed of success. Whether it will be possible for the Council to adopt any measure that will answer the purpose is for them to decide."

This portion of the mayor's message was referred to a special committee, which reported on the 27th of the same month a resolution authorizing him to receive proposals until June 1st for "introducing a copious and permanent supply of water into the city, or into any part thereof, by any individual or company," and advertisements were accordingly published in the newspapers of the city to that effect. The city having thus practically confessed its inability to accomplish the object, and thrown it upon the enterprise of public-spirited citizens, a meeting was called at Bryden's Fountain Inn, on the 20th of April, 1804, to devise means of carrying out the design. It was largely attended by the best citizens of Baltimore, and Gen. Samuel Smith being called to the chair, the following resolutions were unanimously adopted:

"That a committee of seven be appointed on the part of this meeting to prepare and report the plan and constitution of a company for the purpose of introducing a copious supply of water into the city, together with the amount of capital stock which the said company ought to possess, the number of shares, the mode and terms of subscription, and the times of payment.

"Resolved, That the said committee consist of the following persons, viz. Gen. Smith, Alexander McKim, Elias Ellicott, Robert Goodloe Harper, Thomas McElderry, William Cooke, and Col. John E. Howard.

"Resolved, That this meeting be adjourned till Tuesday, May 1st, 7 P.M., at this place, and said committee be requested to make their report at that time."

In the mean time, John O'Donnell, Thomas McElderry, Joseph Stirling, William Buchanan, Cumberland Dugan, the proprietors or tenants of houses fronting on Market Space, and of the McElderry, Dugan, and O'Donnell wharves, applied to the City Council for permission to introduce "at their own expense, and with the aid of voluntary subscriptions, for the convenience and health of the citizens occupying those parts of the city, a stream of pure spring water from sources arising near the Harford road, in the vicinity of the city, all the right to said water when introduced to attach to the mayor and City Council." An ordinance was passed on March 8, 1804, granting their prayer, and appropriating a lot of ground in Market Space, near the south end of the Centre Market, for the purpose of erecting thereon a reservoir for the storage of the water to be introduced.¹

¹ March 3, 1808, an ordinance was passed by the City Council authorizing the introduction of water at Fell's Point by Joseph and James Blays.

The committee appointed at Bryden's hotel reported on May 1st articles of association of the proposed Baltimore Water Company, which were discussed, amended, and adopted, and William Cooke, Alexander McKim, R. G. Harper, George Grundy, and T. McElderry were appointed commissioners to open books and receive subscriptions to the stock. Books were accordingly opened on the 4th of May, only three days afterwards. To diffuse the stock among the citizens as much as possible, no one, according to the original terms of subscription, could subscribe on the first two days for more than four shares, nor could any one subscribe by proxy. In spite, however, of the importance and popularity of the enterprise, great difficulty was experienced in procuring the necessary subscriptions, the activity in business and the small amount of capital at that time possessed by the citizens proving serious obstacles to its success. The books were kept open from the 4th until the 20th of May, the commissioners in the mean time personally calling upon the citizens to induce them to subscribe, if only for one share. At length the insurance companies and other corporations came forward and subscribed liberally, and thus all the stock was taken. On the 24th of May, 1804, the company organized with the following board of directors: John McKim, Sr., James A. Buchanan, Jonathan Ellicott, Solomon Etting, John Donnell, William Cooke, and James Mosher. The directors secured the services of Jonathan Ellicott, a civil engineer of distinction, and a member of the board, and proceeded to make the necessary surveys and estimates. After careful investigation, aided by "the perfect knowledge Mr. Ellicott possessed of the force of the several streams that could be used for that purpose, a decided preference was given to Jones' Falls, as it had long been well known in dry seasons to be the most permanent stream in this part of the country." Proposals were made to purchase all the water-rights on the stream as high up as "Whitehall Mill," then below Woodberry, with the design of conducting the stream "to the elevated ground near the old poor-house, there to form a large reservoir for the supply of the city, and to use the surplus water for milling purposes, by erecting a range of mills on Centre Street." Owing principally to the scarcity of money, which was more profitably employed in active business, this scheme was abandoned, and in the fall of 1804 the company purchased from Messrs. John Eager Howard, Josias Pennington, and James Ogleby several parcels of land embracing the water-privileges of that part of Jones' Falls immediately above and below what is now John Street bridge. They also purchased a lot at the southwest corner of Calvert and Centre Streets, and constructed a storage reservoir, which was filled with water from Jones' Falls, conveyed through an open canal starting from the dam near the present site of John Street bridge and running between Calvert and North Streets. Subsequently, for the supply

