

Water Supply Resources of New York City.

What will probably interest the average New Yorker more than any of the geologic facts published by the United States Geologic Survey in the recently issued New York City Geologic Folio (No 83), is the description of the New York water supply by Mr. H. A. Pressey, which concludes the text of the folio.

The first municipal supply in New York was provided in 1799, when the city, having a population of 60,000 purchased 2,000 shares of the stock of the Manhattan Company, and this company constructed a well 25 feet in diameter and 30 feet deep, in Center street, and pumped the water to a tank on Chambers street, from which it was distributed through pipes made of bored logs. The population and the demand for water increased so rapidly that greater supply was required, and in 1880 the city constructed a well at Thirteenth Street near Broadway, 60 feet in diameter and 112 feet deep, 97 feet being through rock. At 110 feet below the surface two lateral galleries were tunnelled out from the main well, each 75 feet long. The water, which was very hard, amounted to somewhat over 10,000 gallons a day, and was conveyed in cast-iron pipes over a portion of the city. The Manhattan Company also sunk a well at Broadway and Blecker street, 442 feet deep, through rock, which yielded 44,000 gallons a day. Four years later the city drilled a hundred feet deeper in the Thirteenth street well, increasing the supply to 21,000 gallons a day, and at about the same time a well was dug at Jefferson Market, 30 feet deep, from which some water was derived.

The supply from these various sources was so limited, however, that 1,600 hogsheads of water were brought in daily from wells in the country and sold, and 1,415 hogsheads of water were daily imported from wells in Brooklyn to supply shipping. A plan for procuring water from the Croton river was adopted by the Common Council in 1835 and ratified by popular vote. Construction was begun at once, and water was introduced into the city through the Croton Aqueduct in 1842. In 1883 the Legislature created an independent Aqueduct Commission, and in 1884 construction of a new aqueduct was begun under this commission. This new aqueduct has a capacity of 290,000,000 gallons a day and began the delivery of water in 1890. In 1891 the Aqueduct Commission was reorganized, and is now engaged in the construction of a storage reservoir which would probably have been completed in 1903 had not recent changes in design delayed its completion about two years. When this reservoir shall be put in service, probably in 1905, it is thought that the entire practical yield of the Croton watershed will be available for the use of New York City.

At the present time there are seven reservoirs in the Croton watershed (including the Cornell, now constructing), which, with certain natural lakes that have been made tributary to the Croton supply, drain an aggregate watershed of 360 square miles and have a total storage capacity of 73,736 million gallons. In addition to this, a supply has been introduced from the Byram Rivers, yielding about 17 million gallons a day. Originally this was used in part by the Borough of the Bronx, the surplus being delivered to New York; but at present the demand by the Borough of the Bronx is greater than the supply from these two small basins, so that in addition to this, about 10 or 12 million gallons a day are now furnished to the Borough of Bronx.

Brooklyn had no public water supply until after its population reached 200,000. In 1859 a public system was completed by the city, the supply being taken from ponds and streams on the south side of Long Island, east of the city. Since that time the yield of

surface water has been supplemented by pumping ground water from driven wells along the line of the conduit which conveys the water from the ponds, and a further supply is furnished by water obtained from wells at two pumping stations in the southern part of the city. Three private corporations furnish water, drawn from wells, for portions of Brooklyn. The entire supply of the borough is pumped either into reservoirs or directly into the mains.

The Borough of Queens has only a small supply, obtained from wells and pumped directly into the mains, the works being owned partly by the city and partly by private corporations.

The borough of Richmond has a small supply derived from wells. About 5.89 per cent of the total water supply of Greater New York is furnished by private companies, these companies depending solely upon ground-water sources.

It is thus shown that the present water supply of New York is obtained from four general sources: First, the watershed of the Croton River; second, the watersheds of the Bronx and Byram rivers; third, the watersheds of a series of small streams on the southern shore of Long Island; fourth, the ground water which is found underlying a stratum of clay on Long Island and on Staten Island.

The present demand is dangerously close to the capacity of the sources now available, and within the next few years this demand must be met by a materially increased supply. In considering these future demands of the city, several additional sources have been suggested, some of which are briefly considered in the folio, namely, Housatonic River, Tennessee River, Wallkill River, Rondout Creek, Esopus Creek and Catskill Creek, the Hudson River or some of its upper tributaries, Lake George, Lake Champlain, and the Great Lakes.

The water supply of the New Jersey cities within the limits of this quadrangle is also briefly discussed.

