THE COLLINS COMPANY
HISTORY OF WATER POWER

Excerpts from Sam Collins Memorandums 1826 – 1867

1826 Copartnership formed between S. W. Collins, D. C. Collins and William Wells of Hartford, under the firm name of Collins & Company, for making axes and other edge tools.

They purchase a saw-mill and grist-mill and water privilege and a few acres of land on the East bank of the Farmington river in the town of Canton.

David Collins had a shop at that time in Hartford where he employed men in making axes by hand but had no water power.

Not much done at Canton this year, not being able to obtain all the land they wanted on equitable terms.

1827 Commenced quarrying stone for a two-story stone building and for a heavy stone wall West of said building to prevent the river from running through that channel. What is now our canal and raceway was formerly a branch of the main river. There was a log dam where the wall stands and a saw-mill where the upper stone building stands. A grist-mill stood where the upper polishing shop now stands. A saw-mill was removed this year. The grist-mill remained a year or two longer.

1828 Built the first trip-hammer shop, an undershot float wheel to each hammer, located close to the stone building on the East (now a grind shop).

In September soon after the trip-hammer shop was completed, a high flood carried away the flume, the water running over the walls each side of the stone building and into the upper windows filling the upper story to the windowsills. This flood carried off a large quantity of timber collected to build a dam, and looked so formidable that we changed our plans, believing it would not do to build a dam unless in connection with an extensive and expensive stone breastwork to protect our Works, and this was never undertaken until 1837 when the present dam (1855) was built and the high and long stone wall in connection with wooden bulkhead at the gates, which bulkhead was removed and stone substituted in 1849.

1831 Built bridges across the canal and across the main river at our own expense to open building ground for houses near the shops. Subsequently gave the town of Canton a deed of the highways and bridges without charge.

1836 Divided $50,000. to our Stockholders, it being 27 1/2 percent on our capital of $200,000, leaving us a surplus of $3000, and we charged to profit and loss $14,000. expended in improvements, having built the Church voted last year, also a large grinding shop on West side of upper race with three breast water wheels running twenty-four grind stones, (we hesitated to build a shop for want of water the dam across the river not being built until 1837).

Bought the old Case Tavern standing near the river and the Case farm East of the Tavern, since mostly covered with houses. This purchase of the Tavern was desirable to suppress gambling and drinking and to enable us to raise our dam and pond the following year. The stock of the Company sold freely this year at 150 and 160 early in the year, and later some sales **(illegible at bottom of original page)** one sale at 200, or $20. per share, the par value being $10. per share.

1837 Notwithstanding our financial embarrassments with the Banks suspended in May of this year (as recorded on a previous page) we expended some money in improvements at the Works that appeared to be indispensable. It appeared to be the very time to build a dam across the river which was so much needed. Heretofore we had in summer turned the water into our canal by a ridge of loose stone between the upper islands at the head of our fall which of course did not stop all the water, and were moved out of place by the ice in winter when the anchor ice would fill our canal and the water would flow the main channel of the river.

The dam was a heavy job and we could not do it when there was a good demand for axes. We now suspended work entirely at the shops for five months and built a log dam across the river, filled it with stone and planked over, and a heavy stone breast work parallel with it crossing the canal to protect our Works from floods. The bulkheads at the gates on the canal were put in of heavy timber and planked, (stone was substituted in 1849). The dam and the stone breast work was all put down onto the rock all the way, the logs being bolted to the rock. The bottom of the gates is formed of chestnut timber close together running up and down stream and bolted to the rock. Of course it never will decay but the action of running water and sand will in time wear it out. The stone breast work is only about half of it visible, there being about half of it below the surface and the walls much heaver at the bottom. To a stranger it looks unnecessarily heavy and high but not to those who have seen the high floods that sometime occur on this river. By building the dam we got sixteen feet head and fall on our water wheels. The former owners never got more than 12 feet for their saw-mill and grist-mill. (In 1849 we put two feet more on our log dam, giving is 17 to 18 feet head and fall on upper wheels, the channel and lower wheels not yet built).