of the more elevated portions of the town, another reservoir was constructed on Howard's Hill, near the southwest corner of Franklin and Cathedral Streets. The water was pumped into this reservoir by a water-wheel, which was in a building on the southeast corner of Calvert and Centre Streets. At this point the office of the company was also situated, and adjoining were the "City Mills," which were run by the waste water from the Centre Street reservoir. It was discharged by means of an open canal through the grounds now occupied by the Calvert Street Railway Station, and thence into Jones' Falls near Bath Street.¹ Under the direction of John Davis, an engineer of Philadelphia, the company proceeded to complete the works, and, it is said, contracted in June, 1805, with Samuel Hughes, of Harford County, for a supply of cast-iron pipes ranging from two and a half to six inches, at from sixty-five dollars to eighty dollars per ton. Most of the pipes at first employed, however, were of wood, either locust or spruce pine, and were from twelve to fifteen inches in diameter, with a bore of about four inches.² In the fall of 1806 the company was in a condition to furnish water to the city, and on the 29th of October, John McKim, the president, addressed a letter to the mayor to ascertain what quantity the city would require for water-plugs, etc. In consequence of the receipt of this letter the City Council was convened, and a joint committee, composed of James Calhoun, Thorndike Chase, Wm. Lorman, Henry Payson, George P. Keepports, and George Decker, on the 13th of November, made a report upon the subject, which resulted in the purchase by the city of all the fire-plugs erected by the water company, with the proviso that the city should insert new ones in the future at its own expense, and that the company should furnish the water without charge.³ It would seem, however, that unexpected delays must have occurred, as previous to May, 1807, the company furnished no water to the city, except a small amount, which was supplied by natural flow directly from Col. Howard's spring; but in this month the pumps, which had been erected at the intersection of Centre and Calvert Streets, were put in successful operation, and thenceforward water was obtained from Jones' Falls and furnished to the city almost exclusively through this process of artificial elevation into reservoirs of various heights, ranging from sixty-

¹ On the 19th of January, 1805, an act of incorporation was obtained from the Legislature, but, it is stated, was not accepted on account of objectionable restrictions; a supplement to this act was passed on the 25th of January, 1806, but neither does this appear to have been altogether satisfactory.

² On the 14th of February, 1806, an ordinance was passed authorizing the company "to open streets, lanes, and alleys for the purpose of laying down water-pipes."

³ It is stated that in December, 1806, a conference was held between the directors of the company and a committee of the Council in regard to the purchase of the company's stock by the city, but nothing definite resulted from it. The officers of the company in 1806 were John McKim, president; and James A. Buchanan, Solomon Etting, Wm. Cooke, James Mosher, John Donnell, and Jonathan Ellicott, directors.

five to one hundred and thirty-six feet above tide-water. On the 24th of December, 1808, "the president and directors of the Baltimore Water Company," consisting of Wm. Cooke, John McKim, James A. Buchanan, John Donnell, Solomon Etting, James Mosher, Jonathan Ellicott, and John Hollins, were incorporated, with a capital stock of \$250,000, divided into 5000 shares of five dollars each.

In 1811 the receipts of the company were about \$9000 per year from water-rents. With a view of extending the supply of water to the utmost extremities of the city, the company, in May, 1829, began to take up the old wooden main pipes which led from the reservoirs, and substituted larger iron pipes "made at the furnaces of the young Messrs. Ellicott's, on the Patapsco." At this time the company had over thirteen miles of pipe laid in the city, consisting of 30,530 feet of iron pipe and 42,230 feet of wooden pipe. At the January session of the City Council in 1829 a joint committee was appointed "to inquire during the recess into the best mode of furnishing every part of the city in the most ample manner with a never-failing supply of pure, fresh, and wholesome water, which will render the preservation of pumps and wells unnecessary." On the 15th of January, 1830, the committee, composed of P. Lauroenson, Fielding Lucas, Jr., John Reese, Samuel Moore, Jas. K. Stapleton, Wm. Hubbard, and George Keyser, made their report to the Council. Aided by Capt. Louis Brantz, who tendered his services free of charge, they examined all the streams near the city from which the desired supply was to be drawn, and sent Messrs. Lauroenson, Lucas, and Moore as a sub-committee to Philadelphia to examine the Fairmount Water-works, and to obtain all information relative to their cost, mode of construction, etc. Upon the return of the delegation from Philadelphia the committee successively visited Gwynn's and Jones' Falls and the Patapsco River. On the former it was discovered that the canal or race which conveyed the water of the Falls to the Calverton Mills was about one hundred and eighty-five feet above tide, and that it could be continued north of the Frederick turnpike road, near the residence of Jas. Carroll, on the line of Baltimore Street, extended to the city limits, where reservoirs could be erected. The race on Jones' Falls, at Tyson's mill, about three miles from the city, was about one hundred and fifty feet above tide, and the committee reported that "the extension of it would be attended with a great deal of expense and labor from the rocky, undulating nature of the ground," etc. As these two streams presented the same advantages from their natural elevation, the committee endeavored to ascertain if the mill property could be purchased. It was found that on Gwynn's Falls there were ten miles between the Calverton mill-race and tide-water, and ten on Jones' Falls between Tyson's mill-race and the city. On the former stream all the proprietors consented to

sell their property; but on the latter, while some consented, others peremptorily refused. Upon the Patapsco they found there was but one—the Hockley works—which they would be compelled to purchase in case that stream was selected, and that it would cost about five hundred and fifty thousand dollars to introduce the water from it upon the plan of the Fairmount Water-works in Philadelphia. After a careful examination of the whole subject the committee therefore unhesitatingly recommended Gwynn's Falls to the City Council "as the most abundant and most economical source whence the city of Baltimore could be supplied with a never-failing supply of pure and wholesome water." Their preference for Gwynn's Falls was based,—

"1st. On account of the superior elevation of its stream above tide at a shorter distance from the city.

"2d. Because the Calverton race can be extended at its present elevation into the city at a point the most convenient of all others, in our opinion, for the construction of reservoirs comparatively with little labor and expense, the nature of the ground being highly favorable for that purpose; whereas the race of Mr. Tyson's mill, on Jones' Falls, could be carried little further at much greater labor and expense.