The contents of the New York Folio are as follows: 19 large sheets of descriptive text; 4 Topographic sheets, on the scale on one mile to an inch, with 20-foot contours; 4 Historical Geology sheets, showing the areal distribution of the underlying rocks and also quarries, mines, gravel-pits, clay beds, etc.; 4 Surficial Geology sheets, showing the areal distribution of the surficial deposits, with special reference to the deposits left by the ice sheet; 1 Structure Section sheet for the Harlem area, with 7 cross-sections; 2 sheets of photographic illustrations, showing the Palisades of the Hudson, the Falls of the Passaic, glaciated rock surfaces in Bronx Park, and the columnar structure of the basalt lavas of the Watchung Mountains; and 12 figures, distributed through the text, among them a map of North America showing the extent of the ice sheet, a sketch map showing the position of the ice front across Greater New York City, and a map showing the Appalachian sea during the Cambrian period.

This folio should be of great value to the secondary and higher schools, containing, as it does, within brief compass so much material not otherwise available outside of the resources of the larger libraries of the country.

Strikes a Rich Find.

"I was troubled for several years with chronic indigestion and nervous debility," writes F. J. Green, of Lancaster, N. H., "No remedy helped me until I began using Electric Bitters, which did me more good than all the medicines I ever used. They have also kept my wife in excellent health for years. She says Electric Bitters are just splendid for female troubles; that she are a grand tonic an invigorator for weak, run down women. No other medicine can take its place in our family." Try them. Only 50c. Satisfaction guaranteed by Adamson & Winnek Co.

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A Few Points on the Fine Points in Pianos and What Instruments Possess Them Most and in the Greatest Degree.

Piano names are a legion and in quality and character they vary quite as much as human nature. Generally speaking there is the cheap commercial kind that sell for a small sum,—and come dearer than the "stenciled" one at which the finger of scorn is always pointed, the medium priced piano, a whole horde of them and which are always pleasing; the high standard piano costing a little more, but a kind it always pays to have; and finally those that have reached the very pinnacle of perfection. Pianos that remain faultless and sweet in tone, perfectly sound in construction and pleasing in construction for more than one generation to enjoy. Instruments that gifted artists have lavished time and talent on to produce decoration and refined tone within; on which the scientific piano make has bestowed skill, experience and experiment to evolve a case combining perfect symmetry of outline with the utmost possibility for tone production; to whose construction the forests of the world have yielded up their richest woods; mine and forge have contributed fine metals; from out the Orient rare ivories have been gleaned and upland flocks have furnished finest fleece for felts and leathers. Supreme intelligence and judgment the most discriminating musical ear and the greatest mechanical skill have co-operated to so assemble combine proportion, shape and finish these rare products that sweetest tone, the greatest volume, most endurance, responsive touch and perfectly balanced action shall produce a faultless instrument. Few pianos possess all these qualities and none to so marked degree as the Chickering piano, the oldest in America, Boston's best; the Weber of New York, by many odds the finest instrument made in that city, and the great Kimball of Chicago, the most modern and progressive up-to-date piano made. One that through sheer virtue of its superior tone and finish and the reasonableness of its price has risen in its short existence of fifteen years to a prominence in the musical world, equal to the former much older makes.

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Night Was Her Terror

"I would cough nearly all night long," writes Mrs. Chas. Applegate, of Alexandria, Ind., "and could hardly get any sleep. I had consumption so bad that if I walked a block I would cough frightfully and spit blood, but when all of 'er medicines failed, three \$1.00 bottles of Dr. King's New Discovery wholly cured me and I gained 55 pounds." It's absolutely guaranteed to cure Coughs, Colds, LaGrippe, Bronchitis and all Throat and Lung Troubles. Price 50c and \$1.00. Trial bottles free at Adamson & Winnek Co.'s drug store.

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A BRAVE DESERTER.

BY EDWARD H. CLARK.

"What's that you say?" said Sergt. Toole, as he kicked the snow off his boots and sat down by the fire in the little wooden shack that did duty for barracks. "You say there never was any good in a deserter? Well, you've missed it by just one, and have made a four instead of a ball's eye. Didn't you ever hear tell of Jim Benson, of 'T' troop, of the Twelfth? Jim was a deserter, so Washington people said, but Jim loved the flag and his duty to it better than nine-tenths of the fellows who serve their full 30 years and then get let out with Uncle Sam's thanks and a small bit of money every month for life.

"What made him desert? Well, what should make an old soldier desert but a woman? Some poet or other once told about a fellow who had been tempted all kinds of ways. Money couldn't get him; glory couldn't get him; nothin' could get him, so all the wise ones thought, and she got him, or, as the verse singer put it, 'swon an tempted and he fell.'