1838 We found the dam built the previous year a great improvement to our water power obviating all necessity for any more night-work.

1839 Great flood in January. Large cakes of ice came over the flume into long grinding shop. To prevent a recurrence we built a heavy stone wall on the river side of the shop 231 feet long, costing $1000

Mr. Smith now regrets that we expended so much money at the Works in 1837 for the dam, etc. etc. Our financial troubles increased.

1846 The drought last summer (1845) was such that we could not run the works more than half the time but as this occurs only occasionally we decided to build a canal to give room for more shops and we built in connection with it a three-story stone building and two large iron breast wheels, that we might put in operation Mr. Root's machinery for punching heads of axes, shaving them and tempering them in ovens without disturbing or interfering with the present manufacturing business, the demand both last year and this year being larger than we could supply.

The river was very low in October for not having had the usual September rains.

A grinder by the name of Cowdry was killed by a grindstone falling over onto him while moving it outside of the shop.

They took up the flume of the upper stone building to stop leaks, and built on West side of the building an additional stone wall to support the previous wall, and grouted it with water lime (200 barrels) to stop leaks.

The demand for axes the past year has quickened the competition and many of our men having been bribed to leave us we advertised in 40 newspapers in different sections of the country for workmen to fill our new stone building.

We divided 10 percent to our Stockholders this year, our extra expenditures being carried to a "Building Account" contrary to our previous custom which had been to pay them from profits.

The effect of running our grinding with green Irishmen now became visible by the increase "wear and tear" of machinery. The three breast wheels failed one after the other though they had been running but ten years and with care might have run twenty years. The pine shaft of one of them broke, the life of the wood being destroyed by allowing the gudgeons to heat. Grindstone dust fills the holes for oiling unless watched with care. We could not possibly suspend our business to build wood wheels which would delay several months so we put in cast iron breast wheels. The aproning, gearing and large wheels or drums for bolting being all ready for that kind of wheel but they did not live much longer than the wood wheels and we finally put in iron turbine wheels which cost much less though they don't run as steady and we have more accidents by the bursting of stones.

1847 A high dam built this year on the river at New Hartford by The Greenwoods Company giving them a large pond which aids them materially in dry weather and is also a help to us.

1849 This year we raised our dam two feet paying the owner of land above for the right to flood their land to that extent, (amounting to about $3000.) We fastened an iron bolt into the ledge of rocks near the South outlet of the waste-way which marks our rights that spot being 18" higher than the top of our dam after raising it two feet. We also took out the gates and timber bulkhead put in when the dam was built in 1837 and substituted stone placed on logs at the bottom which are

close together running up and down stream and bolted to the rocks and covered with 3" plank.

1852 Great demand this year from California for axes and especially for pick-axes. To increase our trip-hammer facilities put up a long shop next West of railroad bridge (240 feet long) fourteen trip-hammers driven by cast-iron breast wheel 22 feet in diameter, 8 foot buckets.

1853 We bought of E. K. Root this year the water privilege on the river next below our property extending a mile down the river. It will probably be worth more to us to keep others from ponding up to us than to use it as a water privilege, as it would at some season of the year pond the water back on to our present water-wheels.

1854 Great flood this year.

1857 Great ice flood covering the river road North of the Village, East side of the river with ice which obstructed travel after the flood subsided. This flood was followed by much fatal sickness in February and March in that part of the Village nearest to the large deposit of ice.

1859 Not having triphammers enough to enable us to rest the demand for Planter's Hoes, we this year built a triphammer shop 100 by 50 feet close to the three-story stone building, the East side of said building and the hammers operating by shafting connected with the breast water wheel in said stone building.

1863 A vote was passed at the October meeting appropriating $20,000. to build tenements for workmen. Also a vote authorizing the Executive Officers of the Company to take measures to improve our Water Power.