"3d. Because the necessary water-rights on Gwynn's can be purchased for less than half the sum which would be required for those on Jones' Falls if the latter could be obtained, which it appears they cannot be."

In conclusion, they say that Capt. Brantz had gauged the Calverton mill-race several times during the summer, and the smallest quantity of water he ever found it to produce was upwards of 10,000,000 gallons in twenty-four hours, and that the city would have in it "a supply of water abundantly sufficient, in the present state of the race, for the population of half a million of souls, which may, when necessary, be nearly doubled by making the dam tight and by substituting a brick tunnel of six feet diameter for the present open and imperfect race." They therefore recommended the city to purchase all the mills below the Calverton mill-race, the five Calverton mills, the three known by the name of the Ellicott's Mills, on the Frederick turnpike road, and the two mills of James Carroll, owned respectively by Messrs. Jessop, Worthington, James Cheston, George Ellicott, Jacob C. Davis, Thomas Ellicott, and James Carroll, and to pay for the same in five per cent. city stock. Upon the submission of this report, Thomas Parker, president of the Baltimore Water Company, on Jan. 18, 1830, on behalf of his company, memorialized the mayor and City Council, offering to sell their works and fixtures, exclusive of their real estate, to the city for \$350,000. The proposition, however, was not accepted, nor does any further action appear to have been taken at that time upon the committee's report. In 1833, upon application of the City Council, the company offered to sell their works, which had been enlarged by the purchase of Salisbury Mill and the construction of a new pump-house and reservoir, for \$500,000. The number of water-supplies at that time was 2164, and the annual income therefrom \$21,300. In 1835, in response to another overture of the Council, the company offered to sell their interest for

\$550,000, but the municipal authorities declining to pay the price the offer was withdrawn. The annual receipts of the company at this time were \$25,500, and there were about eighteen miles of pipe laid down in the streets of the city, one-fourth of which were of the old defective pattern of cast iron, one-fourth of wood, and the remainder of iron of the improved pattern of the present day. In 1845 the construction of a new reservoir on the east side of the Falls, near the Lanvale Cotton-factory, a short distance above Belvidere bridge, was begun, which was completed in the latter part of 1846. It was eighteen feet deep, with a capacity of about 15,000,000 gallons of water, and covered nearly seven acres of ground. It was intended to supersede the reservoir on Calvert Street, and to supply the city east of the Falls. The water was drawn by natural flow through pipes of twenty inches in diameter from the head-race of the mill, which the company purchased from Maj. Bradford. The work was constructed under the general supervision of Capt. Chiffelle, chief engineer; the excavation and embankment were made by Messrs. Mullen and Lester, the brick-work by Mr. Downing, and the stone-paving by Messrs. Benzinger, Eschback & Co. The pressure from this new reservoir was so great that in the following year many of the wooden pipes still remaining in use burst, and it was found necessary to replace them with iron ones, which was done in Harrison Street, from Gay to Baltimore, in April, 1847. Notwithstanding the construction of this new reservoir, the supply of water was soon found insufficient for the needs of the city, and in 1848 the statement is made that "it is a generally admitted fact that Baltimore is most inadequately supplied with water," and that "the time has arrived for a movement to be made towards diverting the water of Gwynn's Falls, the Gunpowder, or some other of the falling streams of the vicinity, for this purpose. Whilst the city is extending and the demand increasing, the water of Jones' Falls is yearly diminishing, and likewise becoming less pure and wholesome." From 1835 to 1852 the use of pumps and springs, from which many citizens had previously obtained their water, became much less general, and the demand for water from the company's works increased rapidly, the income from water-rents in 1852 being eighty thousand dollars. In the same year the City Council made a fifth application for the purchase of the water-works, and the company offered to sell them for \$1,250,000. During the same year, with a view to the final settlement of what had come to be known as the "water question," Messrs. Vansant, Winans, Keighler, King, Randolph, and Turner were appointed commissioners by the City Council "to examine and report upon the practicability and propriety of introducing a larger and better supply of pure water into the city." Capt. Thomas P. Chiffelle was appointed by the commissioners to gauge the flow of water in the Patapsco and Great Gunpowder Rivers and Gwynn's

Falls, and to make examination of the elevations and depressions of the land between these streams and the city, and also to take the altitudes of those water-courses at favorable points above tide-water. On the 27th of May, 1853, the Legislature passed an act authorizing the mayor and City Council to introduce a permanent supply of water into the city, and empowering them to purchase all necessary lands and water-rights, as well as the interest and property of the water company. For the purpose of defraying the cost of the undertaking the municipal authorities were further authorized to issue certificates of debt, to be denominated "Baltimore Water Stock," to an amount not exceeding two millions of dollars.