"Jim was in the service 25 years before he struck his flag to a petticoat. Like all those fellows, when he got hit he was hit so bad that none of your surgeons who are up in matters of sentiment could probe and get out the bullet, or perhaps I'd better say arrow, for that's the kind of ammunition the little chap who shot Jim uses. You see, Jim was high into 50 when he got his sights fixed and held on to this pretty young creature with blonde hair, blue eyes and pink cheeks. It's always the way with the old fellows, when they get stuck on something young. It goes hard with them. You see, the girl had heard how it was that Jim had always been steady, had never seen the inside of 'the mill' except as a member of the guard, and, moreover, how he had 8,000 dollars four per cent. with the paymaster.

"Jim always went into a fight to win, and he got on to the track of that girl and hung to it just as he did to the 'Kil's trail' down in the Apache country when 'T' troop was chasing that red devil through the Arizona hills. The girl led Jim for a while, a comely little like, just to make sure of him, I guess. I don't suppose she ever cared a rap for him, but she was of a kind to whom Jim's little pot of money and his retired pay meant a heap.

"Jim wasn't any beauty. He looked like one of this artist fellow Remington's pictures of his fellows. All muscle and bone, but as thin as the company cook's soup when the beef doesn't show up. Moreover, Jim had a scar on his face that was deep enough to drop a Springfield cartridge. He got it along with a medal of honor when he was trying to save a kid drummer from being gobbled up by the Sioux out on the Rosebud. The medal of honor didn't mean anything to that girl. It might to some who wear skirts, but not to one of her kind.

"Well, really we all thought that Jim had come back all right. It was given out that the Twelfth's chaplain was going to have a job with the two up. None of the boys congratulated Jim too hearty, because most of them had eyed the affair up right, and wouldn't have it that the girl was good enough for Jim Benson. She might be all right for a rookie, but not for an old fellow who had seen more campaigns than the girl had years. I ought to have told you before that this particular petticoat was visiting at the post. She came from down Iowa way somewhere.

One night she gave it out that she was going home, and that Jim must go down there for the spring. She cleared out, and in a few days after the old fellow gets a furlough and clears out, too, following the trail, as we heard after, way down to Iowa. Now you must just get hold of this fact. Jim was kind of a pious chap, but he loved the flag better than any Bible that was ever printed, but for a short time that girl was above the flag. Jim was just crazy for her. The story is that she wouldn't come back, and wouldn't marry him unless he quit the army then and there. Jim tried to quit through the regular red tape channels, but they wouldn't have it down in Washington.

"Jim Benson, veteran, medal of honor man, fighter in a hundred fights, lover of his flag and country, and as good a soldier as ever wore quartermaster's shoes, deserted, and deserted for a petticoat. I forgot to say that Jim got his wad of money from the paymaster before he had waded up.

"There was another deserter inside of a month after Jim quit the colors. This time a woman did the deserting, though a fellow helped her to do it, and along with the woman and the fellow went Jim's money. I don't suppose during the long months the full force of what he had done went home to the ball's eye with Jim. It went home, however, when the girl quit. Jim wanted to be reinstated in the service. He was willing to take the heaviest penalty for absence without leave, but he knew now how it felt to be a deserter, and more than that, he remembered how all good soldiers despise a fellow who quits.

"Jim's heart was clean broke. He got in communication with his old captain somehow, and he tried to work the thing through the department for Jim, but there'd been a heap of desertions about that time, and despite Jim's medal and his 25 years with many a 'blind' nor a day in 'the mill' against him, the honorable, the secretary of war said if Jim was caught he must take his medicine.

"It was rumored around old Fort Johnson that Jim had been seen on the edge of the woods looking at the old place and seeming kind of wildlike. One night one of the old quartermaster shacks got on fire. It was just before target practice season, and the building had a dozen big boxes of ammunition in it. There was a pretty stiff wind blowing, and it looked as if the barracks and a lot of other things would go. If the staff had exploded the other buildings would have gone sure. The fire was fairly eating around those boxes and the fellows fought say of the flames a little, good soldier stuff though they were.

"All at once while the crowd was bearing back somebody jumped clean through the line and plump into the fire. He grabbed a box and threw it out clear of the blaze, and then another and another, though the flames were burning his clothes and going up wreathlike about his head.

"When he had done the business clean and good the man jumped out of the flames and ran to the woods. Well, I guess you know who it was. It was Jim Benson. We found him dead next day in a thicket, but the curious part of the matter was that Jim's body was wrapped in an old garrison flag that had been pinned about him by the last effort of those poor burned hands. Jim thought, you see, that deserter though he was, if he did this they might bury him with the flag.

"Did they do it? Yes, and gave him the regulation three rounds over the grave and the best prayer that the old chaplain knew how to pray.

"Boys, I've been 29 years in the service. I've only got one year before I retire, but as sure as drill call sounds in decent weather I'm going to fight shy of petticoats till the next 12 months are up."—Chicago Record-Herald.

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