1865 This year we pulled down the one-story polishing shop built in 1845. Took out the old wooden breast wheel put in at the time, and put up a two-story building on the same spot and put in an iron turbine wheel. The lower story is for polishing, the upper story for handling machetes.

Put up a large roof covered with tar and gravel to protect or anthracite coal from the weather.

Put up a building with tall chimney and two steam boilers to get more steam for rolling and hammering steel

Put up a large steam hammer called a ton hammer.

Built (with some aid from others) a reservoir at Otis to improve our water power.

Build large reservoir at Otis.

Description of Reservoir build at Otis:

The original pond covered 318 acres. The reservoir when full covers 1,050 acres and is then (when full) 26 feet above the level of the old pond. The average available depth that we can draw down is equal to 17 1/2 feet deep on 1,050 acres. The dam at the outlet is composed of two walls filled with earth between which is used and accepted by the town of Otis as a public highway. The locality of the old highway and bridge being under water when the reservoir is full.

The lower wall is 133 feet long on the top, 32 feet 4 inches high from the rock in the natural bed of the stream where the sluices from the reservoir discharge.

The bottom or bed of the gully is 60 feet wide and 10 feet deep. That bottom part of the lower wall was laid up with heavy cut stone to the height of 16 feet 9 inches and cemented, the bottom being 13 feet broad and the top 10 feet. Above that a dry wall of rough stone is laid 15 feet 7 inches high 4 1/2 feet thick at the top, which is covered by coping of stone 3 feet wide. One hundred feet of the whole length of the lower wall is either laid in cement or grouted.

The upper wall next to the water is 60 feet long, crossing the gully or natural bed of the stream from rock to rock, the banks being of rock as well as the bottom. This upper wall is 19 feet high and 8 feet broad on the bottom, 18 feet of the height being laid with cut stone and grouted. The upper part being rough dry wall 8 feet high and 4 1/2 feet wide at the top.

The earth slope from top of the road-way to top of the upper wall is covered with loose stone to prevent the earth from washing off.

At each end of the upper main walls there is a wing wall of 20 feet to support the base of the earth embankment at either end and keep it from the gates. There are two sluices from the upper to the lower wall. On the rock at the bottom **(illegible at bottom of original page)** 2 1/2 feet square inside, laid with heavy cut stone dowelled together with iron bolts.

The gates are at the upper end of the sluices. They are of cast iron with rough iron stems, 29 feet long 3 inches diameter.

The earth embankment of filling between the walls is 30 feet wide on the top which forms the road-way.

The roll-way or waste-way for carrying off the surplus water is 30 feet wide and 4 feet deep, having increased in 1871 the roll-way by raising of the bridge over the roll-way; the bottom being 3 feet below the top of the lower wall of the dam. The water of the roll-way when full being only 12 inches lower than he highest part of the dam, consequently during the high floods when the reservoir is full it will be necessary to raise one of the gates as the roll-way is not adequate to pass all the water at such

times, (contrary to our expectations.) That it is adequate has been proved by actual experiment in the Spring of 1867, when it was necessary to raise the gates to prevent the water from running over the road and dam. With both gates raised 15 inches it continued to run over the roll-way by 5 inches deep. One gate raised to full height in flood time will probably carry off all the surplus water without raising the other gate at all. The reservoir is so large that it rises slow and will not therefore be likely to overflow before the gates are raised.

There is a plank partition in the earth parallel with the walls and the whole job being done in the best manner, there is no danger of any break or failure.

Besides the present reservoir "Farmington River Water Power Co." own the outlet of Great Pond, so called, which now covers a surface of 350 acres. This pond discharges into our reservoir, it being 50 feet higher and only about a quarter of a mile distant it affords good mill privileges by using the water several times.

At the outlet owned by The Reservoir Company there is a dilapidated grist-mill and saw-mill neither of which can run without considerable repairs. There is a dwelling house in tolerable repair which is rented. Immediately below ours there is a new saw-mill in good condition and doing a good business.