On the 1st of September, 1853, the commissioners appointed by the resolution of the City Council, approved May 11, 1852, made their report, which was referred to a joint special committee of the City Council. The committee reported in favor of referring the whole subject to the people for decision, and accordingly a resolution was passed on the 5th of October submitting the question of the establishment of water-works by the city to the popular vote. The vote was taken at the municipal election on the 12th of October, 1853, when 9727 votes were cast in favor of the undertaking and 304 against it. In pursuance of this decided expression of the popular will an ordinance was passed, approved July 29, 1854, to carry out the provisions of the act of 1853. Negotiations for the purchase of the old water-works were then resumed, and finally concluded in August, 1854, by their transfer to the city for \$1,350,000. This transfer included several large mills and much valuable real estate. At this time the water-works consisted of two small pools of water in the valley of Jones' Falls, which were formed by the original dams of the Mount Royal and Rock Mills, and from which the whole supply for the city was conducted in large iron mains to a receiving reservoir on the east side of the Falls a short distance below the Charles Street bridge. From this reservoir water was distributed to those points of the city lying below a level of sixty feet above mean tide by direct gravitation. For the higher portions of the city the water was raised by machinery into a second reservoir at the intersection of Charles and Chase Streets, from which it was distributed to all other elevations not exceeding one hundred and thirty-six feet above tide. There were about fifty miles of distributing pipes, and the joint capacity of the two reservoirs was twenty-five millions of gallons, while that of the two mill-pools was about ten million gallons. The residents of the upper and higher parts of the city were not reached, however, by the water-service of the company, but were still forced to depend upon pumps and wells. The president of the water company, at the date of the transfer in 1854, was Columbus O'Donnell. Under an ordinance approved Dec. 29, 1854, a board of three water commissioners was established to take charge of the

Water Department, which was organized in the following year, and consisted of George Neilson, president of the commissioners; Levin P. Clark, first assistant commissioner; Edward Spedden, second assistant commissioner; Wesley Stevenson, secretary and treasurer; J. Green Boggs, book-keeper; Eli D. Howard and Berry Tanner, collectors. The cost of the introduction of water from the Gunpowder was estimated by Mr. Sickels, civil engineer, at \$2,135,000. While the surveys and estimates were being made, however, many portions of the city were suffering for want of a proper supply of water; and it was accordingly determined by the municipal authorities to sink a number of artesian wells in those localities where they were most needed. The first of these wells sunk by the corporation was on Block Street near the chemical works, and was constructed in April, 1855. Many of the wells and pumps, the use of which has recently been interdicted, were constructed in the eastern and southeastern sections of the city at this period. In 1856 an ordinance was passed authorizing the issue of fifty thousand dollars additional water stock to enlarge and improve the water-works. In 1857, under an ordinance approved April 14th, the water board was reorganized by the appointment of six commissioners, James S. Suter, water engineer, and Wesley Stevenson, water registrar. The City Council also passed a further ordinance, approved July 11, 1857, to provide for an increased supply of water from Jones' Falls, upon the plan reported by James Slade, consulting engineer, and authorizing the board to purchase land and water rights and enter upon the construction of new works. By the act of 1858 the city was empowered to issue additional water stock to the amount of \$1,000,000; a subsequent ordinance, however, required all plans for the extension of the work to be submitted to the City Council for its approval. After the consideration of many surveys, plans, and estimates, the choice of the City Council rested between the Gunpowder River and Jones' Falls, and the latter was at last selected. The city had purchased in 1856 the water rights from Rock Mills, above Woodberry, for \$150,598; and in 1857 it purchased the water rights to the head of the lake (originally known as Swann Lake, now known as Lake Roland), with the land required for the lake, dam, and conduit, for \$289,539. During the summer and autumn of 1857 Mr. Wampler, under the general directions of Mr. Slade (who acted as consulting engineer), made all the surveys required in the process of final location of the lake and conduit line, and defined the boundaries of the property acquired by condemnation or purchase.

These arrangements having been concluded, the construction of the new works was begun in 1858, under the supervision of Charles P. Manning, by the erection of a dam across Jones' Falls, at a narrow pass near the Northern Central Railroad Station, eight miles from the city, and the excavation of a

natural basin above it. The dam and lake were both so far completed as to be available for use in 1860, and entirely completed in 1861, and the conduit extending from the gate chamber of the dam to Hampden reservoir was finished by the 1st of January, 1860, twenty months from the time of its commencement. The contractors of the lake were Messrs. Crowley, Hoblitzell & Co.; of the dam, Messrs. Hoblitzell, Crowley & Co. Among the contractors of the conduit line were F. C. Crowley, John W. Maxwell & Co., and Joseph H. Hoblitzell & Co. The cost of the lake was \$112,752.55; of the dam, \$152,190.65. In constructing the conduit it was necessary to excavate three tunnels at different points, one of 1000 feet in length, one of 1225 feet, and a third of 2950 feet. Six millions of bricks were used in its construction, and the whole cost of the (conduit) line, tunnels, and open cuts was \$536,339.35. Hampden reservoir, which is east of Druid Hill Park, near Jones' Falls, was constructed in connection with the new water system, and was commenced in the autumn of 1858, and completed in the spring of 1861. The contractors were Messrs. John W. Maxwell & Co., and its cost was \$206,643.53. Mount Royal reservoir, located on what was formerly part of the Mount Royal Mill property, west of the Northern Central Railroad track, and a short distance north of Boundary Avenue, was commenced in December, 1859, and was finished in May, 1862. Its cost was \$112,352.72, and with the pipe-line from Hampden reservoir to the northern limits of the city, completed the new system of water-works introduced under the auspices of the city at that period. The cost of the pipe-line was \$142,700.14; it was commenced in the month of August, 1860, and was completed in February, 1861. The manufacture of the pipes and the excavation of the trench were executed by contractors, the former by Messrs. Poole & Hunt and the latter by Messrs. John W. Maxwell & Co. The process of delivering and laying the pipes was performed by mechanics and laborers employed by the day. The graduation and the larger proportion of the masonry in and around the Mount Royal reservoir were executed by Messrs. Burke & Green. The masonry of the pipe vault and screen was built by mechanics and day laborers, but the iron house which covers the well was erected by Messrs. Hayward & Bartlett, and the gate-keeper's cottage by Messrs. Binyon & Andoun. The aggregate cost of these new works, including the sum of \$50,000 for engineering expenses, was \$1,313,009.35. The actual cost of all the city water-works up to Jan. 1, 1863, was as follows: for real estate, water rights, etc., \$1,069,661.52; for construction of the new works, \$1,313,009.35; for distributing mains in the city, \$1,066,000; total, \$3,526,000. The estimated revenue from water-rents for the year 1863 was \$225,000, besides income from other sources. At that time there were 38,881 buildings in the city, of which 19,640 used the water. The

expenses for the year, including the interest upon the water stock, were estimated at \$228,000. The property purchased from the old company, and not required by the city, was sold for \$50,000. The Water Board consisted at this date of John Lee Chapman, president, *ex officio*; John W. Randolph, Evan T. Ellicott, F. Littig Schaeffer, John B. Seidenstricker, and George Merryman; James S. Suter, water engineer; John W. Randolph, Jr., clerk; Samuel Hinks, water registrar; Samuel J. Maccubbin and Charles E. Nedles, clerks; Eli D. Howard and John W. Blake, collectors.¹

Although the new works were not entirely completed until May, 1862, a part of the western section of the city was supplied from the new source as early as the 22d of February, 1861. It was discovered, however, soon after the completion of these works, that they would be insufficient for the needs of the city, and in 1863 the City Council passed an ordinance, approved August 27th, authorizing a loan of \$300,000, to be expended for the purchase of land and the construction of another reservoir. The site of Druid Lake, called at one time Lake Chapman,² was then a deep ravine, and was selected on account of the adaptation of the location to the purpose, and the great addition which a lake of the size and character designed would make to the beauty of the park. Work on this new reservoir was commenced in March, 1864, and was so far completed as to admit of the introduction of water in the latter part of 1865. In the fall of 1866 the water was drawn off and the pipes through the base of the dam examined, when four of them were found to be broken, and a similar examination in the following year revealed the fact that the remainder had also been broken by the weight of the immense earth embankment.³ An entire change was necessitated, and new pipes were laid through the rock formation of one of the sides at large cost, in order to insure future safety. This change also, of necessity, reduced the capacity of the lake (which had been originally designed to hold 1,000,000,000 gallons), as it had to be partially filled up in order to obtain safe connection with the influent and affluent pipes, and made its total cost \$1,000,000, instead of \$300,000 appropriated in the beginning. The improvement in the water service after it came under the control of the city may be estimated from the following comparative statement of income receipts under the two managements. The income of the old

¹ In August, 1861, an attempt was made to supply Fort McHenry with water by means of an artesian well, but after boring to the depth of one hundred and twenty-five feet the work was stopped by a thick layer of oyster shells. For eighty feet of this distance a very impervious clay was encountered studded with bowlders and nodules of iron ore, limestone, etc.

² In 1867 the Water Board "restored to Lake Chapman its appropriate name of Druid Lake."

³ The timely discovery of the condition of the pipes undoubtedly prevented very serious consequences, as the leakage would soon have undermined the dam and let loose upon the city and neighboring villages a dangerous and disastrous flood.

water company in 1835 was \$25,500; in 1852 it was \$80,000. The income of the city Water Department in 1862 was \$207,808; in 1866, \$272,522; in 1868, \$352,408. The working expenses for 1868 were \$47,838.93, which included \$10,000 expended in repairs necessitated by floods. After the completion of the new works it was supposed that the storage supply was sufficient, but it proved utterly inadequate in 1869, when the city was threatened with a water famine, and in 1870 the same trouble was experienced. In 1871 the authorities determined upon the construction of another depository, now known as the High Service reservoir, which was begun in that year. It was designed particularly to supply the higher sections of the city, and is located in Druid Hill Park; it was not completed until June, 1874. The inadequacy of the water-supply during the summers of 1869, '70, '71, and '72 compelled the adoption of immediate measures for the relief of the community, and on the 23d of December, 1872, the City Council passed an ordinance directing the award of a contract for the introduction of a temporary supply to the lowest bidder. The contract was awarded to Van Stamp & Suter, and two Worthington pumps were erected at Meredith's Ford, on the Gunpowder, for the purpose of replenishing Lake Roland in time of need. Each of these pumps has a capacity of 5,000,000 gallons, and forces the water from the Gunpowder through a thirty-six-inch pipe for three and a half miles, discharging it into a basin on Roland Run, two miles from the lake. This temporary supply has been in use since July, 1874, and has rendered service of the most important character.