The banks of the upper pond are not high, the present low dam holding back only 3 feet of water on 350 acres. A dam 12 feet high would cover about 1,000 acres making a reservoir as large as the present one, but not so deep. The land damages would be about the same the other expense much less, as the stone quarry is only a mile distant and we had to draw them three miles to build dam to present reservoir.

It was our intention when the property was purchased to build a dam 10 or 12 feet at the outlet of each pond but subsequently surveys demonstrated that the banks of the lower pond were so much higher and the outlet so narrow that it would be best to build that first end much higher than our original intention, although it was much further from the stone quarry.

There is not probably a better quality of granite in the U. S. but there is very little demand for want of means to transport them. We paid $80.00 for all we can get away in five years.

To secure the outlet to the present reservoir we had to buy the farm, some 75 acres of which is not flooded, and has an old house and barn near the gates which can be occupied by the man who has charge of the gates. This outlet and gates are two miles from habitation, but the outlet of Great Pond and the **(illegible at bottom of original page)** there are directly in the village of East Otis.

At Great Pond near the village of East Otis, our surveyor, Mr. Chamberlin, put an iron bolt onto a large rock (about 20 rods West from the mill pond.)

A dam at the outlet 12 feet high would raise the water about 10 feet and the surface of the water will then be 2 feet below the iron bolt. The surplus water must not run off the dam but go over the waste-way.

As near as we can estimate the Works of The Collins Company when in full operation, use 12 millions of cubic feet of water in ten hours.

The capacity of the Otis reservoir is equal to a discharge of eight millions of cubic feet in twenty-four hours for three months (97 days), which, admitting that half of it runs past us during the night, we believe will enable us to run our works through the draughts of summer without hindrance or delay.

The water running at night must first fill out ponds above us that they have been drawn down during the day including our own pond, before it runs past us.

The capacity of the reservoir is estimated to be eight hundred millions, four hundred and fifteen thousand cubic feet, sixty percent of which is estimated to be available; equal to 6,255,242,187 gallons.

1866 Commenced quarrying stone at Canton Village for a new dam across the river.

1867 The Legislature of Massachusetts at its Annual Session in 1867 granted a Charter to the "Farmington River Water Power Company" with Capital of $100,000. in shares of $100.00 each.

The first meeting of the Corporators and Stockholders was held at New Boston, Mass., August 14, 1867.

The Stock of the Company was divided to parties as nearly as possible in proportion to their subscriptions toward the building of the reservoir as follows:

Wm. J. Canfield, of Cannan ……	125 shares
Greenwoods Company ……	100 "
Darius B. Smith ……..	25 "
La Presse & Company ……	25 "
Hartford Carpet Company ……	50 "
Lewis E. Cowles ……...	50 "
Albert Hull ……	8 "
Delos Stephens …….	3 "
L. Brainard & Company ……	16 "
H. S. Sawyer ……..	6 "
E. D. Parsons …….	3 "
Wm. L. Gilbert ……..	2 "
Springfield Paper Company ……..	8 "

Philip E. Chapin ..... 2 "
H. Chapin & Sons ..... 1 "
S. P. Norton (this subscription
being for The Collins Company)
500 shares
Total 1000 shares

S. P Norton)
Wm. J. Canfield)
Darius B. Smith) were chosen Directors
Lewis E. Cowles)
Albert Hull)

S. P. Norton was chosen President
Albert Hull was chosen Clerk and Treasurer

A new road build this year from Collinsville to Unionville on East side of the river.

Put up a three-story building on the side of the old office with concrete pressed brick. Also on Main Street a brick building for a hotel and stores.

Sold more land this year for individuals to build on than ever before in any year.

Built a stone dam across the river one foot higher than the old dam. Not being able to agree with the landholders above the dam we applied to Court for commission to access damages under the flowage law. The commission authorized us to raise our dam one foot and use an 9 inch flash board in Summer. They gave damages to:

Davis ..... 750.
Tiffany ..... 750.
Ackart .....750.
Brown .....225.
I. E. Case .....600.
Silas Case ..... 75.
Mills ..... 30.