On the 3d of November, 1874, the ordinance providing for the introduction of a permanent supply of water from the Gunpowder River was submitted to the people, and was ratified by a vote of 13,131 in its favor to 6202 against it. As early as January, 1866, Mayor Chapman recommended to the City Council the purchase of the water rights of the Great Gunpowder River for the purpose of securing an additional supply of water to meet the future wants of the city. The City Council adopted the suggestion and authorized the issue of the necessary water stock, and the purchase was accordingly made. It included the water rights of the whole stream from tide-water to Meredith's bridge, a distance of twenty-one miles, with sixteen hundred acres of land, the bed of the lake on the Great Gunpowder, with a margin of one hundred feet, and also the Hollingsworth Copperworks, Joppa Mills, and Patterson Nail-factory, the price paid for the whole being \$265,000.

After the passage of the ordinance of 1874, steps were immediately taken to carry its provisions into effect, and the necessary preliminaries having been arranged, ground was broken for the permanent water-supply on the 3d of December, 1875, by Robert K. Martin, the able civil engineer, who on the 18th of April, 1858, had broken ground for the first water-

works constructed by the city, and who was during all this time in the employ of the Water Board. After nearly seven years of continuous labor, the works connected with the permanent supply were completed in October, 1881, at a cost of more than \$4,500,000, making a total of \$10,000,000 expended in supplying the city with water. On July 1st, Mayor Latrobe officially turned in the water from the dam at Loch Raven, on the Gunpowder River, into the great tunnel which connects the dam with Lake Montebello. The Gunpowder River, from which the new supply is drawn, is one hundred and seventy feet above tide. To find its own level the water must rise sixty-five feet above the base of the Washington Monument, and seven-eighths of the city can be supplied by natural flow. The works connected with the supply consist of a dam across the Gunpowder at Raven's Rock, about eight miles from the city, a receiving lake at the same point called Loch Raven, a tunnel piercing the rocky bank of the stream and connecting Loch Raven with a distributing reservoir called Lake Montebello, about two miles from the city, on the line of the Harford road, and a second conduit connecting Lake Montebello with another distributing reservoir, called Lake Clifton, situated on a part of the Johns Hopkins estate. The Gunpowder dam is constructed of solid stone masonry, is five hundred feet wide, thirty-one feet high, and sixty-five feet thick at the base. Loch Raven, which extends from Meredith's Ford bridge to the dam at Raven's Rock, is one hundred and seventy feet above tide, five miles long, one thousand feet wide, twenty feet deep at the dam, and four feet deep at the bridge, and is surrounded, by a roadway thirty feet wide and nine miles in extent. Over the streams running into the lake, and on the line of the carriage-drive, nine stone bridges have been constructed, three being on the east, and six on the west side of the lake. Seven of these bridges are built of white marble found in the vicinity, and two of white and bluestone combined. Their spans are twenty and thirty feet, according to the width of the stream crossed, and each is of different design. The construction of these bridges was necessary for the passage of the carriage-drive on each side; their openings are sufficient for all freshets that may occur; there is six feet head-room from the surface of the water to the intrados of the arches in all cases, and boats can readily pass from the main portion of the lake under the arches and out into the estuaries on the sides. The tunnel connecting this lake with Lake Montebello is seven miles in length, and is a circular bore with an internal diameter of twelve feet and a dip of one foot to the mile.¹ For five miles and a half its course is through hard rock, which required no arching, and where the drifts had to be pushed by hand-drilling and dynamite blasting. The remaining mile and a half is of brick-work, constructed with the greatest care and the utmost atten-

¹ It was commenced in December, 1875, and completed November, 1880.

tion to solidity and endurance. Its direction is north-east, and the greatest depth of the drift is at Satyr Ridge, where it is three hundred and sixty-five feet underground. It is an air-line from the dam to Lake Montebello, except just before reaching this latter point, where a curve with a radius of seven hundred and seventeen feet was used to give the proper direction on entering the gate-house. The waste-weir in the gate-house at the dam is on a level with the intrados of the arch of the conduit at that point, and the waste-weir in the gate-house at Lake Montebello being on a level with that on the dam, there will be consequently seven feet of water over the conduit at the lower end when the upper portion is full. In the construction of the tunnel fifteen shafts were sunk from the surface to the grade-line. From the bottom of these shafts working-parties advanced north and south to meet each other. With the opening at each end of the tunnel and the two at each shaft, there were thirty-two points from which the tunnel was worked. The shafts varied from sixty-five to three hundred feet in depth. They were located about two thousand feet apart, except at each end of the tunnel, where the shafts were shallower, the distance between them was greater. The longest drive between shafts was three thousand one hundred feet, at the south or Montebello end. Six miles of the tunnel was through blue gneiss, most of it very hard, and not disintegrating or softening from the action of the air. This six miles lay north from Lake Montebello in an unbroken chain. The first mile south from the dam was through limestone, all of which, except four or five hundred feet, required arching. The total cost of the tunnel from the dam to Lake Montebello was \$1,779,610.24. Montebello Lake is one hundred and sixty-three feet above tide, with a water-surface of sixty acres, a depth of thirty feet, and a drive eighty feet wide and a mile and a half long. The supply of water for the city, after it leaves the gate-house at Lake Montebello, is conveyed in a conduit, built partly in tunnel and partly in open cut, a distance of five thousand three hundred and ninety-one feet, to the gate-house at Lake Clifton. Clifton Lake has the same level and similar dimensions, and from this point six distributing mains, each forty inches in diameter, bring the water to the distributing mains in the city.¹ The Jones' Falls system, as already shown, consists of Lake Roland, two hundred and twenty-five feet above tide, one and a half miles long, with an average width of one-eighth of a mile, and a water-surface of one hundred and sixteen acres; a conduit four miles long, of brick-work, semi-circular at bottom, semi-ellipse at the top, long axis six feet two inches, short axis five feet, with a dip of two feet to the mile; Hampden reservoir, two hundred and seventeen feet above tide, semicircular in form, and eight acres water-surface; Druid Lake, in

Druid Hill Park, two hundred and seventeen feet above tide, depth twenty to sixty-five feet, with fifty-three acres of water-surface, surrounded by a drive of one and a half miles, sixty feet wide; High Service reservoir, three hundred and fifty feet above tide, supplied by two pumps, with a daily capacity of seven million of gallons, with a water-surface of four acres;² Mount Royal reservoir, one hundred and fifty feet above tide, circular in form, with a water-surface of five acres. These two systems (of Jones' Falls and Gunpowder River) are capable of furnishing daily a supply of 165,000,000 gallons of water, which is the capacity of the streams by which the works are fed. To this must be added the sum total of the reservoirs and aqueducts as given below.

Jones' Falls.—Lake Roland, 400,000,000; conduit (daily), 3,500,000; Hampden reservoir, 46,000,000; Druid Lake, 429,000,000; High Service reservoir, 27,000,000; Mount Royal reservoir, 30,000,000. Total, 935,500,000.

Gunpowder River.—Loch Raven, 1,500,000,000; conduit (daily), 30,000,000; Montebello Lake, 500,000,000; Clifton Lake, 265,000,000; total, 2,170,000,000; grand total, 3,105,500,000.

The cost of the works of the Gunpowder supply to Dec. 31, 1880, had been \$4,704,260.83. The total cost of both systems of works has been about \$10,000,000.

The net revenue of the Water Department for 1880, after deducting the sum of \$28,453.15 allowed in discounts, amounted to \$606,879.06, as against \$552,877.27 for the previous year, showing an increase of net revenue for 1880 of \$54,001.79. The working expenses of the department for 1880 were \$87,419.31.

There are 277 miles of water-pipe in the city. The number of water-meters in service are 524, of which 72 were placed in 1880, and 54 in 1879. The registered consumption of water by meters for 1880 was 629,680,175 gallons, against 496,032,105 gallons in 1879. The number of water-takers in 1880 was 50,000, the revenue from which in 1880 amounted to \$72,483.52, against \$64,230.86 in 1879, an increase of \$8,252.66, notwithstanding the reduction in price made by the board from fifteen to twelve cents per thousand gallons for the last half of the year. For 1881 the charge for water served through meters has been still further reduced, to eight cents per thousand gallons. It is difficult to ascertain accurately the city's daily consumption of water, as the supply is served from two of the three elevations by gravity. The gravity supply can only be ascertained by shutting off the supply from the reservoirs and measuring shrinkage. Close observation at Lake Roland, however, as to opening of gates, has furnished data with respect to water consumption which may be regarded as substantially reliable. When the conduit is being regularly supplied, with no visible waste along the line, it is estimated that every inch of opening on the gates repre-

¹ A plan substantially the same as that which has been adopted in the new water-supply was recommended by T. E. Sickels and Alfred Duvall, civil engineers, in 1854.

² This reservoir distributes to a tenth of the city, Druid Lake and Hampden reservoir supplying the rest of the high service.

sents a consumption of 5,000,000 gallons of water every twenty-four hours. In previous warm seasons the heavy draw seldom exceeded three and a half inches of gates, which represented 17,500,000 gallons, but during the summer of 1880 the gates for days required five inches opening in order to supply the conduit, representing a consumption of nearly 25,000,000 gallons.

The completion of the Gunpowder Permanent Water-supply gives Baltimore a system of water-works unequaled in the United States, affording a supply of water nearly double that of the great city of New York, which has a supply of only 100,000,000 gallons daily, wherein Baltimore has a supply of 150,000,000 gallons. The capacity of the Philadelphia water-works is 50,000,000 gallons. The successful completion of the permanent water-works is largely due to the engineering skill of Robert K. Martin, under whose supervision they were constructed.

The members of the Water Board from 1858 have been as follows:

- 1858-60.—Hon. Thomas Swann, chairman; Columbus O'Donnell, Adam Denmead, F. Littig Schaeffer, Thomas E. Hambleton, John Dukehart, John W. Randolph. Charles P. Manning, chief engineer of new works; James S. Suter, water engineer; W. Stevenson, water registrar. *Engineer Corps New Works, Jones' Fulls Supply*: Charles P. Manning, chief engineer; W. Eugene Webster, principal assistant engineer. Frank F. Jones, resident engineer; H. Scott Thurston, assistant engineer, in charge of Lake Roland and dam. Robert Hooper, Jr., resident engineer; Henry M. Graves, assistant engineer, in charge of conduit line from dam to waste-weir and pipe-line. Robert K. Martin, resident engineer; William L. Kenly, assistant engineer, in charge of remainder of conduit line and Hampden and Mount Royal reservoirs.
- 1861.—Hon. George W. Brown, chairman; John W. Randolph, secretary; Adam Denmead, Thomas E. Hambleton, Nicholas Poplein, George U. Porter, Isaac S. George. Charles P. Manning, chief engineer of new works; James S. Suter, water engineer; W. Stevenson, water registrar.
- 1862.—Hon. John Lee Chapman, chairman; John W. Randolph, secretary; Evan T. Ellicott, F. Littig Schaeffer, John B. Seidenstricker, George Merryman. Charles P. Manning, chief engineer of new works; James S. Suter, water engineer; Samuel Hinke, water registrar.
- 1863-65.—Hon. John Lee Chapman, chairman; John W. Randolph, Evan T. Ellicott, F. Littig Schaeffer, John B. Seidenstricker, Gerard T. Hopkins, Francis T. King. James S. Suter, water engineer; Robert K. Martin, civil engineer; George Merryman, water registrar.
- 1866-67.—Hon. John Lee Chapman, chairman; John W. Randolph, John R. Kelson, F. Littig Schaeffer, John B. Seidenstricker, Gerard T. Hopkins, Francis T. King. James S. Suter, water engineer; Robert K. Martin, civil engineer; George Merryman, water registrar.
- 1868.—Hon. Robert T. Banks, chairman; James L. McLane, George U. Porter, Charles D. Slingluff, John A. Griffith, John F. Hunter, Wendel Bollman. James Curran, water engineer; Robert K. Martin, civil engineer; William L. Sharetta, water registrar.
- 1869-71.—Hon. Robert T. Banks, chairman; James L. McLane, George U. Porter, Charles D. Slingluff, John A. Griffith, John F. Hunter, George P. Thomas. James Curran, water engineer; Robert K. Martin, civil engineer; William L. Sharetta, water registrar.
- 1872-73.—Hon. Joshua Vansant, chairman; James L. McLane, John A. Griffith, John F. Hunter, George P. Thomas, John R. Seemuller, Fielder C. Slingluff. James Curran, water engineer; Robert K. Martin, civil engineer; William L. Sharetta, water registrar.
- 1874-75.—Hon. Joshua Vansant, chairman; James L. McLane, John F. Hunter, George P. Thomas, John R. Seemuller, Fielder Slingluff, Thomas Bond. James Curran, water engineer; Robert K. Martin, civil engineer; William L. Sharetta, water registrar.

1876-77.—Hon. Ferdinand C. Latrobe, chairman; John R. Seemuller, John F. Hunter, George P. Thomas, Thomas Bond, George U. Porter, Thomas W. Hall, Jr. James Curran, water engineer; Robert K. Martin, chief engineer Gunpowder Permanent Supply; William L. Sharetta, water registrar.

1878.—Hon. George P. Kane, chairman; George U. Porter, John F. Hunter, George P. Thomas, Thomas Bond, William A. Fisher, N. Rufus Gill. James Curran, water engineer; Robert K. Martin, chief engineer Gunpowder Permanent Supply; William L. Sharetta, water registrar.

1879.—Hon. Ferdinand C. Latrobe, chairman; George U. Porter, John F. Hunter, George P. Thomas, Thomas Bond, William A. Fisher, N. Rufus Gill. James Curran, water engineer; Robert K. Martin, chief engineer Gunpowder Permanent Supply; William L. Sharetta, water registrar.

1880.—Hon. Ferdinand C. Latrobe, chairman; George U. Porter, John F. Hunter, George P. Thomas, Thomas Bond, William A. Fisher, N. Rufus Gill. James Curran, water engineer; Robert K. Martin, chief engineer Gunpowder Permanent Supply; Samuel Kirk, water registrar.

The engineer corps of the Gunpowder Permanent Supply from 1876 to 1880 has been as follows:

Robert K. Martin, chief engineer; William L. Kenly, principal assistant engineer; Charles P. Manning, consulting engineer; R. B. Hook, resident engineer, H. B. McLane, assistant engineer, in charge of First Residency; William R. Warfield, resident engineer, W. W. Kenly, assistant engineer, George L. Cummins, assistant engineer, in charge of Second Residency; C. O. Swann, resident engineer, John Ridgely, assistant engineer, in charge of Third Residency; Charles T. Manning, resident engineer, Francis O. MacTavish, assistant engineer, in charge of Fourth Residency; William T. Manning, resident engineer, John S. Patterson, assistant engineer, in charge of Fifth Residency; O. H. Balderston, resident engineer, William Seemuller, assistant engineer, in charge of Sixth Residency; Charles A. Hook, resident engineer to April 1, 1880, William A. Chapman, assistant engineer, and resident engineer from April 1, 1880, in charge of Seventh Residency; Matthew O'Brien, draughtsman; A. H. Tinges, resident engineer, William Benthall, assistant engineer, in charge of Eighth Residency.

CHAPTER XXI.

EDUCATION.

The First Schools—Public Schools and Colleges—St. Mary's Seminary—Johns Hopkins University—St. Catharine's Normal School—Oliver Hillerman Free School—Floating School—Baltimore Female College, etc.

WHILE the early settlers of Maryland doubtless entertained no little reverence for education, all the evidence goes to show that the majority of them were more interested in horse-racing and cock-fighting than in books. Some of the first colonists, indeed, were men of high culture, but the generality of the people had to subdue and replenish the land, and were forced to pay more attention to clearing the wilderness and fighting the savages than to mental improvement. People who wanted an education and had the means went to England to get it, but the greater part of the young Marylanders were more like Harry Warrington than his brother George. Fox-hunting in the morning and cards or dancing at night left them little time for books. The earliest effort to establish a public educational institution in Maryland was made in the year 1671, only thirty-seven years after the first settle-